

# C24\_Sudi Prayitno

*by Sudi Prayitno Sudi Prayitno*

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## The impact of the COVID-19 pandemic on mathematics learning in higher education during learning from home (LFH): students' views for the new normal

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**Abstract.** Covid-19 Pandemic has an impact on education that is bringing up new policies for learning from home. The purpose of this study was to determine students' views on learning mathematics in higher education while learning from home and its sustainability towards a new normal. This type of research is qualitative with data collection techniques using online surveys and interviews. Respondents in this study were 169 students of Mathematics Education in Higher Education. The results of this study indicate that 100% of lectures are conducted online with a composition of 34.32% in the form of Asynchronous Online Course, 19.53% Synchronous Online Course, and 46.15% using Hybrid Online Course. The effectiveness of online course that has been carried out was obtained 7.1% very effective, 20.1% effective, 53.8% sufficient, 17.8% less effective, and 1.2% ineffective. Open questions are provided in the questionnaire to allow students to convey constraints/difficulties experienced during Learning from Home (LFH), including network constraints, health problems, costs, the environment, course constraints, and time problems. Student responses regarding the application of the Blended Learning method in the new normal period showed 48% agreed, 31% were doubtful, and 21% disagreed.

### 1. Introduction

Coronavirus is a family of viruses that cause diseases in humans and animals. Humans usually cause respiratory infections ranging from the common cold to serious illnesses such as MERS (Middle-East Respiratory Syndrome) and SARS (Severe Acute Respiratory Syndrome) [1], [2]. The Coronavirus novel (nCoV), which was found in humans since an extraordinary event that appeared in Wuhan China, in December 2019, was named Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). This disease caused by SARS-CoV-2 is called Coronavirus Disease-2019 (Covid-19) or previously known as 2019-nCoV [3], [4]. Although coming from the same family, COVID-19 has differences with SARS and



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MERS in terms of the speed of spread and severity of symptoms. According to data released by the Republic of Indonesia Task Force for the Acceleration of COVID-19 Handling, the number of positive confirmed cases up to 7 June 2020 was 30,514 people with a total of 9907 people recovered and a total of 1801 deaths [5]. WHO (World Health Organization) officially declared COVID-19 as a pandemic on March 9, 2020 [6], [7].

Transmission of the virus is very fast and has spread to almost all countries, including Indonesia, in just a few months [8]. This makes some countries implement a lockdown policy to prevent the spread of the coronavirus [9], [10]. In Indonesia, a Large Scale Social Restriction/PSBB policy was also implemented to reduce the spread of this virus [1]. This has had tremendous global impacts in various sectors in Indonesia, including transportation [9], tourism, manufacturing, trade, construction, Small and Medium Enterprises/UKM, and Education. Many policies made in each institution so that learning continues. The learning method considered to be most relevant to the COVID-19 pandemic situation is the distance learning method [11], [12]. In its implementation, it is certainly not easy because it requires preparation of facilities that support both the instructors, institutions, and students [13].

Three classifications of online learning recipient groups, namely (1) groups of students who are accustomed to implementing online learning in full at school so that facilities from schools are adequate, (2) groups of students who apply semi-online learning, for example by giving assignments through WhatsApp Group without interacting directly, and (3) groups of students who cannot be forced to apply online learning because of limited infrastructure and technological support capacity, for example in remote areas that have no electricity, have poor signal or do not have gadget/ laptop facilities [14]. In the case of group 1 and group 2, it is not a problem, but in the case of group 3, several institutions ask their instructors to conduct a home visit to students. The government has also prepared a live streaming learning service from home from TVRI Channel since 13 April 2020 with schedules based on class levels, every day starting from 8:00 a.m. to 11:30 [15].

The purpose of this study was to determine the views of higher education students regarding the impact of COVID-19 Pandemic on the implementation of online learning during LFH (Learning From Home). This research is important because it provides information to the Minister of Education and Culture about what higher education students feel is the impact of COVID-19 on the implementation of online learning during the COVID-19 Pandemic. It is also an input to educators to anticipate the impact that might occur on their students and the results can be used by educators to prepare the next learning plan with better service. The results of this study are also important as study material for similar research and further research in the field of education/ mathematics education.

## 2. Methods

This study uses a qualitative approach to the type of descriptive research. The data collected is then analyzed and submitted in the form of words and is in a natural condition. The subjects of this study were 169 students in Mathematics Education. Respondents consisted of 78.6% women and 21.4% men. The study was conducted in the Even Semester Academic Year 2019/2020 in the amid of the COVID-19 pandemic. Data collection techniques used in this study were surveys and online interviews. The application used in online surveys is Google Forms and for online interviews using Google Meetings.

## 3. Result and Discussion

The policy taken by the government within the tertiary institution to prevent COVID-19 transmission is to limit interactions between campus academics, both students, lecturers, and education personnel. Lecture activities, final assignment/thesis guidance, and other academic guidance 100% carried out online. In the implementation, many obstacles were found, starting from the internet connection, the application used, the

quality of the presentation, and the facilities so that it was expected that all tertiary institutions would share modules or teaching materials online to strengthen the concept of independent learning.

“Merdeka Belajar” is a new policy program of the Ministry of Education and Culture of the Republic of Indonesia which gives freedom of thought. The “Merdeka Belajar” program with the dimension of higher education is the Merdeka Campus. The motto known in the Free Learning Movement is “Free Learning, Lecturers are movers”. Lecturers must be professional and innovative to serve students to grow and succeed. Change is difficult and challenging, so lecturers and students must be prepared with many changes that occur in dealing with the COVID-19 situation.

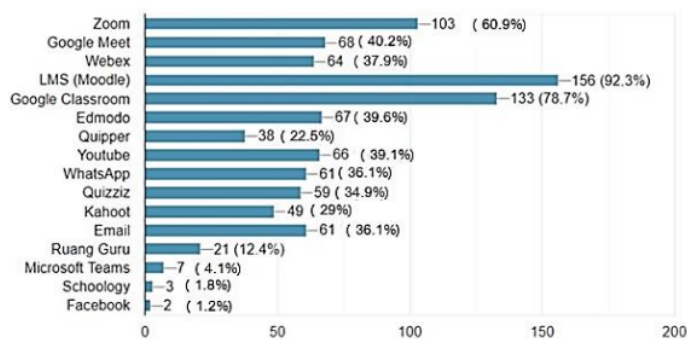
Some government programs in free learning, including: (1) cooperation with telecommunications providers related to internet quota provision, (2) TVRI cooperation related to the presentation of material for distance learning, (3) cooperation with several platform owners, namely Indonesia Cyber Education, Open University, Google Suite, Nvidia-Artificial Intelligence Courses, and Amazon web services [16], and (4) create a Spada Indonesia program to share LMS for lecturers and students from other universities to be able to take/ follow learning materials online [17].

Based on the results of a survey conducted by researchers regarding the readiness of students in online learning shows that the availability of facilities and technology support is 98.2% with 30.2% having a stable internet speed, 31.9% less stable, and 37.9% unstable. Based on internet access, 80.5% of students still use data packages, 16% WiFi, 3.5% a combination of both. Costs incurred per month for accessing the internet in online learning are 8.9% spending < Rp50,000.00 per month, 60.9% issuing Rp50,000.00-Rp100,000.00 per month, and 30.2% issuing > Rp100,000, 00 per month.

**Table 1.** The application used in online lectures

Lecture Model	The application used	Percentage
Asynchronous Online Course	LMS (Moodle), Google Classroom, Edmodo, Quipper, Ruang Guru, Schoology, WhatsApp, Email, Facebook, etc.	34.32
Synchronous Online Course	Zoom, Google Meet, Webex, Youtube, Microsoft Teams, Quizziz, Kahoot, etc.	19.53
Hybrid Online Course	Combination of Asynchronous Online Course and Synchronous Online Course.	46.15

Table 1 shows that the online lecture model conducted while learning from home was 34.32% using the Asynchronous Online Course, 19.53% Synchronous Online Course, and 46.15% Hybrid Online Course. While the details of the applications used in each of these models are presented in Figure 1.



**Figure 1.** Figure percentage of applications used in online learning

Figure 1 shows that the top three applications that dominate online learning are Learning Management System (LMS) especially Moodle at 92.3%, followed by Google Classroom at 78.7%, and Zoom at 60.9%. These three applications are enough to drain the internet quota and consume mobile memory so that many students complain about the cost of the internet quota and the memory capacity on their mobile phones. Most of them use cellphones because most of them use data packages, only about 16% of students use wifi on their laptops. Furthermore, the student's assessment of the effectiveness of online learning that has been carried out is presented in Figure 2.

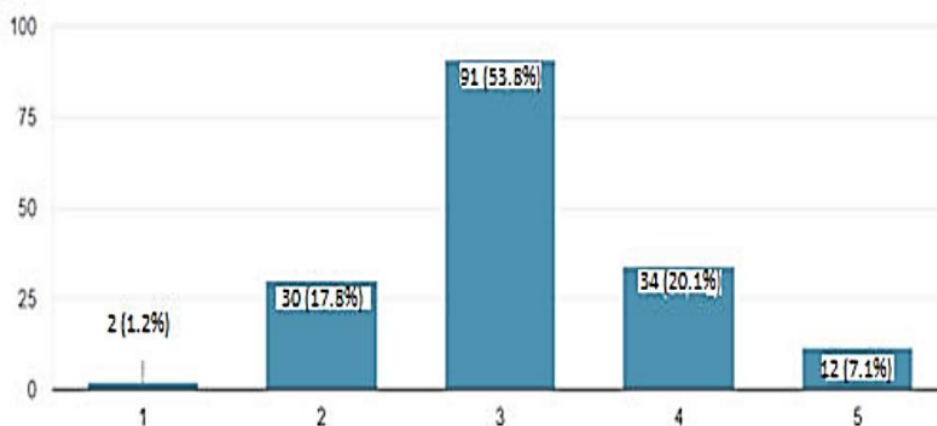


Figure 2. Overview of the effectiveness of online learning during learning from home (LFH)

Figure 2. shows that the effectiveness of online learning during LFH collected through an online survey found 7.1% of students rated it very effective, 20.1% effective, 53.8% quite effective, 17.8% less effective, 1.2% ineffective. This shows that there were 19% of students who rated online learning as less effective. Therefore, researchers also make open questions for students who judge less effective about the obstacles encountered while attending online learning.

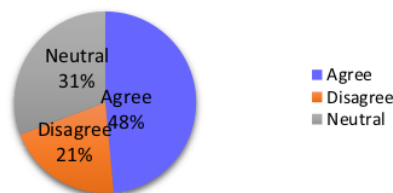
Based on the results of surveys and online interviews through Google forms and Google meetings to find out what students think about online learning that has been done, some of the advantages of online learning are practical (easy to use), flexible (can be done anywhere and anytime), and can be done casually (while lying down, eating, drinking, etc.). Besides these advantages, many complaints and obstacles experienced by students while studying from home. Some of the obstacles encountered by students in online learning during LFH are shown in table 2.



**Table 2.** Constraints experienced by students when learning from home (LFH)

Type of constraint	Obstacles that occur during online learning
Network or facility constraints	Applications that are used often error because too many people are accessing at the same time so they have to switch to another application.
	The network or signal is unstable so it is difficult to connect online, especially for students who live in inland places.
	The camera or scanner is damaged, so borrow a neighbor's mobile to send the task.
	Mobile memory is full because every day is used to store material and scan tasks.
	They need to find a place with a good signal, such as a coffee shop, cafe, food stall, etc. to be able to attend online lectures
Health problems	Having tired eyes and sore eyes because of staring at the screen of a laptop or mobile phone.
	Students lack sleep due to the large number of assignments collected.
	Having back pain due to sitting too much in front of a laptop.
Cost constraints	Data packages run out quickly if video conferencing is often used but do not have money to buy data packages because the income of parents decreased during the COVID-19 period
	There is quota assistance from the campus but it does not reach all students.
Environmental conditions	The situation in the house is crowded so that it interferes with learning
	Difficulty asking questions directly with friends about things that are difficult to understand.
Course obstacles	Each lecturer assigns too many tasks so that a lot of assignments must be collected from each course.
	The lecturer only uploads the presentation material, then asks students to read the material themselves
	Students need lecturers' explanations face to face.
	Students feel inconvenienced in collecting assignments because the file must be scanned first then compressed the file size to be uploaded.
	The available online discussion forums are less effective because messages or information delivered can be stacked with student responses so that the information does not reach all students.
	Students who upload answers first cheat for the next student so that one class can have the same error.
	Students do not agree with the form of the assessment conducted based on the activity of comments in the discussion forum.
	There is no notification if a response appears in the discussion forum.
	There is no notification about the next lecture information.
	The results of the work done are not optimal because too many tasks are collected at the same time.
There are several courses that do not do online learning as a whole, only provide assignments through whatsApp, line, or telegram.	
Unorganized class schedules	The deadline for collection of assignments is too short. If there are students who are late collecting their assignments, they are not accepted.
	No holiday.
	Lecture schedules often unpredictable depending on the lecturer so that sometimes there are 2 courses at the same time.
	There are some lecturers who add lecture hours, which are initially 1 time a week to 2 times a week.
	The lecture hours are delayed because the preparation time is quite long.

Student responses to the proposed Blended Learning Model in the New Normal era lectures are presented in Figure 3.



**Figure 3.** Student Responses to the Proposed Blended Learning Model

Figure 3 shows that students' responses to the proposed application of the Blended Learning method in the new normal period were 48% agreed, 31% were doubtful, and 21% disagreed. As many as 31% of students propose several requirements if in the new normal period the blended learning method is still applied, including, (1) agreed-upon schedule of lectures and major holidays, (2) the composition of online learning is not more than 50%, (3) the time for assignment is given an appropriate deadline, (4) if learning is still done online the material should be explained in advance both through video and audio media. To implement Blended Learning, agencies need to prepare things that must be met, one of which is running a health protocol. Entering the new era of normal behavior changes occur to continue normal activities coupled with implementing health protocols to prevent COVID-19 transmission, including (1) maintaining hand hygiene by washing hands, (2) avoiding touching the face, (3) covering mouth and nose when coughing and sneezing, (4) wearing a mask, (5) keeping a distance by adjusting the seating position in class, (6) doing independent isolation if feeling unwell, and (7) maintaining health with adequate rest and eating nutritious food 4 healthy 5 perfect [18], [19], [20].

Minister of Education and Culture, Nadiem Makarim, in a press conference, gave several requirements that must be met by agencies to be able to hold face-to-face learning, including (1) being in the green zone, (2) getting permission from the regional government/ regional offices/ offices of the Ministry of Religion, (3) The education unit has fulfilled all checklists and is ready to conduct face-to-face learning and (4) approval from parents. If one of the four conditions is not met, then the student continues to learn from home in full [21].

#### 4. Conclusion

Students' views on online learning collected through online surveys and interviews concluded that 100% of the lectures had been carried out online with a composition of 34.32% in the form of Asynchronous Online Course, 19.53% Synchronous Online Course, and 46.15% using Hybrid Online Course. The effectiveness of online learning that has been carried out was obtained 7.1% very effective, 20.1% effective, 53.8% sufficient, 17.8% less effective, and 1.2% ineffective. Through open-ended questions in a questionnaire to allow students to convey the constraints/ difficulties experienced during LFH, including network constraints, health problems, costs, the environment, course constraints, and time. Student responses regarding the application of the Blended Learning method in the new normal period showed 48% agreed, 31% were doubtful, and 21% disagreed. To conduct lectures using the blended learning method, the institution must fulfill several requirements proposed by the government. This research is a reflection of learning to achieve better learning success. As a further consideration, an online survey should also be conducted for teachers to find out their competencies in the field of technology and information.

#### 5. References

- [1] R. Djalante *et al* 2020 Review and analysis of current responses to COVID-19 in Indonesia: Period of January to March 2020 *Prog. Disaster Sci.* **6** 100091 p. 1-9
- [2] Kementerian Kesehatan Republik Indonesia 2020 *Info Khusus Covid-19* (Jakarta: Kemeskes).
- [3] Ahmed H, Allaf M and Elghazaly H 2020 *COVID-19 and medical education Lancet Infect. Dis.*, **20** 7 p 777-778
- [4] Peng L, Yang W, Zhang D, Zhuge C & Hong L 2020 Epidemic analysis of COVID-19 in China by dynamical modeling *arXiv Prepr* p. 18
- [5] Gugus Tugas Percepatan Penanganan Covid-19 2020. Data Sebaran Virus Covid-19 di Indonesia (Jakarta: Gugus Tugas Nasional)
- [6] Singh R and Adhikari R 2020 Age-structured impact of social distancing on the COVID-19 epidemic in India *arXiv Prepr. arXiv2003.12055*



- [7] Zhang D, Hu M and Ji Q 2020 Financial markets under the global pandemic of COVID-19 *Financ. Res. Lett.* **101528**
- [8] Tosepu R, Gunawan J, Effendy D S, Lestari H, Bahar H and Asfian P 2020 Correlation between weather and Covid-19 pandemic in Jakarta, Indonesia *Sci. Total Environ.* **138436**
- [9] Chinazzi M *et al* 2020 The effect of travel restrictions on the spread of the 2019 novel coronavirus (COVID-19) outbreak *Science* **368** 6489 pp. 395–400
- [10] Nicola M *et al* 2020 The socio-economic implications of the coronavirus and COVID-19 pandemic: a review *Int. J. Surg* **78** p.185-193
- [11] Pragholapati A 2020 Covid-19 Impact on Students *edarxiv.org* p. 1–6
- [12] Crawford J, Butler-Henderson K, Rudolph J and Glowatz M 2020 COVID-19: 20 Countries' Higher Education Intra-Period Digital Pedagogy Responses *J. Appl. Teach. Learn* **3** 1 p. 1-20
- [13] Cortez C P 2020 Blended, Distance, Electronic and Virtual-Learning for the New Normal of Mathematics Education: A Senior High School Student's Perception *Eur. J. Interact. Multimed. Educ* **1** 1 p.02001
- [14] Hadi S, Andrian D and Hidayat A 2020 The Social Fields Students' Distress in Learning Statistics in the Era of Pandemic Covid-19 *J. Talent Dev. Excell* **12** 1 p. 4388–4397
- [15] Kementerian Pendidikan dan Kebudayaan 2020 *Ragam Tayangan Belajar dari Rumah di TVRI* (Jakarta: Kemendikbud)
- [16] Direktorat Jenderal Pendidikan Tinggi 2020 *Kebijakan dan Penelitian Perguruan Tinggi untuk Hadapi Pandemi Covid-19* (Jakarta: Kemendikbud)
- [17] Spada Indonesia 2020 *Spada Indonesia: Kolaborasi untuk Negeri* (Jakarta: Kemendikbud)
- [18] Van Bavel J J, Baicker K and Willer R 2020 Using social and behavioral science to support COVID-19 pandemic response *Nat. Hum. Behav* **4** p. 460-471
- [19] Thompson C A *et al* 2020 Math matters during a pandemic: A novel, brief educational intervention combats whole number bias to improve health decision-making and predicts COVID-19 risk perceptions and worry across 10 days *psyarxiv.com*
- [20] Azanella L A 2020 *Simak, Panduan Protokol Kesehatan Pencegahan Covid-19 untuk Sambut New Normal* (Jakarta:Kompas)
- [21] Kridhangkara W 2020 *New Normal Dimulai, Ini Syarat Kegiatan Belajar Mengajar Di Sekolah* (Solo: Solopost)

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