

ANALYSIS OF THE UTILIZATION OF INFORMATION TECHNOLOGY IN EDUCATION DURING THE COVID-19 PANDEMIC

Wahyu Eko Saputro¹, Widya², Tantra Agun Wiguna³, Sinta Meilinda⁴, Agrustiani⁵

International Journal Labs, Cirebon, West Java, Indonesia^{1,2,3,4,5}

E-mail addresses: ekow47103@gmail.com

*Corresponding: ekow47103@gmail.com

Abstract: The Covid-19 pandemic has been around for the past two years. All sectors are affected by the Covid-19 pandemic, including the education sector. Learning that was originally done face-to-face, with the pandemic must be done online. Teachers and students are forced to be prepared for sudden changes. Online learning of course must use technology and the internet to connect it. So this study aims to analyze the use of information technology in education during the covid-19 pandemic. Documentation method is a research method used in this research. The data used are sourced from various types of documents, be it books, reports, or journals. In addition to the method, the approach used is qualitative approach. The results showed that the existence of information technology helped facilitate the learning process during the Covid-19 pandemic. Some of the applications used for learning include Google Classroom, Zoom, Google Meet, WhatsApp and several other applications. Not only when learning is online, but when learning has been done face-to-face again, information technology still helps in the process of teaching and learning activities.

Keywords: Utilization of Information; Education; Covid-19 Pandemic

INTRODUCTION

The entry of the Covid-29 virus into Indonesia has a major impact on people's lives, ranging from health, economy, social, religious, to education. Various ways have been carried out in preventing the spread of the virus, such as *social distancing*, *self-quarantine*, to *lockdown*. Indonesia has also adopted a Large-Scale Social Restrictions (PSBB) policy. As a result of this policy, the life of society has also changed. People must stay at home to break the chain of spread of Covid-19. On January 30, 2020 WHO has declared a health emergency for the people of the world. Then, on March 2, 2020, Indonesia reported 2 confirmed cases of Covid-19. On March 16, 2020, at least 17 people tested positive for Covid-19. The existence of the Covid-19 pandemic is an important concern for the Indonesian government, especially the safety and health of students as a generation of the nation (Gunawan & Amaludin, 2021).

Covid-19 is a virus that has attacked two for more than 2 years, having a very significant impact on the field of education. UNESCO (*United Nations, Educational, Scientific and Cultural Organization*) recorded around 1.5 billion school-age children affected by Covid-19 with around 60 million of them from Indonesia. This is due to the closure of access to education to prevent the spread of the virus.

Education is a very crucial thing in the sustainability of a nation and country in addition to health and economy, even in the Covid-19 emergency, education must continue. New policies are present that are in accordance with the conditions during the pandemic. One of them is

DOI:

<https://opsearch.us/index.php/us/index>

the policy manifested in circular number 4 of 2020 which contains provisions for the transition of face-to-face learning activities to become online teachings (Masluhah et al., 2022).

The Covid-19 pandemic has brought changes to various sectors of life, especially in the field of education. Although schools are temporarily closed UNESCO has recommended distance learning programs and educational platforms. So that teachers and schools can reach students and educational disruptions caused by the Covid-19 pandemic. Although termed closure, it does not mean that education is stopped. The closure of formal and informal educational institutions is only carried out physically, namely school buildings are closed but learning activities and administrative activities are still carried out with long distance (Wahyuni et al., 2021).

Various ways are carried out in the spread of the coronavirus. One of them is by carrying out online learning . Online learning is learning that uses the internet network with connectivity, accessibility, flexibility, and the ability to bring out various forms of interaction in learning. Online learning can bring teachers and students together during learning with the help of the internet network. Teachers must not only be able to carry out learning but are also required to be able to use the online learning system in accordance with the conditions that are being experienced (Ana, 2022).

The effectiveness of learning implementation is also supported by the ability of students to access applications and the role of parents is very supportive of the continuity of the learning process. Online learning requires rua people to take the time to accompany ank-child in learning (Aminullah et al., 2021).

The use of technology during a pandemic is a very appropriate choice, technology provides enormous benefits in the world of education in the process of distance learning. Online learning is part of a policy instructed by the Ministry of Education and Culture echoed by the minister of education that requires students to master technology, has a high motivation to learn, is creative, able to innovate so that students will be able to face various challenges that always arise (Mayori et al., 2021).

The use of technology has a huge contribution in educational institutions, including in it the achievement of the goals of distance learning. Various media can be used to support the implementation of online learning . This online learning connects students with their learning resources. Online learning is a form of distance learning that utilizes telecommunication and information technology (Sadikin & Hamidah, 2020).

Based on the background presented above, researchers are interested in conducting research with the title "Analysis of the Use of Information Technology in Education During Covid-19".

MATERIALS AND METHODS

The research method used in this study is a documentation method. In Nilamsari research (2014) the documentation method is a research method with data sources in the form of sources from images or videos, works, and written things that can provide information.

In the past, this method of docmeation was still rarely considered, but today the documentation method is one of the important and inseparable parts of the qualitative approach. Qualitative is an approach in researching natural objects, namely the researcher

becomes a key instrument, data collection techniques are carried out in combination, and emphasize more on generalization (Prasanti, 2018). Qualitative proximity is defined as an approach that focuses on a deeper understanding of a research problem formulation (Salma, 2021).

The data collection carried out in this method is by analyzing various types of documents, be it books, reports, or journals through searches using Pubmed, and Google Scholar. The keywords used to obtain information sources are online learning, learning during the Covid-19 pandemic, and the use of information technology.

RESULTS AND DISCUSSION

A. Learning

Belajar is an effort in getting better through various experiences. Experiences can come from oneself or from others, whether from seeing, hearing, and feeling. Learning is a process that a person does in seeking change, be it knowledge, skills, or attitudes.

In the learning process, tools, methods, and techniques are needed so that communication and delivery of information from teachers to students can be achieved effectively and efficiently. Communication can be in the form of conveying information from the teacher and responses from students become easy to understand and understand without length and convoluted. The learning media that always develops into modern according to (Ismail & Alexandro, 2021).

1. Computer Based Training (CBT)

a. Kelebihan *Computer Based Training* (CBT)

- 1) The display can produce a combination of writing, sound, images, and animation.
- 2) Can access information instantly.
- 3) Produces a clearer image.
- 4) More advanced CBT programs and systems make learning access more.
- 5) Provide access to more information.
- 6) Can be adjusted to motivation, ability, and learning speed.
- 7) As a patient teacher.
- 8) Reduce learning worries if you don't understand.

b. Kelemahan *Computer Based Training* (CBT)

- 1) The absence of human interaction.
- 2) It costs a lot of money.

2. Web Based Training (WBT)

a. Advantages of *Web Based Training* (WBT)

- 1) Combines the advantages of video, computer speed, and internet access.
- 2) The mechanism of action of the program is able to adapt to all learning styles.
- 3) It is possible for learners to actively participate.
- 4) Allows access to the desired material for many learners in different places.
- 5) Learners and teachers can relate to each other.

b. Disadvantages of *Web Based Training* (WBT)

- 1) There was no face-to-face meeting with the teacher.
- 2) It needs to cost a lot of money.

3. Internet

a. The advantages of the Internet

- 1) Allows access to information to multiple sources.
- 2) Almost all themes can be obtained from the Net.
- 3) Can explore the world from anywhere.
- 4) There are facilities to interact with other people from all over the world.
- 5) Can communicate both ways.

b. Disadvantages of the internet

- 1) Expensive cost , to operate it.
- 2) A computer is required, and the ability to operate it.
- 3) It requires thoroughness to the information at hand.

In accordance with the Circular Letter of the Minister of Education and Culture of the Republic of Indonesia Number 3 of 2020 concerning Prevention of Corona Virus Disease in the Education Unit in Barus (2021), namely:

1. Optimizing the role of Health Service units in universities by coordinating with local health service facilities in order to prevent the spread of covid-19.
2. Ensuring the availability of handwashing facilities with soap (CTPS) and disposable cleaning tools in various strategic locations in the education unit.
3. Ensure that residents of the education unit use CTPS facilities (at least 20 seconds) and disposable hand dryers as appropriate, and other healthy clean living behaviors (PHBS).
4. Ensure that the education unit cleans the room and environment of the education unit regularly, especially door handles, light switches, computers, keyboards and other facilities that are frequent held by the hand.
5. Give permission for residents of the education unit who are sick not to come to the education unit.
6. Does not impose penalties/sanctions for those who do not enter due to illness, and does not enforce attendance-based incentive policies (if any).
7. Transferring the duties of educators and absentee education personnel to educators and other capable educational personnel.
8. Consult with the Education Office or Higher Education Service Institutions if the level of absence is considered to be very disruptive to the teaching and learning process to get consideration of whether teaching and learning activities need to be temporarily suspended .
9. Remembering all residents of the education unit not to share food, drinks, and wind instruments.
10. Reminding residents of the education unit to avoid direct physical contact (shaking hands, kissing hands, hugging, and so on).
11. Postpone activities that gather a large number of people or activities in the environment outside the educational unit (camping, tourist studies).
12. Restrict guests outside the education unit.

B. Changes to the Defense System during Covid-19

In Indonesia, distance or online learning began on March 16, 2020, where children started learning from their respective homes without the need to go to school. Online learning requires mastery of technology for a teacher so that distance learning continues to run effectively during a pandemic. In online learning, there are several obstacles that are considered ineffective such as providing learning materials from teachers, technology literacy, both teachers and parents who will guide her son (Pradika & Amrullah, 2021).

The system in the network stands for online system as a substitute for the word online which is often heard, where the word online or online is related to internet technology. Online learning is learning that is carried out online by utilizing various applications such as *Google Classroom*, *WhatsApp*, *Zoom*, *Google Meet*, and so on. Teachers and students are required to be able to adjust according to the condition that is being experienced.

For teachers who have become accustomed to doing face-to-face learning, it creates uncertainty in the learning process due to the Covid-19 pandemic. During the Covid-19 pandemic, teachers are intended to be more creative and innovate online learning and need a change in the approach that used to be carried out in person, to be indirect (Jamila et al., 2021).

The Covid-19 pandemic requires educational institutions to innovate in the learning process. One form of innovation is to carry out online learning which is nothing but the application of distance education which has the aim of increasing student access in gaining learning. Online learning is a process of transforming conventional education into digital form.

Online learners provide opportunities for students to learn with the flexibility of learning time and where students and teachers are located. The online learning process is learning whose success will be greatly influenced by the teacher's ability to use a technologist and deliver learning materials. Teachers who will be successful in implementing online learning are teachers who utilize science and technology in the process of delivering material to students.

The online learning process is carried out with two models, namely carried out in one direction and two directions. One-way online learning here is carried out when the teacher gives assignments or materials through online media then students actively and gradually study the material and do assignments a given. Meanwhile, two-way online learning is carried out when teachers and students are in one virtual space that is deliberately provided to communicate (Assidiqi & Sumarna, 2020).

Online learning is actually not easy to do. Interaction between teachers and students that cannot be done directly so that communication is very limited, these limitations lead to the acquisition of information and instructions from teachers are less than optimally addressed. So that in order for online learning to run successfully, there are three things that need to be considered, namely: first, technology specifically network settings must allow for the occurrence of synchronization and asynchronous exchange, learners should have easy access. Second, the characteristics of teachers who are able to play a central role so that students have a positive nature towards the distribution of learning. Third, the

characteristics of students who are smart, disciplined and have high self-confidence will be able to carry out learning with the online method (Widianti et al., 2021) .

The characteristics of online jaran defense according to Wulandari & Agustika (2020) are:

1. Requires learners to build and create knowledge independently.
2. Utilizing page media that can be accessed via the internet, computer-based learning, virtual classes, and digital classes of the Ministry of Education and Culture.

C. Utilization of Technology pno Learning

The implementation of teaching and learning activities still uses various applications, one of which is *WhatsApp group* and *e-learning*. *This e-learning* is a learning application made by the government to help the teaching and learning process.

In the post-Covid-19 pandemic period, there are several teachers who are still utilizing online media in the teaching and learning process . Apart from students being used to it because online media is still effectively used. Thus, learners are faster in capturing learning if it is delivered face-to-face, learners can ask directly if there is a teaching pel that is not understood (Nur, 2022).

1. Supervision in online learning

The process of monitoring online learning is not the same as supervising the face-to-face learning process. When face-to-face learning is in person, teachers are used to organizing learning. But it's different when done online. The teacher needs to sort out the material to be delivered so that there is no misunderstanding between the teacher and the parents, even the teacher and the student. The surveillance carried out when online has become more limited. When online learning becomes more limited, supervision is carried out only from one side because teachers can only see their students online.

2. Teacher and student responses to online learning

Online learning is a challenge for a teacher. Teachers are required to get out of their comfort zone and try and practice the learning process in schools, especially at the elementary school level. The pandemic that is not over has made online learning continue to be extended. Teachers need to rack their brains so that learning is not boring and makes students feel saturated.

Students' response to online learning was initially happy because they were learning from home and did not need to go to school. However, after a few months, there was a sense of resentment due to the longing for the desire to meet teachers and friends. Students feel bored and bored during online learning because there is no direct interaction with teachers and friends and students have difficulty understanding the material presented by the teacher online plus daily tasks (Ghozali & Fatmawati, 2021).

D. Obstacles to Online Learning During the Covid-19 Pandemic

The learning process carried out face-to-face has shifted to online learning due to the Covid-19 pandemic. This online learning still has obstacles because most teachers and students have never done online learning . Obstacles are not only felt by teachers, but also

felt by students and their parents. Online learning has a positive impact and a negative impact. The lack of public knowledge and differences in knowledge about technological advances make up differences in the learning process among the community.

Not all students have tools that support online learning. Meanwhile, online learning needs to be supported by the use of technology that can be used to carry out learning. As for those who have supporting technology, but not necessarily parents and students are able to access platforms that support the learning process (Prawanti & Sumarni, 2020).

Online learning carried out at home requires parenting skills and supportive knowledge from parents. Parents must monitor the child's behavior and the performance carried out at home. Parents can directly be with their children in learning such as in face-to-face effective hours at school (Waikelak et al., 2021).

In addition, an obstacle that often arises during the process of implementing online learning is internet packages that are not owned by students. The Covid-19 pandemic has not only had an impact on the field of education, but also the economic sector which has caused parents to have difficulty in buying internet quota. Even though many tasks given by teachers must be collected online (Dewantara & Nurgiansah, 2021).

The obstacles to the implementation of the effectiveness of online learning in Akhiar & Muazziah (2021) include:

1. Limited use of information technology by educators and learners.
2. Facilities and infrastructure that are not supportive.

Supporting devices of reltif technology are expensive. In Indonesia, the economic situation is quite worrying. Limited welfare limits the facilities and infrastructure of indormation technology that is indispensable with the Covid-19 disaster.

3. Internet access is limited.

The internet network is still uneven to several regions in Indonesia so that not everyone can enjoy internet access. If there is an internet network, the condition is still unable to cover online media.

4. Lack of preparedness of budget provision.

Cost is also an obstacle to the implementation of online learning. Well-being affects the readiness of online learning. The state has not presented a comprehensive way in facilitating the cost needs in question.

E. Digital Transformation in Post-Pandemic Education Recovery

National awakening is a national invitation to the nation's problems. The Covid-19 pandemic has had many negative impacts due to the implementation of health protocols. Accelerating the implementation of digital transformation of schools and their supporting ecosystems by observing the pandemic moment of the last two years, the dynamics of diverse technological developments, and the needs in fill the gap in school access to learning. Digital transformation can be understood as the process of using available digital technologies.

Digital transformation in the field of education is gradually changing old processes and learning habits into new ones and more effective and efficient. The presence of new technologies that started this digital transformation will bring fresh angina to human life.

The pandemic forced a digital leap in educational technology. To optimize digital transformation opportunities in education, society and government need to work together to create a smart and quality workforce as well as technology and proper facilities (Siswanto, 2022).

Digital transformation, including the transformation of learning and synergy with between educational institutions, are the key to the slump caused by the pandemic. The use of technology in distance learning provides ease of learning that makes it a means to be able to communicate directly with the virtual world. With this virtual in-person interaction, it provides a meaningful touch between educators and learners, which can reduce the thoughts, thoughts and will of students. Direct interaction, educators are able to create a learning atmosphere and learning process in accordance with the character and needs of students and the achievement of educational goals (Argaheni, 2020).

CONCLUSION

Based on the analysis carried out with data from several journals, it can be concluded that the use of technology in learning during the Covid-19 pandemic is very helpful for the learning process. Although there are still some obstacles that hinder it, learning will not be possible if technology does not exist.

Actually, the use of technology in learning has been carried out long before the pandemic occurred. With the pandemic, it has forced all parties to use technology that can be accessed remotely so that activities can be carried out as usual. However, the use of technology and the internet is the main support in the process of teaching and learning activities during the learning process.

REFERENCES

- Akhiar, & Muazziah. (2021). The Effectiveness of Online Learning During the Covid-19 Pandemic at the State Islamic University (UIN Ar-Raniry) Banda Aceh. *AL-IJTIMA'I: International Journal of Government and Social Science*, 7(1), 13–26.
- Aminullah, Ikram, Chandra, F., Fitriani, N., Wasna, Misna, & Elihami. (2021). Learning Process During the Covid-19 Pandemic (Basic PLP Implementation Study). *Maspul Journal of Community Empowerment*, 3(1), 21–26.
- Ana, R. F. R. (2022). Student Problems in the Implementation of Online Learning During the Covid-19 Pandemic at SDN Kendalrejo 01 Talun District, Blitar Regency. *SEMDIKJAR 15 Educational And Learning Seminars*, 849–859.
- Argaheni, N. B. (2020). Systematic Review: The Impact of Online Lectures During the Covid-19 Pandemic on Indonesian Students. *PLACENTUM: Scientific Journal of Health And Its Applications*, 8(2), 99–108.
- Assidiqi, M., & Sumarna, W. (2020). Utilization of Digital Platforms during the Covid-19 Pandemic. *Graduate National Seminar 2020*, 298–303.
- Barus, M. I. (2021). Analysis of Online Learning During the Covid-19 Pandemic at STAIN Mandailing Natal. *Journal of Literacy*, 7(3), 1–19.

- Dewantara, J. A., & Nurgiansah, H. (2021). The Effectiveness of Online Learning during the COVID-19 Pandemic for PGRI Yogyakarta University Students. *Basicedu Journal*, 5(1), 367–375.
- Ghozali, M. I. Al, & Fatmawati, S. (2021). Online Learning in Elementary Schools in the Era of the Covid 19 Pandemic. *EduBase: Journal of Basic Education*, 2(2), 61–68.
- Gunawan, Y. I. P., & Amaludin, A. (2021). Utilization of Learning Technology in the Network during the Covid-19 Pandemic. *Madaniyah Journal*, 11(2), 133–150.
- Ismail, M. N., & Alexandro, R. (2021). Utilization of Online Learning Media during the Covid-19 Pandemic. *Kanderang Tingang Scientific Journal*, 12(1), 37–46.
- Jamila, Abdar, & Natsir, E. (2021). Problems of Teachers and Students in the Online Learning Process during the Covid-19 Pandemic Period at UPTD SMP Negeri 1 Parepare. *Al-Ma'rief : Journal of Social and Cultural Education*, 3(2), 101–110.
- Masluhah, Udhmah, S., Isnaini, N. F., & Lailiyah, S. (2022). The Effectiveness of Online Learning in Improving Technology Skills and Parent Attachment with Elementary School Students. *AULADUNA: Journal of Islamic Basic Education*, 9(1), 69–82.
- Mayori, Saputra, P. E., Ichwanto, K. N., Simanungkalit, B. E., & Etteruddin, H. (2021). The Effectiveness of Online Learning during the COVID-19 Pandemic for Students of the Civil Engineering Study Program at Lancang Kuning University. *SNKIM: National Seminar on Multidisciplinary Scientific Work*, 1(1), 70–77.
- Nilamsari, N. (2014). Understanding Document Studies in Qualitative Research. *Discourse*, 13(2), 177–181.
- Nur, Z. (2022). The Effectiveness of Learning After the Covid-19 Pandemic in MTs Negeri 1 Makassar. *Educantum*, 8(1), 121–128.
- Pradika, D. D., & Amrullah, M. (2021). The effect of the Covid 19 Pandemic on the Online Learning Process. *Psychology and Education Conference Facing The Era of Merdeka Belajar*, 10, 1–8.
- Prasanti, D. (2018). Use of Communication Media for Adolescent Girls in the Search for Health Information. *Journal of Lontar*, 6(1), 13–21.
- Prawanti, L. T., & Sumarni, W. (2020). Obstacles to Online Learning During the Covid-19 Pandemic. *2020 Graduate National Seminar*, 287–291.
- Sadikin, A., & Hamidah, A. (2020). Online Learning in the Midst of the Covid-19 Outbreak. *BIODIC: Scientific Journal of Biological Education*, 6(2), 214–224.
- Salma. (2021). *Research Approaches: Definitions, Types, and Complete Examples*. Deepublish.
- Siswanto, R. (2022). *Digital Transformation in Post-Pandemic Education Recovery*. Directorate of Primary Education Teachers.
- Wahyuni, A., Bayti, C. S., Purnama, A. R., & Wahyundari, L. (2021). The Impact of Online Learning Implementation during the Covid-19 Pandemic. *Journal of Biogenesis*, 17(2), 88–93.
- Waikelak, K. S., Arrozy, A. F., & Rahmani, L. (2021). Online Learning during the Covid-19 Pandemic; How is parental role supported? *Journal of Economics, Business, And Education*, 1(3), 240–250.

- Widianti, T. P., Musoffa, S., Maulana, M. I., Widayati, A. S., & Falah, R. Z. (2021). Online Learning During the Covid-19 Pandemic at Indonesian Schools in Kuala Lumpur. *Tarbawi: Journal of Islamic Education*, 18(1), 17–31.
- Wulandari, I. G. A. A., & Agustika, G. N. S. (2020). Dramatic Online Learning during the Covid-19 Pandemic (Study on the Perceptions of PGSD Undiksha Students). *Pulpit of PGSD Undiksha*, 8(3), 515–526.



© 2022 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY SA) license (<https://creativecommons.org/licenses/by-sa/4.0/>).