

# The Development of Education Digitalization in the Hinterland

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## ABSTRACT

This study aims to decide the digitization of education in rural areas. This research was conducted using a qualitative type of research with phenomenological methods. The data collection methods used are interviews and observations. This study used purposive sampling data collection techniques. This research also uses data analysis techniques consisting of, preparing data, reading the entire data, coding data, applying the results of data coding into themes that will be analyzed, presenting themes into narrative form, and interpreting data. The results showed that the four subjects, namely subjects M, H, BL, and YMJ located in rural areas, had a good development of education digitalization, it was just that there were obstacles from several factors, namely the factor of poor infrastructure readiness with the availability of limited facilities and the lack of training for teachers who work as educators in rural areas. This constraint on the teacher readiness factor is also influenced by the age of educators, most of whom are 40 years old and above and are constrained by the lack of technological knowledge they have.

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## I. INTRODUCTION

Nowadays, digital technology is becoming a part of everyday human life. The development of digital technology supplies many benefits to humans and supplies a lot of aid in human activities (Horobet *et al.*, 2022; Ulzytueva *et al.*, 2021). The development of this technology will certainly bring a change in quality for the better, and make everything more efficient, such as clearer image delivery with a faster delivery process. This change makes it easier for humans to do many things, just by using digital technology. Technology digital became an information technology, where it is more likely to use digital power than human labor devoted to fully automated and sophisticated operating systems (Danuri, 2019; Qureshi *et al.*, 2021).

The existence of digital technology has also changed many things to be all digital, or it can be said to be digitalization. Prastiani and Subekti (2017) explained that digitalization is a

process in which there is a convention from analog-shaped media to digital forms. This digitalization can apply in various aspects of human life, such as digitalization in the development of MSME digitalization, digitalization in the business sector, digitization in companies, to digitalization in the education sector (Bordiyani *et al.*, 2022; Matveeva *et al.*, 2020). The focus on this research is related to digitization in the field of education.

Digitalization in the world of education has an influence on the learning system and school administration system. Digitalization of education which is the use of the technology part used as an aspect of the learning system, starting from the curriculum to the education administration system (Gumelar & Dinnur, 2020). This digitalization supplies many conveniences and efficiencies for teachers and students. In Kuncahyono *et al.* (2020), with the title "E-Test Application 'That Quiz' as a digitization of 21st century learning skills at

school Indonesia Bangkok”, where the results were obtained that the 'That quiz' application or learning through a digital application supplies many conveniences for teachers. It is said that the existence of learning with this digital application makes the method of assessment and control of students easier, as well as the ease of accessing the material. According to Amarulloh *et al.* (2019) digitalization in the world of education has had quite a lot of positive impacts. The positive impact is in the form of mass media that is easy to use to find information and carry out publications, create new methods of learning, make learning more effective, provide convenience when explaining complex material while shortening the length of learning time (Khomariyah & Afia, 2020; Krainov *et al.*, 2021; Vallo Hult & Byström, 2021).

The development of digitalization is not only useful in making it easier for humans to do many things, but there are also challenges in its application (Lyakhova, 2020; Matveeva *et al.*, 2020). Especially for educators and students in facing this digitalization development. In this digitalization development, the main challenge for education is the ability or knowledge of teachers and students in using the functioning of digital technology, the extent to which teachers and students know in using digital technology. The readiness of infrastructure or in the form of facilities in meeting the needs of digitalization of education is also especially important (Antonov & Ivanova, 2021; Pu *et al.*, 2022). Of course, this digitalization requires gadgets or computers, adequate internet access, learning management applications, and so on. These preparations are a challenge in adjusting to the development of digitalization of education.

In big cities, the facilities that accumulate the development of digitalization of education are quite good, but in rural areas they still do not get access properly (Pluzhnikova, 2021; Ronzhina *et al.*, 2021). In the research conducted Sukiastini (2020), with his research entitled “The world of education in the hinterland of Papua before and after being affected by Covid-19”, where he used literature studies and used documentation data collection techniques and content analysis methods. It was found that, in the city part of Papua, there are no obstacles related to digital learning because of adequate facilities and parents' feelings that have begun to open about this learning, but in rural Papua, accessing the internet is still quite difficult. Infrastructure in the hinterland of Papua such as television, gadgets, to inadequate electricity, and unopened thinking about the use of gadgets for learning, is quite difficult to implement this digital learning.

Another research conducted by (Arkiang, 2021), with the research title “Analysis of online learning during the COVID-19 pandemic in the 3T (East Nusa Tenggara) area.” The research was conducted using the descriptive content analysis study method, where it was explained that there were obstacles in accessing the internet in remote areas, and there was an adequate electricity flow. Another obstacle also comes from human resources that are still lacking, this is enough to make rural areas lag the development of education digitalization, so that aid from the government is needed so that rural areas are not left behind in this digitalization development.

From the two studies above, researchers felt the need to conduct interviews to dig deeper into the picture of the development of digitalization in the hinterland in areas close

to the researcher. Based on the results of an interview with one of the teachers in the hinterland, which was conducted on March 25, 2022, using WhatsApp media, it was found that students and teachers in the hinterland had used digital technology, such as chrome books during exams and learning. It is said that there is digitalization in this education, making it easier for teachers and students, and making it easier for teachers to conduct assessments. Even though they are in the hinterland, students and teachers can already use existing digital technology, although not very proficient, but networking is the main problem in the digital-based learning process.

From the results of the interview, the researcher concluded that, in rural areas, it is not always lagging in the development of digitalization of education. The existence of facilities from the government and the ability of teachers and students to use digital technology supports the development of digitalization, especially in rural areas. The facilities provided by the government have been mentioned in Law No. 11 of 2003 “The central government and local governments are obliged to provide services and conveniences, as well as ensure the implementation of quality education for every citizen without discrimination.” Law No. 20 of 2003 in article 5 (3) also explains that “more specifically for rural or underdeveloped communities entitled to special service education.” There are efforts from the government in taking part in advancing education in Indonesia and there is an allocation of funds used to complement the infrastructure for the development of digitalization of digitalization of digital-based education (Arkiang, 2021). In fact, sometimes the allocation of funds given is not always even, resulting in uneven distribution of educational facilities in rural areas.

Based on earlier studies on the development of digitalization in rural areas, it is known to have similarities and differences with the research that researchers will conduct. The similarity of the research conducted by Sukiastini (2020) with this research is to examine related to the digitization of education in rural areas. The difference between the two studies lies in the subject used. In the study conducted by Sukiastini (2020) using the subject of the hinterland of Papua, while in this study used the subject of the Muara Jawa inland school.

From the description above, it is known that the development of digitalization of education in hinterland areas has improved quite a bit, this makes researchers interested in conducting research with the title “The Development of Education Digitalization in Rural Areas” in order to dig deeper into how the development of digitalization of education in rural areas by collecting the results of interviews and observations that later researchers will do. Researchers will also dig deeper into what factors influence the development of digitalization of education in rural areas.

## II. RESEARCH METHODS

This research is a qualitative study with theme analysis. The selection of qualitative methods in this study was because the researcher wanted to see a picture of the digitization of education in hinterlands. Researchers also want to see how the development of digitalization of education in rural areas

and what are the obstacles that occur when implementing digitalization of education in rural areas.

#### A. Types of Research

This research uses a qualitative approach with phenomenological methods. Qualitative methods are the methods used in researching objects naturally, researchers themselves become the main instrument in qualitative research, triangulation, or combination into techniques in collecting data, have inductive data analysis properties, and in results tend to focus on meaning compared to generalizations (Sugiyono, 2017). Phenomenology is a method that focuses by making observations on matters related to the existence of objects to obtain the essence of experiences and phenomena that have been seen and with the researcher as the main instrument.

#### B. Research Subjects

The participants involved in this study were four people. The criteria for the selected participants are teachers and students who attend schools in rural areas. Researchers used purposive sampling participant selection techniques and researchers used informed consent which aimed to seek approval from participants involved in this study.

#### C. Data Collection Methods

Researchers collected data using interview and observation methods. Interviews were conducted so that researchers obtained more in-depth information and observations were made with the aim of strengthening the results of interviews related to the development of digitalization of education in rural areas. Researchers took the data at a junior high school in the hinterland of the Inner Bay Area. Researchers will contact participants who meet the criteria and conduct interviews directly to the subject's home and through zoom meeting media, while observations are made when the

interview is conducted and conducted during visits to the location. In the interview process, researchers used in-depth questions to find out thoroughly related to the development of digitalization of education in rural areas. This in-depth question makes participants will talk about the benefits and constraints of implementing digitalization of education in their schools and make it easier for researchers to group answers based on questions.

#### D. Data Analysis Techniques

This researcher uses qualitative techniques and consists of several stages, namely the stage of managing and preparing data to analyze, reading all the data obtained, analyzing detailed data using data coding, starting to do calculations to describe the results of the information obtained, and interpreting the data.

### III. RESEARCH RESULTS

Four subjects who were students and teachers in hinterlands agreed to take part in the of this study. Two 13-year-old subjects who are in the ninth grade of SMPN 4 Muara Jawa and two subjects aged 35 years who are educators at SMPN 4 Muara Jawa.

This research can supply an overview related to the development of digitalization of education in the area where the participants involved are students and educators of SMPN 4 Muara Jawa who are in rural areas. The following is (Figure 1) the dynamics of the picture of the development of digitalization of education in rural areas.

The analysis of this research succeeded in uncovering the condition of schools that have implemented digitalization of education in rural areas, starting from, infrastructure readiness, teacher readiness, and student readiness.

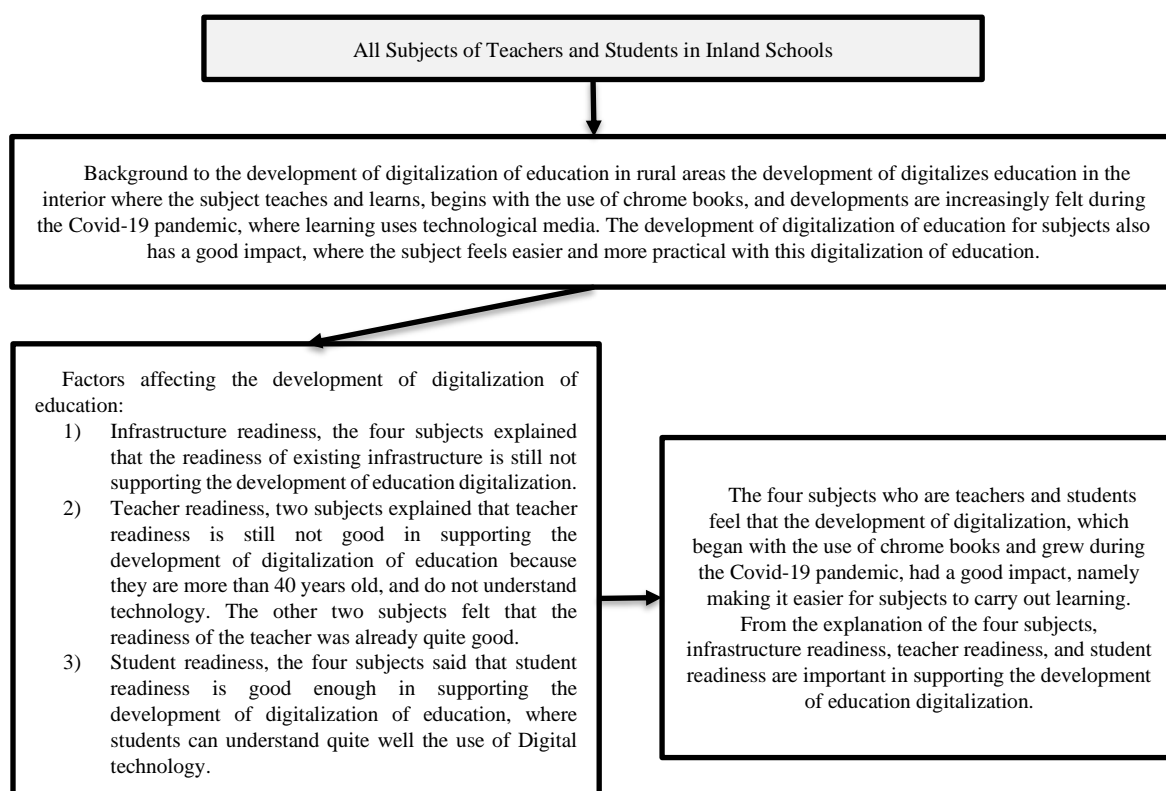


Fig. 1. Dynamics of the digitalization of education hinterland areas.

### A. Infrastructure Readiness

All participants felt the many obstacles during the process of implementing digitalization of education at SMPN 4 Muara Jawa. All participants realized that the location of schools in rural areas resulted in lags and slow technological developments that entered in rural areas in contrast to urban areas. The limited facilities available in the school in the form of computers and LCD Projectors, make all participants must use them interchangeably and this makes the duration of learning longer and not best. The network is also one of the most important obstacles in the implementation of digitalization of education, an unstable network makes it difficult for all participants to access the internet.

### B. Teacher Readiness

Participants felt that the teacher was particularly ready to carry out the digitization of education, the teacher always provided guidance and explanations regarding the operation of existing facilities and structured teaching was carried out by the teacher in the use of limited facilities so that all students could use them (S1 and S3). Participants felt that they were not fully prepared in facing the digitalization of education, this was influenced by educators who were mostly elderly so that they were less proficient in using technology and the lack of training obtained by teachers in rural areas (S2 and S4).

### C. Student Readiness

Participants experienced difficulties during the implementation of education digitalization at SMPN 4 Muara Jawa, namely difficulties in operating educational digitization support facilities because they were still entering the adaptation phase of moving from ordinary learning to technology-based learning (S1 and S3). Participants also realized that as students, they must have the ability to understand and run technology so that when using the facilities provided by the school run smoothly and do not waste time (S1 and S3). According to participants, the digitalization of education has made students have begun to be able to adapt and get used to using supporting facilities for educational digitization, this is seen from the way students who can already run the facilities provided (S2 and S4).

## IV. DISCUSSION

This study discusses the digitization of education in rural areas. The subjects involved in this study consisted of four people, namely two students (M and BL) and two teachers (H and YMJ) at SMPN 4 Muara Jawa. SMPN 4 Muara Jawa is in a remote area and the journey to the location must pass through forests with poor roads and unstable or poor networks. According to Nugraha and Anggraini (2019) inland areas are areas or places that are difficult to reach by internet networks and telephone networks and inland areas are also places far from urban areas.

The four subjects in this study, namely M, H, BL, and YMJ, each said the beginning of the digitalization of education that they felt at SMPN 4 Muara Jawa. Digitalization of education itself is a use of technology which is a sign of change in a learning system starting from learning

procedures to curriculum and educational administration systems (Gumelar & Dinnur, 2020). Subject M said that the digitization of education at SMPN 4 Muara Jawa began to be implemented due to the COVID-19 pandemic which required online learning by using technology and due to the rapid development of technology began to enter the hinterland. Just like subject M, subject H also said that the digitization of education began to be felt during the COVID-19 pandemic and required teachers and students to be able to adapt related to changes in the education system that uses technology. This is in line with the statement Wisdom and Chudzaifah (2020) put forward by the one who said that the demand of the wider technological development is to combine face-to-face learning with technology-based learning created as a form of innovation in the learning process in the new normal era or adaptation programs from the Covid-19 pandemic.

The BL subject said that the digitization of education at SMPN 4 Muara Jawa began to develop when there were ICT subjects and the availability of facilities that supported learning using technology. Just like the subject of BL, the subject of YMJ also said that the digitization of education at SMPN 4 Muara Jawa has been quite developed due to the existence of ICT subjects and the availability of Chromebook as support for ICT learning. ICT itself is considered as an important thing in digitizing education, because with the existence of ICT, it is hoped that schools will be able to prepare and educate students with skills to use technology in line with the development of increasingly broad technology so that students can more easily access knowledge (Fitriyadi, 2013).

According to Amarulloh *et al.* (2019) the impact of digitalization of education, the teaching and learning process has become easier and more effective and makes it easier for students to access learning resources independently. It is the same as the four subjects feel. Subject M and the subject of BL as students stated the impact felt from the application of digitalization of education at SMPN 4 Muara Jawa is the subject of gaining a lot of new knowledge from the use of technology available in their schools and with the digitization of education this makes the subject comfortable because of its practical nature and makes it easier for the subject to learn. Just like subjects M and BL, subject H and YMJ as teachers also feel the same impact from this digitization of education, which is to ease the teaching and learning process and make it easier for teachers to evaluate students which makes all work more effective.

Subject H and the subject of YMJ who work as teachers at SMPN 4 Muara Jawa realize that the location of schools in rural areas results in lagging far behind and the slow development of technology that enters the hinterland area is inversely proportional to areas in urban areas. This has caused many obstacles experienced during the process of implementing digitalization of education at SMPN 4 Muara Jawa, starting from the delay in facilities provided by the school in the form of computers and LCD Projectors as well as unstable or poor networks. The limitations of this facility resulted in teachers and students having to use the facilities supplied interchangeably and of course draining a long time. In addition, it is not much different from the statement of subject H and the subject of YMJ as a teacher, according to subject M and subject BL as students the facilities provided

by the school are very lacking and limited making students have to use the facilities alternately and in groups which makes the students' understanding of using the technology provided less. This is in line with the statement (Nugraha & Anggraini, 2019) that raises the challenge of digitizing education in rural areas is the limitation of learning support facilities, one of which is a laptop or computer so that its use must alternate and make the duration of learning longer.

Not only facilities that must be prepared in the face of digitalization of education but also the abilities of teaching staff also need to be prepared. According to the subjects of M and BL as students feel that in the application of digitalization of education when using the technological facilities provided by the school, teachers always provide guidance and explanations regarding the operation of existing facilities and structured teaching carried out by teachers in the use of limited facilities so that all students can use them. Broadly speaking, students feel that teachers are particularly ready to carry out the digitization of education, but it is different from the statements put forward by teachers. According to subject H and YMJ as teachers feel that they are not fully prepared in facing the digitization of education, this is influenced by educators who are mostly elderly so that they are less proficient in using technology and the lack of training obtained by teachers in rural areas. This is in line with the statement (Nugraha & Anggraini, 2019) that states that the first challenge of implementing digitalization of education is the ability of teachers to run technology, for example laptops, the inability of teachers to run laptops will certainly make it difficult for these teachers to conduct digitalization of education.

According to Nugraha and Anggraini (2019), the challenges of teachers' abilities in digitizing education, the ability of students is also important in facing the digitalization of education. One of the abilities that students or students must have been the use of facilities in the form of laptops, because if students do not know at all about running a laptop, it will make the learning time longer. Subjects M and BL experienced difficulties during the implementation of education digitization at SMPN 4 Muara Jawa, namely difficulties in operating supporting facilities for educational digitization because they were still entering the adaptation phase of moving from ordinary learning to technology-based learning. Therefore, subjects M and BL agreed that students must have the ability to understand and run technology so that at the time of use of the facilities supplied the school runs smoothly and does not waste time. In addition, subject H and subject YMJ as teachers at SMPN 4 Muara Jawa said that from the implementation of digitalization of education, students have begun to be able to adapt and get used to using supporting facilities for digitalization of education, this is seen from the way students can already run the facilities provided.

The difficulty faced and felt by the researcher is when deciding the time to conduct an interview between the researcher and the four subjects. This is because the difficulty of communicating with the subject is caused by the network in the hinterland which is often lost. In addition, interviews conducted in person are only conducted once due to unfavorable weather. A few days before the appointed time the weather suddenly rained which of course did not allow

researchers to come to the site because of the slippery roads that were still covered in clay. After the situation allows, then the researcher can go directly to the location of subject M. Not only that, because the interview process is scheduled to approach the Eid al-Fitr, but most of the subjects also postpone the agreement on the predetermined schedule because they are busy preparing for the needs of the holiday. Furthermore, the interview was conducted using zoom meeting media only because considering that it was still in the atmosphere of Eid al-Fitr.

## V. CONCLUSION

Digitalization of education is the use of the technology section in supplying many conveniences and efficiencies for teachers and students. The development of digitalization in the world of education has supplied changes to the learning system and school administration system. In the development of digitalization, of course, there are challenges in it, especially for educators and students, which require better abilities and knowledge for teachers and students in using this technological development.

In this development of digitalization, there are several factors that influence it, namely infrastructure readiness, teacher readiness and student readiness to support this digitalization development. Based on research that has been conducted on the four subjects who are teachers and students of SMPN 4 Muara Jawa from rural areas, it is said that the readiness of infrastructure in the subject's hinterlands is still not good, and this is quite hindering in supporting the development of digitalization of education. On the readiness of teachers and students in subject schools, it is quite good in supporting the development of digitalization of education, although it still requires training in teachers who do not understand technology.

The suggestion in this study is for schools to apply for aid to the government to supply infrastructure readiness to support the development of education digitalization in hinterlands. It is hoped that students and teachers can train and continue to seek knowledge related to the development of digitalization and the use of technology to support the readiness of teachers and students in the development of digitalization of education.

## CONFLICT OF INTEREST

Authors declare that they do not have any conflict of interest.

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