

Student perceptions of online biology learning during the COVID-19 pandemic

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Student perceptions of online biology learning during the COVID-19 pandemic

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Abstract: This study aims to determine students' perceptions of the online biology learning process in class X IPA 1 SMA Negeri 1 Manokwari. This type of research uses a survey method. This study's data collection techniques used a questionnaire instrument and data analysis techniques using percentages. The population in this study amounted to 35 students of class X IPA 1 SMA Negeri 1 Manokwari by using the saturated sampling technique so that the determination of the number of samples is that all members of the population are sampled. Based on overall learning outcomes with an average indicator value of 64.43%, it was concluded that students' perceptions of the online biology learning process in class X IPA 1 SMA Negeri 1 Manokwari were in the passable category.

Keywords: Perception, Online learning, Biology, Covid-19 Pandemic.

Abstrak: Penelitian ini bertujuan untuk mengetahui persepsi siswa terhadap proses pembelajaran biologi online pada siswa kelas X IPA 1 SMA Negeri 1 Manokwari. Jenis penelitian ini menggunakan metode survei. Teknik pengumpulan data dalam penelitian ini menggunakan instrumen angket dan teknik analisis data menggunakan persentase. Jumlah dalam penelitian ini berjumlah 35 siswa kelas X IPA 1 SMA Negeri 1 Manokwari dengan menggunakan teknik sampling jenuh sehingga penentuan jumlah sampel adalah seluruh anggota populasi dijadikan sampel. Berdasarkan hasil secara keseluruhan dengan nilai indikator rata-rata 64,43% disimpulkan bahwa persepsi siswa terhadap proses pembelajaran biologi online pada kelas X IPA 1 SMA Negeri 1 Manokwari berada pada kategori cukup.

Kata kunci: Persepsi, Pembelajaran Online, Biologi, Pandemi Covid-19.

INTRODUCTION

One of the lessons that play an important role in the quality of education is biology (Safira et al., 2018). Biology is a scientific discipline that provides a variety of learning experiences that can facilitate students in understanding science concepts and processes. Biology learning has content that is very close to life, so the selection of the learning model must be right. However, the current biology learning process is not carried out as usual (face to face) due to the Covid-19 pandemic. The Covid-19 pandemic caused unprecedented global health (Ali et al., 2020).

UNESCO (2020) also states that many countries have temporarily closed schools and other educational institutions to prevent the spread of the coronavirus in the environment (Drane et al., 2020; Huang et al., 2020). One of the government's efforts in education during this pandemic is changing offline to online teaching and learning activities for all educational institutions (Kurniawan et al., 2021; Yurida et al., 2021). In addition, the

government has also limited community activities outside the home to reduce interactions in order to break the chain of the spread of Covid-19 (Chandio, 2021). The government's policy to limit student interaction in schools during this pandemic is to implement distance learning or online learning.

The online learning process is a learning process that, in its implementation, requires supporting facilities, namely the internet (Damopolii et al., 2021). There are several advantages that can be felt when using online learning; namely, students have flexibility in the time and learning process. Students can follow and access materials, and assignments anytime and anywhere. The online learning process uses various supporting applications in the learning process including google classroom, video conference, telephone or live chat, zoom or via WhatsApp group (Fuady et al., 2021; Hussein et al., 2021; Ignacio, 2021; Mobo, 2021; Rinekso & Muslim, 2020; Torrato et al., 2021). Online learning is a new way of working that can provide a solution to a reference in providing a creative and different learning process (Raiman et al., 2021).

During the pandemic, biology learning was transformed into online learning (Limiansi et al., 2020). This learning requires technology so that students continue to learn and do not have to come to school (Aladesusi & Akindiya, 2021). Learning biology during the pandemic has limited students to work in the laboratory (Ferdyan et al., 2020), the difficulty of students to understand biology content (Humphrey & Wiles, 2021), decreased critical thinking skills (Damopolii et al., 2022), decreased interest and results learning (Gustia & Suharti, 2021). In fact, learning biology requires that students must acquire knowledge (Lelasari et al., 2021), skills (Mandasari et al., 2021; Rumalolas et al., 2021), and be creative (Yustina et al., 2020). Online biology learning during the pandemic has something to do with the creativity of teachers in teaching (Yurida et al., 2021), thus motivating their students to learn (Raiman et al., 2021). Several studies offer virtual learning (Delgado et al., 2021), contextual learning (Welerubun et al., 2022), digital comics (Malau et al., 2021), or blended learning (Santosa et al., 2021).

SMA Negeri 1 Manokwari is one of the schools that has implemented online learning since the home study policy was established. Online biology learning certainly raises different perceptions for each student. This is because the perceptions that arise from students come from their observations and experiences during the learning process. This study aims to determine students' perceptions of the online biology learning process in class X IPA 1 SMA Negeri 1 Manokwari.

METHOD

This research was conducted in Class X IPA 1 SMA Negeri 1 Manokwari Even Semester 2020/2021 Academic Year in May-June 2021. The research method used in the study was a survey method. The population in this study were all students of class X IPA 1 at SMA Negeri 1 Manokwari. The saturation side technique is a sampling technique when all

members of the population are used as samples. The samples in this study were students of class X IPA 1 which consisted of 35 students.

The instrument in this study was in the form of a questionnaire consisting of statements based on indicators that had been prepared in accordance with the grid regarding students' perceptions of the biology learning process. The research questionnaire grid is prepared by showing the relationship between the variables studied and the data sources to be taken based on the method used. As for before being tested, the instrument will first be validated to prove that the instrument is valid or feasible to use. Validation is carried out by appointed experts and is willing to conduct an assessment of the instrument.

Table 1. Instrument grid

Indicator	Statement Item Number	Characteristics of Statement Item	
		Positive	Negative
Biology Teaching Materials	1, 2, 3, 4, 5,	1, 2, 3, 5	4
Learning Environment	6, 7, 8, 9, 10, 11, 12	7, 8, 10, 11	6, 9, 12
Student Interaction	13, 14, 15	14, 15	13

The score from the questionnaire data is calculated by percentage statistics with the following formula:

$$P = \frac{F}{N} \times 100\%$$

Information:

P = Percentage value of respondents' answers

F = Frequency of respondents' answers

N = Number of respondents

The percentage of the questionnaire will be expressed in the form of a category of assessment results. The category of assessment results is used to determine students' perceptions of the online biology learning process in class X IPA 1 SMA Negeri 1 Manokwari.

Determination of the qualitative average percentage category has used the indicators in Table 2 below.

Table 2. Categories of student perceptions

No	Percentage	Category
1.	86%-100%	Very good
2.	85%-70%	Well
3.	69%-54%	Passably
4.	53%-38%	Not good
5.	37%-0%	Not very good

RESULTS AND DISCUSSION

Students' perceptions of the online biology learning process in class X IPA 1 SMA Negeri 1 Manokwari were obtained from the analysis of quantitative data from a questionnaire to 35 respondents. The indicators analyzed include the indicators of teaching materials, the learning environment, and student interaction (Table 3).

Table 3. Results of the analysis of students' perception indicators

No.	Indicator	(%)	Category
1.	Biology Teaching Materials	69.96	Passably
2.	Learning Environment	60.40	Passably
3.	Student Interaction	62.93	Passably
	Average	64.43	Passably

In Table 3, it can be seen that the highest percentage of indicators is the dimension of teaching materials (69.96%) while the lowest percentage of indicators is the dimension of the learning atmosphere/environment (60.40%), with an average indicator percentage of 64.43% in the Passably category. Based on Table 3, data analysis of students' perception indicators of the online biology learning process in class X IPA 1 SMA State 1 Manokwari that:

Teaching Material

Teaching materials are everything used in learning that contains instructions, explanations, examples, and learning objectives to be achieved which are used as facilities to gain learning experiences (McGrath, 2016). The use of instructional materials plays a very significant part in the whole process of education. The teaching materials must be able to meet suitable standards for students. This means that the content should be tailored to the needs of students, the content should be organized in a way that makes it easier for students to read and study it, and the writing style and vocabulary structure should be clear so that students can easily understand. The dimension indicator of this teaching material is measured by five statements with a percentage value of 69.96%, categorized as Passably. This is supported by the research of Muntazhimah et al. (2020), who conducted research on the responses of high school students, which showed that the majority of students were not interested in online learning because the material was difficult to understand, the lack of student interaction, the presence of electricity constraints, and the internet and lack of focus while studying. Meanwhile, these results are inversely proportional to the results of research conducted by Adila & Harisah (2020), in which students prefer online learning to conventional ones.

The paradigm of providing teaching materials online is using internet-based technology as a medium of interaction. Online biology learning in class X IPA 1 of SMA

Negeri 1 Manokwari is carried out through video conference/google meeting, where the teacher provides teaching materials in the form of PowerPoint presentation slides and students follow using LKS. However, sometimes students are less interested in the material provided. This indicates that the biology teaching materials provided online are less attractive to students, the delivery of the material is monotonous, the intonation is less varied, so that students are less interested and bored to take online classes. This condition is caused by a lack of readiness to face a pandemic (Scherer et al., 2021). Therefore, teachers need to make periodic improvements to teaching materials, make innovations and variations in the provision of teaching materials, and mastery of technology so that the material can be packaged in an attractive manner in terms of appearance and content/content of teaching materials so as to increase the interest of students in participating in online learning

Learning Environment

Students will have a higher chance of achieving better learning outcomes if they are provided with a pleasant setting and are motivated to study by the learning environment, which plays a very crucial part in the whole learning process. When it comes to encouraging students to have a high level of excitement for studying, the learning environment plays a vital role. As a result, the classroom setting has to be able to foster an atmosphere of serenity while still inspiring students in their academic pursuits (Radovan & Makovec, 2015).

The dimensions of the learning atmosphere/environment are measured by seven (with a percentage value of 60.40% which is categorized as Passably. From these data it indicates that the tendency of students to disagree if it is said that learning from home is better than learning in the school. This is interesting to study, because it is not all students enjoy the learning process from home. The tendency of students to feel better in class so that they have high enthusiasm because the environment and friends can strengthen the research findings above as the conclusion stated by Adijaya & Santosa (2018) that usually someone in the class will have a better spirit if he has friends who are active in learning. This makes some students not like the atmosphere or learning environment from home.

The indicator of the learning environment affects the concentration of students in online learning. Learning biology online requires a high concentration of learning. This concentration of attention allows students to be able to absorb and understand the material given. To increase the concentration of students, teachers need to pay attention to the condition of students before class starts, mid and end of class, provide motivation, and provide a break or refreshing if the online learning time is more than 30 minutes.

Student Interaction

Student interaction is another important part of learning, along with the materials used to teach and the environment in which they learn. This interaction is between both students and teachers as well as between students. Lin & Lin (2015) said that interaction

between students and their friends and interaction between their teachers should always be built in to help students talk to each other and talk about each learning activity. Based on the results, the percentage of 62.93% is categorized as passably. From these data, students have a tendency to agree but find it difficult to interact with other friends when learning online. This is because students feel that the interaction in the online learning process is less interesting to do when compared to the offline learning process so that it makes students find it difficult to interact with the teacher and their friends. This condition is reinforced by research by Laksana (2021) which obtained the same results as the research that the author did, where this researcher found that the quality of interaction in online learning was in the passable category.

According to the findings of the analysis that was done on the collected data, it seems that most learners have a favorable disposition toward the adoption of online education. The situation can be observed from the data that have been mentioned, which show that learners are capable of adapting and adjusting to all of the facets that are included in the process of online learning. Even though the results show that students are more likely to say that learning activities at school are better than learning online from the houses. Online learning has created new conditions and new experiences for students (Yates et al., 2021). The author says that kids genuinely need these two activities in order to progress in both their cognitive and metacognitive abilities. Students are able to connect and mingle with their friends while studying at school, which may, of course, build a spirit of solidarity and unity as well as a feeling of brotherhood.

Of these 3 indicators that have a high percentage value of the indicator is 69.96% of teaching materials, because some students agree with the online learning process. While the indicator of the learning environment atmosphere has a low percentage value of 60.40%, because students tend to prefer the offline learning process than online. then the indicator of student interaction has a moderate percentage value of 62.93%. However, these 3 indicators are in the Passably category because they do not reach an average of 70-75 in the assessment category.

CONCLUSION

The conclusion of this study is that students' perceptions of the online biology learning process in class X IPA 1 SMA Negeri 1 Manokwari received a passable response with a percentage value of 64.63%. Students at SMA Negeri 1 Manokwari, especially in class X IPA 1, responded Passably to the implementation of this online biology learning process because for students the biology learning process is better done offline than online.

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