



# Analysis of the Impact of the Covid 19 Pandemic on Distance Learning at Universitas Dirgantara Marsekal Suryadarma

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## ARTICLE INFO

## ABSTRACT

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The Covid-19 pandemic had an extraordinary impact on various aspects of life, including aspects of health, humanity, economy, social and education. Therefore, to reduce the impact of the spread of Covid-19 evenly and quickly, health protocols and policies for restricting mobility between regions and between countries are strictly implemented. The world of higher education has changed lectures, thesis guidance and other academic activities that initially used the face-to-face method (offline), now need to be changed to distance learning methods. At Dirgantara Marshal Suryadarma University is required to change the face-to-face learning system to an online system (E-Class) as a result of the COVID-19 pandemic. However, based on the observations of previous researchers, several obstacles were found in the current PJJ system process which is still not effective and efficient as a substitute for formal or face-to-face education. The main purpose of this paper is to further analyze the direct and indirect impacts that have occurred and been caused by the Covid-19 pandemic on distance learning on student satisfaction in higher education, especially at the Industrial Technology Faculty, Dirgantara Marshal Suryadarma University in the academic year. 2020/2021 Even. This study uses quantitative descriptive research methods. Based on the results of the study, it is known that the impact of the pandemic on the distance learning process so far 57.47% of students already have devices, but on the other hand students feel they cannot study independently by 8.14%, and there is an ineffectiveness of PJJ that is felt by students in receiving material learning by 6.79%. This ineffectiveness is caused by several dominant obstacles, among others: constrained by unfavorable environmental conditions (33%), and constrained by unstable internet network (29.9%). The results of this study are expected to assist in the preparation of effective and efficient learning methods, so that students can obtain optimal education in a conducive environment and supported by a stable internet network. For this reason, universities need to review current distance learning methods, and also need to strengthen digital literacy for both students and lecturers.

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## 1. Introduction

Corona Virus Disease or Covid-19 was first reported in Wuhan, China at the end of 2019, belonging to the betacoronavirus genus. In an effort to prevent the spread of Covid-19 in Indonesia, the government has implemented the PJJ (Distance Learning) system for elementary, junior high, high school and university levels of education. And also to reduce the impact of the spread of Covid-19 evenly and quickly, health protocols and policies to limit mobility between regions and between countries are strictly implemented. This study aims to see the impact of Covid-19, especially the PJJ system, on the education gap in Indonesia, especially at the tertiary level.

According to Dharmawan, et al [4] In an effort to prevent the spread of Covid-19 in Indonesia, the government has implemented a Distance Learning (PJJ) system for elementary, junior high, high school and



university education levels. This distance learning requires internet access from students to help support the learning process from school. However, if we look at the reality, the current PJJ system has not been effectively and efficiently a substitute for formal education. The main purpose of this study is to further analyze the direct or indirect impacts that have occurred and been caused by the Covid-19 pandemic on distance learning for student satisfaction in higher education, especially at the Faculty of Industrial Technology, Universitas Dirgantara Marshal Suryadarma, academic year. 2020/2021 Even.

## 2. Method

The research method is a scientific way to obtain valid data that aims to be found, proven and developed by a knowledge so that it can be understood, solved, and used to anticipate problems. This research is a cross-sectional study with a quantitative descriptive analysis approach. This research is a quantitative research, that is research whose data is in the form of numbers. Based on the method, this research is a survey research because it only discloses existing data without giving treatment or manipulation to the variables studied. The population in this study were students of Electrical Engineering Study Program S1 + Industrial Engineering Study Program S1 + Information Management DIII students + Information Systems students  $S1 = 185 + 94 + 50 + 164 = 493$  students. Thus, to obtain a sample that was carried out by random sampling, the Slovin formula was used as follows:

$$n = \frac{N}{1 + Ne^2} \quad (1)$$

Description:

n = number of samples

N = Total population

e= Margin of error set is 5% or 0.05

then obtained:

$n = 493 / (1 + (493 \times 0.05^2))$

n = 221 Students

## 3. Result and Analysis

The results and discussion contain the results of research findings and scientific discussions. Write down the scientific findings obtained from the results of research that has been carried out supported by adequate data. Research results and findings must be able to answer the research objectives/hypotheses in the introduction.

### 3.1 Characteristics of Respondents

The results showed that the total respondents were 221 students. Based on gender characteristics, information was obtained that there were 158 male respondents with a percentage of (71.5%) while for women there were 63 respondents with a percentage of (28.5%). Based on the characteristics of the study program, information was obtained that in the electrical engineering study program as many as 53 respondents with a percentage of (24%), in the industrial engineering study program as many as 70 respondents with a percentage of (31.7%), in the information systems study program as many as 75 respondents with a percentage amounted to (33.9%), and the informatics management study program as many as 23 respondents with a percentage of (10.4%).

Based on the characteristics of the semester, information was obtained for respondents from semester 2 as many as 63 respondents with a percentage of (28.5%), respondents from semester 4 as many as 69 respondents with a percentage of (31.2%), respondents from semester 6 as many as 59 respondents with a percentage of (26.7%), and respondents from semester 8 were 30 respondents with a percentage of (13.6%). Based on the characteristics of the learning media, information was obtained for respondents who used meeting applications (zoom, google meet) as many as 95 respondents with a percentage of (43%), respondents who used e-class as many as 13 respondents with a percentage of (5.9%), and respondents who using meeting and e-class applications as many as 113 respondents with a percentage of (51%).

### 3.2 Face-to-face Learning Conditions Before Covid 19

#### a. Campus Facilities

Based on the results of the study indicate that campus facilities must be managed properly, it is known from the answers of students who agree as much as 66.6%. It should be noted that campus facilities are one of the supports for the implementation of good face-to-face learning. The results of this study are relevant to the research of Dharma, et al [4] which states that campus facilities must be managed properly because they are one of the supports for the implementation of good face-to-face learning as well. Thus, there has not been a problem with the condition of face-to-face learning facilities before the Covid-19 outbreak at the Faculty of Industrial Technology, Elementa.

**b. Device Ownership**

Based on the results of the study, it was found that 66.3% of students agreed to have personal device ownership as a support to facilitate the face-to-face learning process. The possibility of ownership of devices during face-to-face and before the onset of covid 19 was not so important for students only for communication and not yet to be applied in face-to-face learning at the Faculty of Industrial Technology, Elementy.

**c. Ability to Monitor/Follow Material**

Based on the results of the study, it showed that the ability of students to monitor and follow the material before covid 19 occurred, which was 65.61%. However, there were still 2.26% who answered that they did not agree with this. The value of disagreeing with the ability to follow the material can be seen from the problems faced by each student who experienced face-to-face before covid 19.

**d. Ease of Obtaining Materials**

Based on the results of the study showed that the ease of obtaining material for each student who answered agreed was 69.23%. This shows that the ease of obtaining material for each student before COVID-19 occurred, had not found any significant obstacles and could still be classified as well implemented.

**e. Ease of Studying Materials**

Based on the results of the study, it was shown that the ease of learning the material for each student who answered agreed was 67.87%. However, there are still 0.90% of respondents who do not agree with this. The value of disagreeing in studying the material during face-to-face is very small, only about 2 students out of 221 students who have difficulties in learning the material before covid 19 or face to face. This shows that it is easy to learn the material for each student before covid 19 occurred. There have not been any significant obstacles and can still be classified as well implemented.

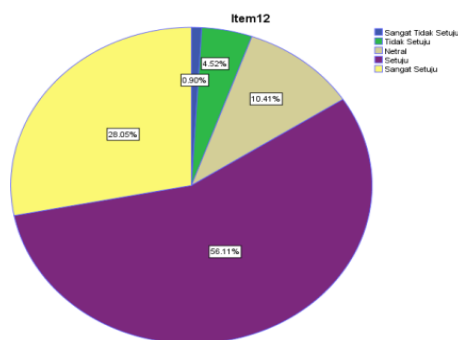
**f. Interaction with Lecturers**

Based on the results of the study, the interaction with lecturers was 64.71%. However, there are still 0.45% of respondents who answered that they did not agree with this. Thus, it is known that interaction between lecturers and students when face to face has gone well if it is known from the number of respondents who answered agree that 143 students answered that they could interact with lecturers, while only 1 student experienced problems in interacting with lecturers during face-to-face learning. This shows that the interaction between lecturers and students before COVID-19 occurred has not found any significant obstacles and can still be classified as well implemented.

**3.3 Factors Affecting Distance Learning Satisfaction (PJJ)**

**a. Accessibility**

The results of the research on accessibility question items are presented in Figure 1 below:



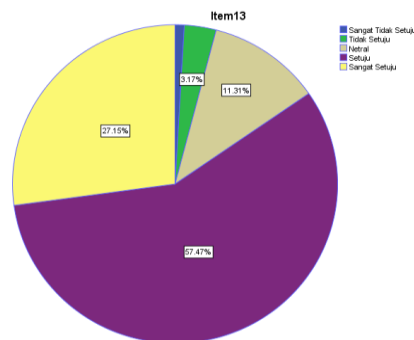
**Fig 1. PJJ Accessibility Pie Chart**



Based on the results of the study in Figure 1, it shows that distance learning becomes effective and efficient with internet access as a support for the learning process by 56.11%. Thus, students are still able to receive material well during distance learning. According to Yuliana, 2021 [17] the level of accessibility of web-based communication media is easy to access and only a few state that it is difficult to access. This is natural because not all perfect web runs well. If most of the respondents stated that the web access is easy, it can be said that the web accessibility is good.

**b. Device Ownership**

The results of the research on item ownership questions after covid 19 are presented in the figure below:

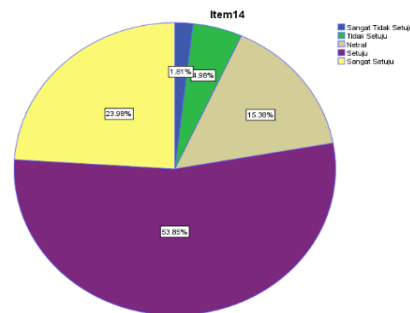


**Fig 2.** Pie Chart of PJJ Device Ownership

Based on the results of the study, it showed that the ownership of each student's device during PJJ during covid 19 was 57.47%. Device ownership is a factor that affects the sustainability of PJJ during covid 19, this is in accordance with sources from Kumparan.com [9] one of which is the availability of adequate learning devices such as laptops or cellphones or both.

**c. Ability to Monitor/Follow Material**

The results of the research on the question item on the ability to monitor/follow the material are presented in Figure 3:

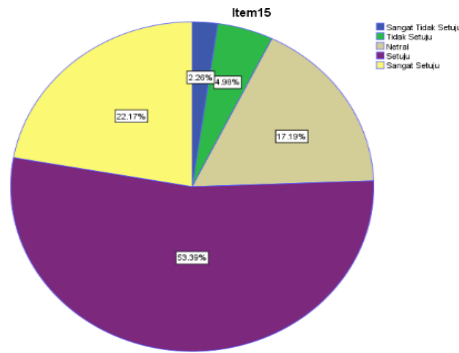


**Fig 3.** Pie Chart of the ability to monitor/follow PJJ material

Based on the results of the study, it showed that the ability to monitor/follow the material of each student during PJJ during covid 19 was 53.85%. However, there are still around 15.38% of respondents who answered neutrally, 4.98% of respondents who answered disagreed and 1.81% of respondents who answered strongly disagreed with it. Difficulties in monitoring the development of distance learning materials can be caused by the difficulty of accessing information through the distance learning methods used today as well as the availability of internet connections. The results of this study are also reinforced by a statement according to Napitupulu, 2020 [10] that there are still students who feel that the PJJ method is not right because students cannot easily monitor the progress of PJJ. Students are not satisfied with the PJJ method that is followed and with the lecturer's ability to deliver PJJ material.

**d. Ease of Obtaining Materials**

The results of the research on the question of the ease of obtaining material are presented in Figure 4:

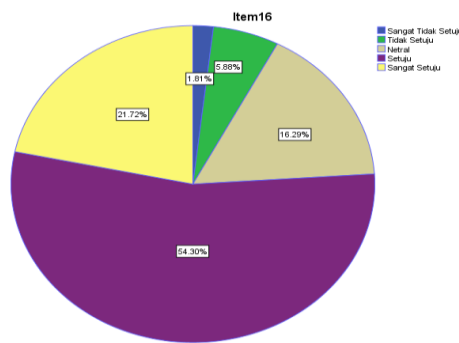


**Fig 4.** Pie Chart Ease of Obtaining PJJ Materials

Based on the results of the study, it was shown that the ease of obtaining material for each student during PJJ during covid 19 was 53.39%. This is in line with the results of research which states that easy access to material provided by lecturers plays an important role in lectures. The results of the study are relevant to the statement of Kopertis3.or.id [8] which states that PJJ has practical implementation, meaning that anyone can register as a student at any time, is free to take courses, is free to complete education without a time limit, and the practical implication is in the form of providing flexibility for students across spaces. and time, mass and organized, utilizing information and communication technology.

**e. Interaction with Lecturers**

The results of the research on the interaction question items for lecturers are presented in Figure 5:

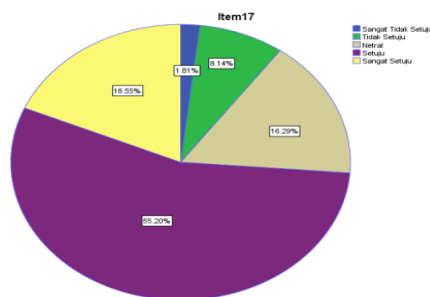


**Fig 5.** Pie Chart of Interaction with Lecturers When PJJ

Based on the results of the study, it showed that the interaction with each student's lecturer during PJJ during covid 19 was 54.30%. However, there are still 16.29% who answered neutral, 5.88% of respondents who answered disagreed, and 1.81% of respondents answered strongly disagreed with this. This is in line with the results of research which states that interactive and the opportunity to respond to material when PJJ plays an important role. Interactivity is an element that must exist in distance learning. Yuangga and Sunarsih, 2020 [16] state that teaching strategies to attract learning approaches to students include strengthening interactions by utilizing interactions between students and planning several online quizzes.

**f. Self-Learning Ability**

The results of the research on the question items of independent learning abilities are presented in Figure 6



**Fig 6.** Pie Chart of Independent Learning Ability during PJJ

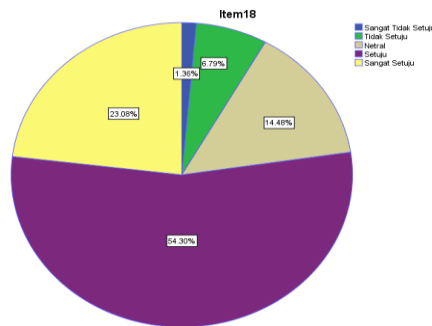
Based on the results of the study, it showed that the independent study ability of each student during PJJ during covid 19 was 55.20%. However, there were still some 16.29% students who answered neutrally, 8.14% of respondents who answered disagreed, and 1.81% of respondents answered strongly agree. It is possible that some students who already have independent learning have not been fully successful in being



felt by all students. This may be because students at FTI are not familiar with the current distance learning method. The occurrence of Covid-19 forced students to undergo distance learning with independence which is not yet fully available to every student.

**g. Effectiveness**

The results of research on student effectiveness during PJ are presented in Figure 7 as follows:



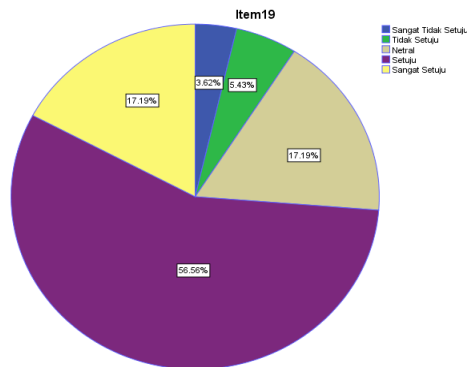
**Fig 7.** Pie Chart of Effectiveness during PJJ (during covid 19)

Based on the results of the study presented in Figure 7 of 221 respondents, it was obtained information that the majority of respondents answered agreed to the question by 54.30%, while those who answered strongly agreed were 23.08%. However, there are still 14.48% who answered neutral, 6.79% of respondents who answered disagreed, and 1.36% of respondents answered strongly disagreed with the selection of the current distance learning method.

It should be noted that currently at the Air Marshal Suryadarma University, especially the Faculty of Industrial Technology, already using E-Class and various media in distance learning that are connected directly to Spada including online meeting applications (Zoom, Google Meet, Google Classroom) and social media (Whatsapp). , Facebook, Instagram). Appropriate distance learning methods also affect the quality of the system and the quality of information and service quality received by students. Based on respondents' answers, currently the method used in distance learning is appropriate.

**h. Lecturer's Ability to Deliver Material**

The results of research regarding the ability of lecturers to deliver material are presented in Figure 8 as follows:



**Fig 8.** Pie Chart of Lecturer Ability to Deliver Material during PJJ (during covid 19)

Based on the results of the study, Figure 8 is presented, namely from 221 respondents there are 17.79% of students assessing neutral in the ability of lecturers to convey material at the current PJJ. 5.43% of respondents answered that they did not agree or were not satisfied with the ability of the lecturer to deliver the material. 56.56% stated that they agreed or were satisfied with the ability of the lecturer to deliver the material. Dissatisfaction from the lecturer's side is felt by students at the current PJJ. In addition, self-confidence in using technology for new learning also affects the quality of lecturers.

**3.4 Additional Parts of Distance Learning during Covid 19**

**a. Implementation of Distance Learning**

Based on the results of the study, information was obtained that the majority of respondents were constrained by environmental conditions that were not conducive with a percentage of 33%, then followed by

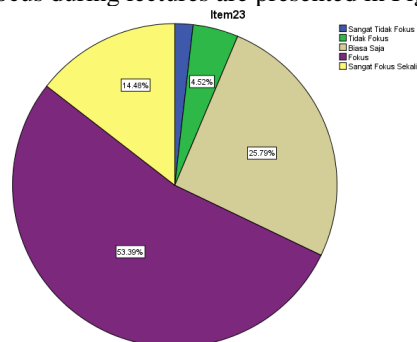
constraints on an unstable internet network with a percentage of 29.9%, and constrained by the availability of internet quota with a percentage of 24%. At the Faculty of Industrial Technology, Elementya does partly distance learning and partly face-to-face because there are practicum activities that must be carried out on campus, in laboratories, such as Electrical Engineering, Industrial Engineering, and Information Systems study programs. Other supporting research, namely the research of Dharmawan, et al [4] stated that when compared to regular or face-to-face lectures, lectures conducted online gave them more flexibility in the time, place, and energy they had to spend. Judging from normal or face-to-face lectures that were usually held before this pandemic, students had to pay for transportation to campus.

**b. Obstacles During Distance Learning**

Based on the results of the study, it shows that the majority of respondents are constrained by environmental conditions that are not conducive by 33%, then followed by constraints on an unstable internet network by 29.9%, and constrained by the availability of internet quota by 24%. Other obstacles experienced by students include; on the availability of internet quota, the internet quota which is very wasteful and quickly runs out results in the distance learning process being hampered (0.5%), and constrained at learning time (10.4%). As a result of these constraints focused on environmental conditions that are not conducive, 33% of students of the Faculty of Industrial Technology find it difficult to access online lecture activities which are very dependent on the quality of the network and devices owned by students.

**3) Focus during the Lecture Session**

The results of research regarding focus during lectures are presented in Figure 9 as follows:

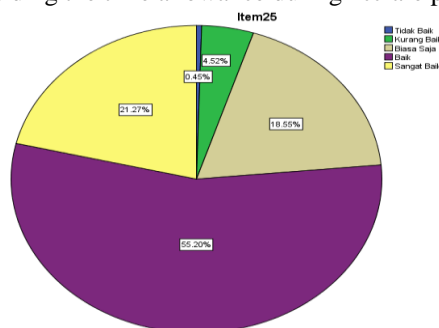


**Fig 9.** Pie Chart Focused on PJJ Lectures (during Covid 19)

Based on the results of the study, it was obtained information that the majority of respondents answered focus during the lecture session with a percentage of 53.39%, answered normal at 25.79%, and very focused at 14.4%. However, there are still 4.52% who answered that they were not focused and the rest answered that they were very unfocused. The possibility of this lack of focus occurs based on the constraints described previously.

**c. Free Time During Distance Learning**

The results of the study regarding the time allowance during PJJ are presented in Figure 10 as follows:



**Fig 10.** Allowances During PJJ (during Covid 19)

Based on the results of the study obtained information that the majority of respondents answered well with a percentage of 55.20%, answered very well with a percentage of 21.27%. However, there are still those who answered mediocre with a percentage of 18.55%, answered less well with a percentage of 4.52%, and answered not well at 0.45%. Thus, this makes PJJ have a flexible time and place to make it easier for students



and lecturers. Distance learning has a lot of flexibility, one of which is time allowance. PJJ can be done anytime and anywhere, it can even be done together with other activities. This makes PJJ have a flexible time and place to make it easier for students and lecturers. According to Yuangga and Sunarsih [16] stated that the PJJ system gives freedom to learners and learning citizens to participate in learning activities freely and independently.

#### d. Social Interaction

The results of research on social interaction are presented in Figure 11 as follows:

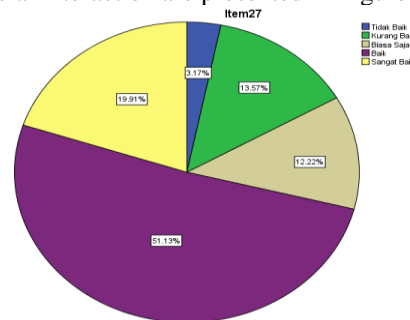


Fig 11. Social Interaction during PJJ (during Covid 19)

Based on the results of the study, information was obtained that social interaction between students for group discussion in lecture material during distance learning the majority of respondents answered well with a percentage of 51.13%, and answered very well with a percentage of 19.91%. However, there are still those who answered mediocre with a percentage of 12.22%, answered less well with a percentage of 13.57%, and not well with a percentage of 3.17%. Yuangga and Sunarsih [16] stated that the success of distance learning really depends on the parties involved helping each other apart from that students are required to care more about each other in order to create an effective and efficient distance learning process.

#### 4. Conclusion

The conclusions in this study include; a. At the Faculty of Industrial Technology, Universitas Dirgantara Marshal Suryadarma, the learning conditions before (during face-to-face) and during Covid-19 (PJJ) were classified as good because lecture activities in class and practicum were still carried out well and lecturers who continued to try to provide material optimally in the future. this pandemic. b. Impact of implementing PJJ at the Faculty of Industrial Technology, Air Marshal Suryadarma University; especially related to the accessibility of the internet network, so that easy access to following, obtaining lecture materials cannot be maximized, other impacts provide flexibility both in terms of space, time, and energy for students at the Faculty of Industrial Technology, Elementary (more flexible), and require students to prepare themselves learning, evaluate, manage and simultaneously maintain motivation in learning. c. Another impact (other factors that affect the implementation of PJJ) for students should be able to manage themselves well (learning independence), avoiding many students who experience a decrease in understanding of lecture material. d. The impact of covid 19 shows that research results in terms of student satisfaction during PJJ and satisfaction with lecturers' abilities are still said to be good and normal, because there have been no obstacles related to this. e. The accuracy of the PJJ method in Elementa based on the results of the study showed that it was quite good. Therefore, it is important for the academic community to maintain the quality and quantity of Distance Learning (PJJ) so that PJJ can be used as an effective solution in replacing normal learning. f. An additional part of the attention of the campus as one of the private higher education institutions in Indonesia, Universitas Dirgantara Marshal Suryadarma is also required to change the face-to-face learning system to an online system (E-Class) as a result of the COVID-19 pandemic. In this distance learning, 57.47% of students already have tools in online learning, but on the other hand, students feel they have not been able to learn independently by 8.14%, and there is an ineffectiveness of PJJ that is felt by students in receiving learning materials by 6.79%. This ineffectiveness is due to several dominant obstacles, including: Constrained by unfavorable environmental conditions (33%) and Constrained by unstable internet network (29.9%).



## References

- [1] Amalia, Andina. & Sa'adah, Nurus (2020). Dampak Covid-19 Terhadap Kegiatan Belajar Mengajar Di Indonesia. *Jurnal Psikologi* Volume 13|No.2. Desember 2020.
- [2] Anggraeni, Elisabet Yunaeti & Rita Irviani. 2017. *Pengantar Sistem Informasi* Yogyakarta: CV. Andi Offset.
- [3] Bi.go.id (2020). BAB I Krisis Kemanusiaan Covid-19 Dan Implikasinya Pada Tatanan Perekonomian Global. Diakses pada 25 September 2021, dari [https://www.bi.go.id/id/publikasi/laporan/Documents/3\\_LPI2020\\_BAB1.pdf](https://www.bi.go.id/id/publikasi/laporan/Documents/3_LPI2020_BAB1.pdf)
- [4] Dharmawan, Muhammad, Wiyanti, Iffah, & Permana, Dharma (2021). Dampak Covid-19 Terhadap Pembelajaran Pendidikan Tinggi Di Indonesia Institut Teknologi Bandung. *Jurnal Education and Development Institut Pendidikan Tapanuli Selatan*. E.ISSN.2614-6061. P.ISSN.2527-4295. Vol. 9 | No. Edisi Mei 2021.
- [5] Health.detik.com (24 Juli 2020). Dampak Positif Dan Negatif Virus Corona Bisa Jadi Pelajaran. Diakses pada 25 September 2021, dari <https://health.detik.com/berita-detikhealth/d-5106402/dampak-positif-dan-negatif-virus-corona-yang-bisa-jadi-pelajaran>
- [6] Humaniora (18 Mei 2020). Pengaruh Korona di Pendidikan Tinggi. Diakses pada 24 September 2021, dari <https://mediaindonesia.com/humaniora/313915/pengaruh-korona-di-pendidikan-tinggi>
- [7] Iuk.staff.ugm.ac.id (Juni 2011). Panduan Penyelenggaraan Model Pembelajaran Pendidikan Jarak Jauh Di Perguruan Tinggi. Diakses pada 25 September 2021, dari <https://luk.staff.ugm.ac.id/atur/PanduanPJJ-2011.pdf>
- [8] Kopertis3.or.id (2016). Kebijakan Pendidikan Jarak Jauh dan E-learning Di Indonesia. Diakses pada 25 September 2021, dari <http://kopertis3.or.id/v2/wp-content/uploads/Paulina-Pannen-Kebijakan-PJJ-dan-E-Learning.pdf>
- [9] Kumparan (21 Februari 2021). Pengeruh Covid-19 Terhadap Pola Perilaku Mahasiswa. Diakses pada 25 September 2021, dari <https://kumparan.com/andini-zahra-shafira/pengaruh-covid-19-terhadap-pola-perilaku-mahasiswa-1vDCaV4F7ZP>.
- [10] Napitupulu, R. M. (2020). Dampak pandemi Covid-19 terhadap kepuasan pembelajaran jarak jauh. *Jurnal Inovasi Teknologi Pendidikan*, 7(1), 23-33.
- [11] Purwanto, Antonius (23 Agustus 2021). Ekonomi Dunia di Masa Pandemi Covid-19: dari Dampak hingga Proyeksi Pertumbuhan 2021-2022. Diakses pada 24 September 2021, dari <https://kompaspedia.kompas.id/baca/paparan-topik/ekonomi-dunia-di-masa-pandemi-covid-19-dari-dampak-hingga-proyeksi-pertumbuhan-2021-2022>
- [12] Sunarti, Mitrohardjono, Margono. 2021. Analisis Dampak Pandemi Covid 19 Terhadap Pembelajaran Jarak Jauh Pada Dunia Pendidikan Di Fakultas Ekonomi Dan Bisnis Universitas Muhammadiyah Jakarta. *Jurnal Tahdzibi : Manajemen Pendidikan Islam*. ISSN 2503-5126 | Vol. 6 | No. 1.
- [13] Theconversation.com (11 November 2020). Turunnya Jumlah Mahasiswa Baru Karena Pandemi Berdampak Pada Keuangan Perguruan Tinggi: Apa Yang Bisa Dilakukan. Diakses pada 25 September 2021, dari <https://theconversation.com/turunnya-jumlah-mahasiswa-baru-karena-pandemi-berdampak-pada-keuangan-perguruan-tinggi-apa-yang-bisa-dilakukan-149441>
- [14] Unicef.org (Agustus 2021). Menuju Respons Dan Pemulihan Covid-19 Yang Berfokus Pada Anak: Seruan Aksi. Diakses pada 25 September 2021, dari <https://www.unicef.org/indonesia/media/10671/file/Menuju%20respons%20dan%20pemulihan%20COVID19%20yang%20berfokus%20pada%20anak.pdf>
- [15] Unisbank.ac.id (29 Maret 2020). Dampak Virus Covid-19 Bagi Mahasiswa. Diakses pada 25 September 2021, dari <https://www.unisbank.ac.id/v2/news/dampak-virus-covid-19-bagi-mahasiswa/>
- [16] Yuangga, K. D., & Sunarsi, D. (2020). Pengembangan media dan strategi pembelajaran untuk mengatasi permasalahan pembelajaran jarak jauh di pandemi covid-19. *JGK (Jurnal Guru Kita)*, 4(3), 51-58.
- [17] Yuliana, M. E., Alifi, M. R., & Hidayah, E. N. (2021). Media Komunikasi Berbasis Web Online Dalam Kegiatan Pembelajaran Jarak Jauh Universitas Duta Bangsa Surakarta. *TIN: Terapan Informatika Nusantara*, 2(6), 401-406.
- [18] Widayati, S., Hotimah, N., & Rakhmawati, N. I. S. (2020). Respon Mahasiswa Pada Proses Pembelajaran Mata Kuliah Daring. *Child Education Journal*, 2(1), 48-52.



- [19] Worldometers (25 September 2021). Covid-19 Coronavirus Pandemic. Diakses pada 25 September 2021, dari <https://www.worldometers.info/coronavirus/>
- [20] Ritzkal R, Subchan M. Quality Measurement of a Web-Based Activity Management Reporting System for Email-Based Alerts. In Proceedings of the 2nd National Teknoka Seminar UHAMKA 2017.
- [21] Ritzkal R, Setiadi D. Data Storage System Arrival and Departure Airnav Halim Perdana Kusuma Airport. Jurnal Mantik. 2021 Jun 15;5(2):555-62.
- [22] Ritzkal R, Patimah S. Pemanfaatan Robot Kotak Amal Pada Masa Pandemi COVID-19. Jurnal KARINOV.2021/10/27;4(4):144-148

