

# Technologies as Online Learning Media: The Problems and Solutions in School

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**Abstract**—The COVID-19 pandemic has changed our life in various aspects. One of which is the education aspect, especially the learning process. Learning was originally a face-to-face system which turns into online learning nowadays. One of the alternative methods in providing online learning services was using technology such as WhatsApp, Zoom Class, and Google Classroom as learning media. The use of technology as a medium in online learning had many drawbacks, especially in its use. This study was a literature review by examining various sources based on books, journals, and social media. The result of this study found that there were several problems that arose in learning with technology as an online learning medium, namely teacher's anxiety in using technology at the beginning of the pandemic and providing materials and assignments during the learning, and teacher's low ability to operate computers and gadgets. The solutions were encouraging teachers to study some online learning platforms, providing infrastructure and guidance in the use of technology as a learning medium by local governments and schools, increasing teachers' technological competence by holding workshops, providing support for vulnerable families to have equipment and skills in using technology, and involving the participation of youth organizations such as Karang Taruna in accelerating the understanding of the use of technology for parents.

**Keywords**—Technology, Media, Online Learning, Covid-19 Pandemic.

## I. INTRODUCTION

It has been two years since the COVID-19 pandemic has hit Indonesia, many things have changed, including the teaching and learning process in elementary schools. The COVID-19 pandemic has caused education sector to undergo enormous changes [1]. Therefore, it is necessary to find alternative methods for the service [2], such as the distance class, hybrid teaching, or 100% virtual [3]. This pandemic makes the learning process at school becomes more difficult and the increasing number of cases makes learning using online media technology as a solution. Thus, COVID -19 pandemic has been a unique challenge for education [4].

Referring to the Ministry of Education and Culture Circular Number 4 Year 2020 concerning the Implementation of Education Policies in the Emergency

Period during Corona Virus Disease (COVID-19), the Minister of Education and Culture (Mendikbud), Nadiem Makarim took a number of policies to deal with the pandemic. These policies included the abolition of the national exam, changes to the school exam system, changes to the regulation for new student acceptance, and the determination to study from home [1]. The government's policy on learning from home is online learning [5]. The online learning from home policy requires teachers, students and parents to prepare media to support these learning activities. Learning from home activities carried out online requires an understanding of the online media uses. Therefore, the demands of online learning to provide meaningful experiences and to achieve the objectives of curriculum can be carried out [6].

The change from face-to-face learning to online learning has brought many problems. The problems included lack of understanding on the use of technology [7], insufficient mastery of technology and lack of access to supervise students [8]. The lack of understanding of online learning technology is experienced not only by teachers but also by students and parents. Lack of understanding of the technology used because the technology used in online learning is not familiar to teachers, students and parents at home. As a result, teachers more often use the learning process that requires students to take school assignments and return to collect at a predetermined time.

The technology as online learning media commonly used during this pandemic were WhatsApp, Zoom and Google Classroom. All of the three media have positives and negative sides. WhatsApp was considered as being easy to use but it is not able to make a large number of video calls [9]. In addition, Zoom was able to make video calls with a large number of participants but it is considered costly. On the other hand, Google Classroom was able to make video calls with many participants and needed lower budget. Using Google Classroom as a medium can be a solution for teachers, students and parents to overcome the problems.

Government policies in the implementation of online learning have consequences in their application. Teachers who have limited equipment and abilities in mastering

technology have an impact on the implementation of learning. In addition, students and parents also experience the same thing, especially for those who are in rural areas or disadvantaged areas, frontier and outermost (3T). Network service limitations also arise in online learning. Some students have to travel long distances just to get network services and some have to climb trees to gain height. Therefore, a solution is needed so that the problem of online learning that has weaknesses in mastering IT, the availability of equipment and signals can be overcome by the government, schools and local communities.

## II. THEORETICAL THEORY

### A. Learning Media

Learning media are tools to assist the teaching and learning process and they function to clarify the meaning of the message conveyed, so that it can achieve learning objectives properly and perfectly [10]. The media that is often used in face-to-face learning is certainly very different from the media used in online learning. Online learning media is dominated by technology-based media, especially social media such as class zoom, google class, whatsAap and software-based video management media.

According to Kemp and Dayton, learning media must be able to fulfill three main functions if the media are used for individuals or groups, namely motivating interest or action, presenting information, and giving instructions [10]. In this study, we analyzed the use of technology-based learning media such as Zoom platform, Google Classroom, and WhatsApp during the pandemic. Does the use of technology-based media have no difficulty in being operated by teachers, students and, parents. Based on the opinion of Kemp and Dayton above, more sophisticated media should be able to easily convey information in the learning process.

The main functions of learning media are (1) as a tool to realize effective learning in the learning process; (2) as an integral part of the learning process; (3) integrated with the objectives and subject matter; (4) not merely a means of entertainment or merely complementary; (5) used to accelerate the learning process and help students understand what they are learning; and (6) improving the learning quality [11].

As a tool to realize effective learning in the learning process, technology-based media should be designed to be easy to use and operate. The ease of operation and simple features allow teachers, students and parents at home not to experience depression when they have to use the technology. The choice of technology as a learning medium must be followed by the technological competence of teachers, students and parents. The selection of technology as a medium must prioritize effectiveness, convenience and is an inexpensive technology to reach both in terms of applications and the devices used.

### B. Online Learning

Online learning is the use of the internet and using various technologies in the learning process [12]. The learning process using the internet network such as the use of applications provided by Google is a need for every

teacher, student and parent. Currently, the use of the internet network continues to develop and no less than 200 million Indonesians are connected to the internet.

Using the online learning, students have flexible learning time, and they can study anytime and anywhere. Moreover, they can interact with teachers using several applications such as Google Classroom, video conference, telephone or live chat, Zoom or WhatsApp group [13]. The teaching and learning process is no longer limited by the classroom but can already be done without restrictions on place, time, and without restrictions on the selection of the desired learning resources. Online learning has advantages and disadvantages. The advantages of online learning are that it knows no boundaries, is more efficient, has abundant sources of material and is more fun.

However, the weakness of learning is more about the ability to use technology and network availability. There is a requirement that online learning can run quickly and be useful in overcoming problems, namely the use of platforms provided by google such as gmail, google forms, google classroom, and open board software (not google products) [14].

## III. METHOD

This study used a literature review method related to the use of online learning media during the COVID-19 pandemic. Literature review is a literature study conducted by reading various books, journals, and other publications related to the research topic to create an article regarding a particular topic [15]. It is also concluding studies through analysis of articles or thoughts on a particular topic [16].


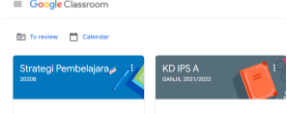

The data obtained by the researchers were analyzed in depth in detailed description of the existing problems; various perspectives from the various available data were brought up; and then followed by an analysis from the researcher about a phenomenon under the study [17].

## IV. RESULT AND DISCUSSION

The transition of direct learning (offline) to online learning requires teachers, students and parents as companions to start learning several technologies as online learning media. The technology commonly used to communicate such as whatsapp is not too difficult to use, but this technology has a weakness because it does not have the features of google classroom and zoom class.

WhatsAap has features that are easy to operate by teachers, students and parents at home. Features owned by WhatsApp include providing file sharing services, video calls, group chats. The downside of WhatsApp is that members are limited in video calls. WhatsAap is very commonly used by teachers, students and parents at home. In Google Classroom and Zoom Class, there are more services, but they are a little complicated to use and require practice and habit in their use, this makes it rarely used by teachers, students and parents. The Table I will show the differences between whatsapp technology, google meet, and Zoom Class.

TABLE I. COMPARISON OF TECHNOLOGY IN LEARNING MEDIA

NO	Comparison of Technology		
	Name	Excess	Weakness
1	WhatsAsp 	Can be used for file sharing, video calls, group chat, and easy to use	Limited participants in video calls, no class setting feature
2	Google Classroom 	It has video conference features, screen sharing and chat, file sharing, assignment distribution creation, class attendance, google docs, sheets, slides and writing. The use is more efficient, practical and fast	Users need sufficient understanding and mastery.
3	Zoom Class 	It has Zoom Class features, video conference, screen sharing and chat, video recording.	Users need sufficient understanding and mastery. Spend more quota

Source: [18],[19]

Based on the result of the analysis of the literature, there were several problems arose in the use of technology as an online learning medium. The identified problems are as followed:

1. Problems appeared at the beginning of online technology media use including anxiety in using the provided technology, and anxiety in providing online learning[3]. In the early days of the COVID-19 pandemic and the implementation of online learning, learning was introduced using technology as a medium. In the early days of using this technology, there was a form of anxiety in its use because teachers, students and parents

were not accustomed to using online technology in the learning process. Equipment such as laptops, smartphones may not be strange to some teachers, students and parents, but the use in learning by using google classroom and zoom class can be a strange.

2. Lack of availability of communication technology infrastructure, multimedia, information platforms that supported the learning process and limited knowledge on using the IT [20], and limited internet connection[21]. In Indonesia, with a different geography from one region to another, this results in differences in the development of communication infrastructure. The limited network coverage in rural and mountainous areas causes students to have to work harder to be involved in online learning. Not surprisingly, there are students who walk kilometers from their homes just to get a signal. The same is true for the ability to use IT. The very unequal difference between urban and rural areas, especially in 3T (lagging behind, leading, outermost) areas, causes online learning to experience obstacles in areas with low levels of ability in using IT.
3. Low teachers' ability to use technology in online learning. Not all teachers were able to operate computers or gadgets for online learning activities. In some research results, there were some teachers who were able to use computers but they had limited abilities in operating them to support their teaching [22]. The ability of teachers to use technology that is still low is influenced by unusual factors in the use of technology such as laptops, cellphones and applications that support the learning process. The COVID-19 pandemic has suddenly changed the learning process which was originally face-to-face learning. The more dominant face-to-face learning is direct learning with the teacher as a source and controller of learning. Online learning requires teachers to use technology as a learning medium, learning resource and controlling the learning process. The platform provided by technology has menus in learning management such as student attendance management, class management, learning, assignments and management of teaching material resources. Teachers who experience technology stuttering feel that using technology as a learning medium is a burden and a problem.

Solutions to the use of technology as an online learning medium based on literature analysis are listed below.

1. Encouraging teachers to learn new pedagogy and virtual instruction platforms and making teachers as the first resource [3]. Teachers can independently study the technology used as learning media such as google classroom, and zoom class through youtube media or learn by looking for sources from google. Learning to use google classroom and zoom class early prevents teachers from experiencing anxiety when giving learning instructions through the application. Many instructions can be run from youtube and google for free.
2. Supporting teachers for their learning, technology use and emotional. Local governments and schools needed to provide an environment supported by infrastructure and guide teachers in reducing their anxiety during online

learning using technology [3]. Limitations of teachers in having laptops, smartphones and IT are found in teachers in 3T areas but do not rule out the possibility for teachers in urban areas as well. The local government can play an early role to provide assistance in ownership of the equipment. Programs that can be done are goods grants, light credit and collaboration with third parties such as companies to provide assistance to teachers through corporate sustainability and responsibility (CSR) programs. Schools provide support by creating a supportive environment, namely by providing adequate internet network services. Teachers have limited funds to provide an internet network so that in order to upload learning instructions they are happier if they are provided with fast and free internet services.

3. Improving teachers' technological competence by attending workshops, asking other teachers who had more abilities in the field, following tutorials on YouTube which provided the introduction to learning applications and the steps for using them [23]. Conducting regular workshops with programs that have been prepared in stages can make it easier for teachers to master the technology used in learning. Workshops can be carried out by the local education office by involving IT experts and collaborating with senior teachers to develop training programs and the preparation of teaching materials in applications. In addition, schools can do the same by involving IT experts to conduct training on the introduction of IT and its use in learning. So that the implementation of the workshop can be financed by the school cheaply, the schools that are members of the cluster group can do it simultan.
4. Supporting the needed families so that they have the equipment to acquire the needed tools and skills to support their children learning online [24]. Families who do not have the financial capacity to meet the requirements of online learning must get support from the government, schools and the community where the family is located. The government through the school funding grant program can provide concessions to provide free equipment assistance to families who do not have the financial capacity. In addition, the government can provide equipment assistance through direct assistance or provide assistance to families affected by COVID-19. Communities can do the same by identifying families who do not have the financial capacity in the vicinity where they live. Through the union of neighbors, the community can carry out assistance programs for others.
5. Involving the participation of youth, especially those who are members of social organizations such as Karang Taruna, will have a broad and rapid impact on the ability of parents to master technology such as WhatsApp, Zoom Class and Google Classroom so that they can act as teacher agents in learning at home. Organizations like Karang Taruna exist in every village and youth learn faster in mastering technology.

## V. CONCLUSION

The COVID-19 pandemic has caused major changes in the learning process in schools. Before the pandemic, learning was done face-to-face, but nowadays learning became online. Therefore, the online learning required teachers and students to learn using technology as the learning medium.

There were some problems when learning was conducted by employing technology such as Zoom Class, Google Classroom and WhatsApp. However, some problems such as the teacher's anxiety in using the provided technology and during the teaching arose. Moreover, low teacher's ability to use technology as a medium in learning also became one of the problems. This is because not all teachers were able to operate computers and gadgets.

The solutions that can be done are 1) encouraging teachers to learn online platforms such as WhatsApp, Zoom Class and Google Classroom, 2) providing supportive environment, infrastructure and guidance in using technology by the government, 3) improving teachers' competence by holding workshops, 4) providing support to the needed families in obtaining online learning tools, and 5) involving the participation of youth organizations such as Karang Taruna in accelerating the understanding of the use of technology for parents.

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