

Research Article

Analysis Of Student Constraints In Online Biology Learning During The Covid-19 Pandemic

Tasya Hudia^{a,1,*}, Rahmawati Darussyamsu^{b,2}^{a,b} Universitas Negeri Padang, Jl. Prof. Dr. Hamka, Air Tawar Barat, Kec. Padang Utara, Padang, 25132, Indonesia

*Corresponding author: tasyahudia18@gmail.com

ARTICLE INFO**Article history**Received 25th of Agustus, 2021Revised 29th of Agustus, 2021Accepted 02nd of Sept, 2021Published 30th of Nov, 2021**Keywords**

Covid-19

Online Learning

Biology

Constraints

ABSTRACT

The Covid-19 pandemic has an impact on almost all aspects of life, one of which is education. One of the efforts made by the government in the education aspect is the implementation of online learning. Changes in learning methods that were originally carried out offline or face-to-face to online learning experienced several constraints in the implementation process for both teachers and students. This study aims to determine the constraints of high school students in online biology learning during the Covid-19 pandemic. The type of research conducted is descriptive research with a sample of students of class XI and XII MIPA at SMA Excellent Nurul Ikhlas. The data collection technique in this study used a survey technique using an instrument in the form of a questionnaire given to 40 students. The data analysis technique used in this research is descriptive analysis. The results showed that the percentage of constraints experienced by students in the implementation of online biology learning, namely: (1) quota and internet network 40%, (2) communication limitations 25%, (3) difficulties in understanding material 25%, and (4) lack of focus/tasks accumulate 10%. Based on the results of data analysis, it can be concluded that the biggest obstacles experienced by students in online learning at SMA Excellent Nurul Ikhlas are quotas and internet networks.

Copyright © 2021, Hudia et al

This is an open access article under the CC-BY-SA license

**INTRODUCTION**

Based on Law Number 20 of 2003 concerning the National Education System, it is stated that education is a conscious and planned effort to create a learning atmosphere and learning process so that students can actively develop their potential. Learning is a two-way interaction between teachers and students, where communication occurs and leads to a set target. Learning is a study process built by teachers to develop creative thinking that can improve students' thinking skills and can construct new knowledge as an effort to improve good mastery of the subject matter. Generally, learning activities are carried out directly in a room, where teachers and students can interact directly.

However, at this time the world is faced with a phenomenon of an outbreak of a virus known as CoronaVirus Disease-2019 (Covid-19). This virus began to become epidemic around the end of 2019 in China but is now rapidly spreading to almost all over the world, including Indonesia. Hundreds to thousands of people around the world are victims. Indonesia is one of the many countries around the world that have been exposed to this virus (Dewa et al., 2020). In an effort to break the chain of the spread of this virus, on March 24, 2020, the Ministry of Education and Culture issued SE Number 4 of 2020 concerning the Implementation of Education Policies in the Emergency Period for the Spread of Covid-19 after holding a limited meeting with the president. The circular contains policies regarding education during the pandemic, one of which is the process of implementing online or online learning (Sidiq et al., 2020).

Basically, online learning is distance learning. The distance learning system has existed since the mid-18th century. The learning process is carried out using technology ranging from the simplest to the most recent. According to the meaning in Indonesian, online learning is translated as "pembelajaran dalam jaringan" or "pembelajaran daring" (Belawati, 2020). Online learning is learning that utilizes the internet network to bring up various types of learning interactions using the support of devices to access information anytime and anywhere (Sadikin & Hamidah, 2020). The online learning process is very different from the learning process that has taken place so far in Indonesia. The implementation of learning is usually carried out in schools and can interact directly with educators known as face-to-face learning (Muslimah & Najwa, 2020). Online learning is certainly very helpful for teachers and students in the implementation of distance learning. Various applications and platforms are used to support the implementation of the online learning process including Zoom Meeting, Whatsapp, Edmodo, Google Classroom, and so on (Zuliyanti et al., 2021). In addition to using these applications and platforms, online learning can also be carried out with learning videos where students can understand the subject matter through learning videos that have been prepared in advance by the teacher. Basically, the learning process is a communication process between teachers and students (Marleni, 2016). Although online learning is currently the best solution in implementing learning during the Covid-19 pandemic, there are still obstacles and shortcomings in its implementation, especially in biology subjects.

Biology is a branch of natural science that studies living things and their environment. Biology is a subject that demands an understanding of concepts in students. There are four main elements of biology learning that must be possessed by students, namely, behavior, scientific methods, products, and implications (Sari, 2017). Biology learning is a process of seeking, discovering, and sharing knowledge so as to increase understanding. The ideal biology learning can result in the development of students' scientific process skills, the growth of scientific attitudes, and the improvement of students' learning outcomes (Widyasari et al., 2013). Biology is a branch of science that has the most complicated level of discipline compared to other branches. Biology is also often considered a lesson that makes students tend to feel heavy in learning it because it is a rote lesson (Setiawan, 2019).

Due to the Covid-19 pandemic, the learning process is carried out online. The learning process that is different from the general one causes several constraints

experienced by students in learning, especially in biology. This is in line with the research conducted by (Widiana & Aviani, 2021) which states that the implementation of online learning creates constraints that cause feelings of anxiety felt by students. Based on this, researchers have conducted research with the aim of analyzing the constraints of students in learning biology online during the Covid-19 pandemic.

METHOD

The method used in this research is descriptive qualitative, aiming to describe the online learning process at SMA Excellent Nurul Ikhlas. In qualitative research, generally, the data collected is in the form of explanations or words that describe the situation (the numbers are only for support). This study describes and analyzes the constraints experienced by students at SMA Excellent Nurul Ikhlas during online biology learning. The data collection technique used in this study was an interview technique, namely by conducting interviews with students using a modified interview sheet instrument from (Tasdik & Amelia, 2021). The following are the questions asked:

1. What do you think about the online biology learning process?
2. Is online biology learning effective?
3. Mention what constraints you experienced during online biology learning?
4. What are the expectations for online learning in the future?

Table. 1 Distribution of Respondents Who Conducted Interviews.

No.	Class	Total Number of Students	Number of Respondent Students
1.	XI MIPA	45	21
2	XII MIPA	21	19
Total		72	40

RESULT AND DISCUSSION

The results of this study indicate that students experience obstacles in the implementation of online biology learning caused by several factors. These factors include many students finding it difficult to understand the material presented because of limited communication between teachers and students. Where learning biology basically requires understanding concepts, one of which is obtained from teacher explanations or observations which can usually be done directly at school. This is in line with the results of research by (Latifa et al., 2021) which states that the limitation of interacting directly with the teacher is one of the learning obstacles that makes it difficult for students to ask for explanations and results in a lack of understanding of the material presented by the teacher. Then many students feel bored with the unsupportive environment and unattractive learning process. This feeling of boredom makes students not focus and choose to do other things while the learning process is in progress.

In addition to these two factors, the internet network and internet quota are also other constraints experienced by students in the implementation of online learning. Because with this online learning system, students are required to have sufficient internet quota and adequate internet network quality for the implementation of learning. Due to various

constraints in the implementation of the online biology learning process, many students prefer the offline learning system to online learning because it is considered more effective in the learning process. The following are the results obtained from the interviews conducted (**Table 2**).

Table 2. Analysis of Students' Constraints in Online Biology Learning

No.	Aspect	Indicator	Respondent	Percentage
1.	Conditions for the Implementation of Online Learning	Not good	20	50%
		Pretty good	14	35%
		Good	6	15%
2.	The effectiveness of the implementation of online learning	Ineffective	2	5%
		Less effective	22	55%
		Quite Effective	16	40%
3.	Constraints and barriers to the implementation of online learning	Network and Internet Quota	16	40%
		Communication Limitations	10	25%
		Difficult to Understand	10	25%
		Lack of focus/task piled up	4	10%

Conditions for the Implementation of Biology Online Learning

Based on the results of interview question number 1 "What do you think about the online learning process for biology?" the following results were obtained:

In **Table 2**, it can be seen that the respondents who answered less good were 50%. According to some students, online biology learning is not good because of limited interaction with the teacher. Learning that is carried out virtually using applications such as zoom meetings and whatsapp groups with a less supportive environment makes students feel bored quickly and cannot focus on lessons. Understanding of the material is also lacking due to less detailed explanations such as face-to-face learning usually, plus biology lessons sometimes require direct observation but online learning cannot be done. Then those who answered quite well were 35% because according to some students learning biology online made them freer to find their own sources and there was no need to come to the school directly every day, although sometimes it was a little boring because the duration of learning was quite long and monotonous. Then 15% of those who answered well. Some students feel that online biology learning is good because it is done online or virtual from home so that it can help reduce the spread of COVID-19 in Indonesia.

Students Views on the Effectiveness of Biology Online Learning

Based on the results of interview question number 2 "Is the online biology learning process running effectively?" the following results were obtained:

Table 2 shows that 5% of students feel that online biology learning is ineffective on the grounds that there are frequent misunderstandings between teachers and students in terms of understanding the material. Because sometimes what is conveyed by the teacher does not reach the students so that what is conveyed by the teacher is different from what is captured by the students. Then, 55% of those who feel that online biology learning is less

effective are because students feel that this biology lesson requires a detailed and complete explanation along with the parts in the picture, or sometimes even requires direct observation at school. Then 40% of students who feel that online biology learning is quite effective on the grounds that they feel that learning is currently better at home by relying on various applications to reduce the spread of COVID-19 and be safer. The ineffectiveness of online learning is in line with the results of research conducted by (Futriani Hidayah et al., 2020) which states that the implementation of online learning for now can be said to be less effective because there are many constraints experienced by students and parents/guardians. The effectiveness of learning can be seen through the responses, activities, and mastery of students' concepts. In addition, reciprocal relationships are also needed between students and educators, adaptation to the environment, facilities and infrastructure, and learning media (Rahmatia et al., 2020). The effectiveness of learning can be achieved with the support of the ability of educators in planning and implementing learning, as well as the availability of facilities and infrastructure (Irawati & Santaria, 2020).

Constraints and Barriers to Biology Online Learning

Based on the results of interview question number 3 "State what constraints you experienced during online biology learning?" the following results were obtained:

In **Table 2** it can be seen some of the constraints faced by students during the implementation of the online biology learning process. The first constraint is on the network and the internet as much as 40% because online learning requires students to prepare a network and internet quota that is always stable and sufficient, especially if learning is carried out using applications such as zoom meetings which require a good and stable signal. A network that is not good and stable can hinder learning such as difficulty joining and intermittent audio. Likewise, the availability of sufficient quota to be able to follow the lesson to completion. This is in line with the research results of (Fauzy & Nurfauziah, 2021) which state that the biggest obstacle experienced by students is the internet network because the internet network is an important element supporting the implementation of online learning.

Another constraint and obstacle experienced were limited communication as much as 25% of students felt that communication with the teacher was limited because they could only ask questions during class hours. Unlike offline learning where students can meet and directly ask the teacher anytime and anywhere regarding lessons that are not understood or other things. This is in line with the research results of Fikri et al. (2021) which state that many students are constrained by the limited communication between students and educators due to the limited features and quality of the internet network for both students and educators. A similar study conducted by (Sholichin et al., 2020) also stated that many students consider school to be a fun activity because they can interact directly with each other. However, at this time these activities have been discontinued and have been shifted to online learning so that they cannot interact directly with each other.

The next obstacle felt by students was that it was difficult to understand the subject matter as much as 25%. This is due to the misunderstanding of students when the teacher explains. In situations like this, teachers are required to create a media that can be used during online learning so that the material presented can be delivered perfectly to students.

As many as 10% of students feel less focused on online learning because the atmosphere at home or the surrounding environment is less supportive. So situations and conditions like this, teachers should be able to create an interesting and not monotonous learning atmosphere so that students can focus more on their lessons and are not affected by the surrounding environment.

Biology Online Improvement Hope

Based on the results of the interview question number 4 "What are your hopes for online biology learning in the future?" the following results were obtained:

Table 3. Expectations of Online Learning Improvement

No.	Interview result	Respondent	Percentage
1.	Quota Assistance	15	50%
2.	Made effective	15	50%

In **Table 3**, it can be seen that as many as 50% of participants expect 50% internet quota assistance. This is under the results of a survey conducted by Arus Survey Indonesia (ASI) which stated that as many as 85% of Indonesians hoped for internet quota assistance from the government for students to ease the economic burden on parents because the main obstacle to online learning is internet quotas (Tasdik & Amelia, 2021). Then the other 50% of students expect online learning to be more effective. One effort that can be done is the use of applications that may be lighter in capacities, such as Google Classroom or similar applications. Other efforts such as encouraging teachers to be more creative and innovative in creating an interesting and not monotonous learning atmosphere so that students have a sense of interest and can increase students interest in learning.

CONCLUSION

Based on the results of the study, it can be concluded that the constraints experienced by students in the online biology learning process are limited internet quotas and internet networks as well as limited communication between teachers and students. With the constraints experienced and the learning atmosphere that is less supportive, students feel that the implementation of online biology learning is less effective. Students hope that the implementation of biology online learning will be more effective, for example by using learning applications that are lighter in capacities and easily accessible, more interesting and complete learning media, and internet quota assistance for students from the government.

REFERENCES

- Belawati, T. (2020). *Pembelajaran Online edisi 2*. Universitas Terbuka. [http://repository.ut.ac.id/9178/1/Ibu Tian Belawati_Buku_GB_Digital.pdf](http://repository.ut.ac.id/9178/1/Ibu%20Tian%20Belawati_Buku_GB_Digital.pdf)
- Dewa, E., Maria Ursula Jawa Mukin, & Oktavina Pandango. (2020). Pengaruh Pembelajaran Daring Berbantuan Laboratorium Virtual Terhadap Minat dan Hasil Belajar Kognitif Fisika. *JARTIKA Jurnal Riset Teknologi Dan Inovasi Pendidikan*,

- 3(2). <https://doi.org/10.36765/jartika.v3i2.288>
- Fauzy, A., & Nurfauziah, P. (2021). Kesulitan Pembelajaran Daring Matematika Pada Masa Pandemi COVID-19 di SMP Muslimin Cililin. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, 5(1). <https://doi.org/10.31004/cendekia.v5i1.514>
- Fikri, M., Zaki Ananda, M., Faizah, N., Rahmani, R., & Adelia Elian, S. (2021). Kendala dalam pembelajaran jarak jauh di masa pandemi covid-19: Sebuah Kajian Kritis. *Jurnal Education and Development*, 9(1), 145–148. <https://doi.org/10.1016/jjheduc.2013.06.00>
- Futriani Hidayah, A. A., Adawiyah, R. Al, & Rizqi Mahanani, P. A. (2020). Efektivitas Pembelajaran Daring di Masa Pandemi Covid-19. *JURNAL SOSIAL: Jurnal Penelitian Ilmu-Ilmu Sosial*, 21(2), 53–56. <https://doi.org/10.33319/sos.v21i2.61>
- Irawati, R., & Santaria, R. (2020). Persepsi Siswa SMAN 1 Palopo Terhadap Pelaksanaan Pembelajaran Daring Mata Pelajaran Kimia. *Studi Guru Dan Pembelajaran*, 3(2).
- Latifa, N. A., Lufri, L., & Zulyusri, Z. (2021). The problem of online learning in Covid-19 toward learning process. *Bioeducation Journal*, 5(1).
- Marleni, L. (2016). FAKTOR-FAKTOR YANG MEMPENGARUHI MINAT BELAJAR SISWA KELAS VIII SMP NEGERI 1 BANGKINANG. *Journal Cendekia: Jurnal Pendidikan Matematika*, 1(1).
- Muslimah, H., & Najwa, W. A. (2020). Minat siswa kelas iv sdn turi 1 terhadap pembelajaran daring menggunakan google formulir. *Jurnal Pendidikan Anak Dan Karakter*, 03(01).
- Rahmatia, R., Syahira, S., & Sajaril, A. E. (2020). PRESEPSI SISWA DAN GURU TERHADAP PEMBELAJARAN DARING DI SMA YAPIS MANOKWARI KELAS XI. *Visipena*, 11(2). <https://doi.org/10.46244/visipena.v11i2.1251>
- Sadikin, A., & Hamidah, A. (2020). Pembelajaran Daring di Tengah Wabah Covid-19 (Online Learning in the Middle of the Covid-19 Pandemic). *Jurnal Ilmiah Pendidikan Biologi*, 6(1), 214–224.
- Sari, R. T. (2017). UJI VALIDITAS MODUL PEMBELAJARAN BIOLOGI PADA MATERI SISTEM REPRODUKSI MANUSIA MELALUI PENDEKATAN KONSTRUKTIVISME UNTUK KELAS IX SMP. *Scientiae Educatia*, 6(1). <https://doi.org/10.24235/sc.educatia.v6i1.1296>
- Setiawan, A. R. (2019). EFEKTIVITAS PEMBELAJARAN BIOLOGI BERORIENTASI LITERASI SAINTIFIK. *THABIEA: JOURNAL OF NATURAL SCIENCE TEACHING*, 2(2). <https://doi.org/10.21043/thabiea.v2i2.5345>
- Sholichin, M., Zulyusri, Z., Lufri, L., & Razak, A. (2020). Analisis Kendala Pembelajaran Online Selama Pandemi Covid-19 Pada Mata Pelajaran IPA di SMPN 1 Bayung Lencir. *BIODIK*, 7(2). <https://doi.org/10.22437/bio.v7i2.12926>
- Sidiq, D. A. N., Fakhriyah, F., & Masfuah, S. (2020). HUBUNGAN MINAT BELAJAR IPA SISWA KELAS V SD NEGERI 2 PELEMKEREP TERHADAP HASIL BELAJAR SELAMAPEMBELAJARAN DARING. *PROGRES PENDIDIKAN*, 1(3). <https://doi.org/10.29303/prospek.v1i3.31>
- Tasdik, R. N., & Amelia, R. (2021). Kendala Siswa SMK dalam Pembelajaran Daring Matematika di Situasi Pandemi COVID-19. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, 5(1). <https://doi.org/10.31004/cendekia.v5i1.536>

- Widiana, W., & Aviani, Y. I. (2021). KENDALA-KENDALA YANG DIHADAPI SISWA MENENGAH ATAS (SMA) SELAMA MELAKUKAN PROSES PEMBELAJARAN BERBASIS ONLINE (DARING) SAAT PANDEMI COVID-19 DI KABUPATEN TANAH DATAR. *PSYCHE: Jurnal Psikologi*, 3(2). <https://doi.org/10.36269/psyche.v3i2.316>
- Widyasari, L. A., Pratama, S., & Prayitno, B. A. (2013). PEMBELAJARAN BIOLOGI MENGGUNAKAN MODEL ACCELERATED LEARNING MELALUI CONCEPT MAPPING DAN MIND MAPPING DITINJAU DARI KREATIVITAS DAN KEMAMPUAN VERBAL SISWA. *INKUIRI: Jurnal Pendidikan IPA*, 2(03). <https://doi.org/10.20961/inkuiri.v2i03.9792>
- Zuliyanti, P., Sukirwan, & Yuhana, Y. (2021). Persepsi Siswa SMA Terhadap Pembelajaran Daring pada Mata Pelajaran Matematika Di Masa Pandemi Covid-19. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, 05(02).