

THE STUDENT PERCEPTIONS ON ONLINE BIOLOGY LEARNING DURING THE COVID-19 PANDEMIC

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Abstract: The COVID-19 pandemic has changed the patterns of learning in schools. This study aims to determine: (1) the pattern of implementation of online Biology learning at SMAN 1 Kediri; (2) students' perceptions of online Biology learning at SMAN 1 Kediri; (3) differences in students' perceptions of online Biology learning at SMAN 1 Kediri based on grade level; 4) differences in students' perceptions of online biology learning at SMAN 1 Kediri based on gender. This type of research is exploratory, descriptive research. The population in this study were students majoring in science at SMAN 1 Kediri. The research sample consisted of 137 students. The sampling technique used was stratified random sampling. Data analysis was carried out using qualitative and quantitative approaches (calculating categories, percentages, and median tests). The results show that the implementation of online Biology learning at SMAN 1 Kediri used WhatsApp Group (WAG) and Google Classroom (GC) media. Students' perceptions of online learning of Biology subjects during the Covid-19 pandemic varied, both positive and negative. Online learning provides flexibility and easy access to learning resources, but there are also difficulties in student-teacher interaction and understanding of the learning material. Students' perceptions of online learning are similar between grade levels and genders.

Keywords: *Students Perception, Online Learning, Biology, High School*

INTRODUCTION

Hundreds of millions of students worldwide have stopped attending school because of the Covid-19 pandemic [1,2]. To stop the spread of the Covid-19 epidemic, direct face-to-face learning has been replaced by online learning [3]. Online learning is used to keep the teaching and learning process going even when schools are closed and to keep education going as feasible.

The term "online" comes from the phrase "in the network. As a result, online learning is one of the online or internet-based activities. As defined by Abidin & Arizona [4], online learning is a type of remote learning that uses telecommunications and information technology, such as the internet.

Online learning is possible thanks to the rapid advancement of information and communication technology. Teachers and students can use a variety of available communication channels in the online learning process. Teachers can still give subject matter to students directly via video conferencing, even if they are not on the network.

Online learning is not straightforward to execute, and the process has numerous challenges and flaws. Differences hamper online learning activities in each student's technological and financial capacities. Online learning is further hampered by the need for more learning resources (such as computers and devices) and a hostile environment.

The existence of these benefits and drawbacks will influence students' perceptions of

online learning. Students' attitudes and behaviors during the learning process can influence their opinions of online learning. People have diverse perspectives on education [5]. Students' perceptions of online learning during the Covid-19 pandemic should be researched as future evaluation material.

SMAN 1 Kediri is one of the senior high schools implementing online learning during this pandemic. According to the observations, students need help understanding the material being taught. It is especially true for disciplines like biology, which require hands-on activities to aid learning. As a result, a study into students' perceptions of online Biology learning during the Covid-19 outbreak is critical.

RESEARCH METHODS

It is a descriptive study that uses both quantitative and qualitative methods. The research was conducted using a Google Form questionnaire from January 4 to January 18. The participants in this study were all science majors at SMAN 1 Kediri. The Stratified Random Sampling approach was used for sampling.

Stratified Random sampling is a method of gathering samples from a population divided into strata, then a random sample from each stratum [6]. The strata in this study are not simply one class but numerous classes from which just a few samples are obtained. If the population is known, the Taro Yaname and Slovin formulae are used to calculate the total sample members.

$$n = \frac{N}{N \times d^2 + 1}$$

Information:

N = Total population

n = number of samples

d = precision

The set precision is 5%, then:

$$n = \frac{N}{N \times d^2 + 1}$$

$$n = \frac{208}{208 \times 0,05^2 + 1}$$

$$n = 137$$

The total number of students in this study was 137, with 59 males and 78 females. Thirty-eight students from class X, 47 from class XI, and 52 from class XII provided samples.

Quantitative data was gathered through interviews, data reduction, data presentation, and conclusion drafting. Quantitative data is collected using a closed questionnaire with a Likert scale ranging from 1 to 5, verified for validity and reliability. Category, percentage, and median tests are used in quantitative data analysis.

The mean and SD are used to determine the category, which can be expressed in various ways.

Table 1. Assessment Norms

No	Interval Formula	Category
1	$X \geq (M + 1.5 \text{ SD})$	Very good
2	$(M + 0.5 \text{ SD}) \leq X < (M + 1.5 \text{ SD})$	good
3	$(M - 0.5 \text{ SD}) \leq X < (M + 0.5 \text{ SD})$	neutral
4	$(M - 1.5 \text{ SD}) \leq X < (M - 0.5 \text{ SD})$	bad
5	$X < (M - 1.5 \text{ SD})$	Very bad

Information:

X = score

M = Count Mean

SD = Standard Deviation Calculate

The student's perception is positive if the score is in the very good and good category. However, the student's perception is negative if the score is in the very bad and bad category. In comparison, the score in the neutral category includes a neutral perception.

The determination of the relative frequency of the percentage is as follows.

$$P = \frac{f}{N} \times 100$$

Information:

P = Percentage sought (Relative Frequency)

F = Frequency

N = number of respondents

Data analysis was to determine the difference between students' perceptions at grade level and gender in the Mann-Whitney test. The level of confidence in this study is 95% <0.05. If the p-value < 0.05, then there are differences in student perceptions. However, on the contrary, if the p-value > 0.05, then there is no difference in student perceptions.

RESULTS AND DISCUSSION

The results reveal that during the Covid-19 pandemic, teachers and students at SMAN 1 Kediri conducted online Biology lessons. In practice, students learn online biology utilizing the WhatsApp Group (WAG) and Google Classroom (GC) apps. Implementation of learning according to a predefined schedule.

The teacher in charge of class X decided to employ WAG and GC. Meanwhile, the teacher only utilized WAG in classes XII and XI science. The ease with which WAG may share written, verbal, and video messages are the primary factor in choosing WAG for online learning. WAG is also well-known among instructors and students as a means of communication. Furthermore, WAG does not demand additional internet data.

Teachers only utilize WAG in Biology classes to provide material summaries and learning videos as learning assignments. As a learning evaluation, give assignments in the form of descriptions of questions, multiple choice, and vocally through voice notes in the WAG program. Completed assignments are sent to the teacher in the form of images or files.

By just offering resources and assignments, WAG and Google Classroom allow learning to become boring [7]. Meanwhile, when using the application, talks are ineffective [8]. As a result of the absence of variance in learning, student saturation in the learning process might occur [9].

Variations in learning are required to avoid student saturation and ensure successful learning. The use of WAG and GC can be paired with other learning-supporting apps. Edmodo can be used to share topics, and Google Meet or Zoom can be used for face-to-face learning and practicum [10]. Similarly, when paired with other programs, WAG and Google Classroom will be beneficial [11].

Students had various impressions of the online learning system just deployed at SMAN 1 Kediri. Students' perceptions are expressed in terms of four features of online learning: interactivity, independence, accessibility, and enrichment. Except for the enrichment component, there is little variance in the percentage of students' perceptions of each aspect of online learning.

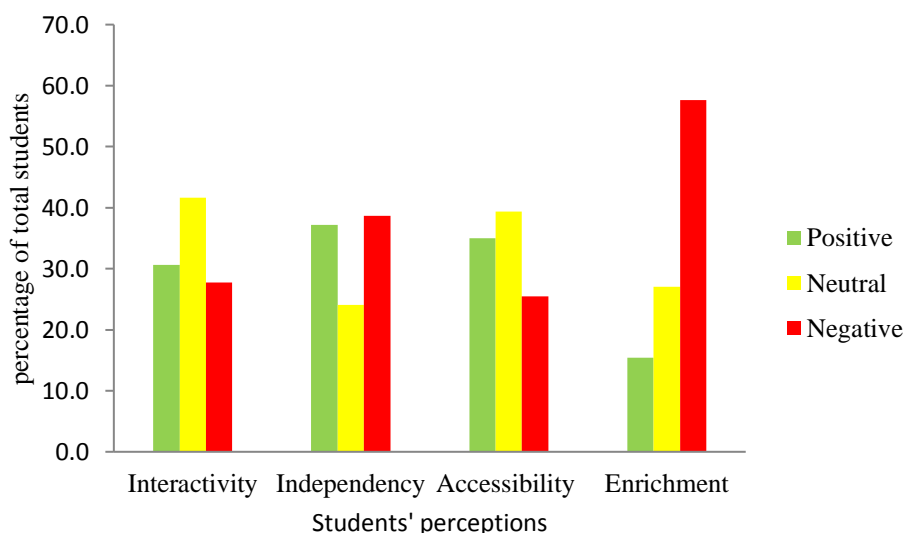


Figure 1. Percentage of students' perceptions of online learning

Positive opinions of interaction were held by 30.7 percent of students, but unfavorable perceptions were held by about the same percentage (27.8 percent). It means that there needs to be complete agreement among respondents on the topic of interactivity in online learning. The lack of good communication channels, which results in a lack of contact between students and teachers, might be ascribed to this disparity in perception.

This research suggests that not all students think online learning makes engaging with classmates and teachers easy. It is contrary to the advantages of online learning, which include enhancing contact between students and teachers [12]. Unlike in face-to-face learning, not all students are willing to share their thoughts and ask questions. Additionally, the application employed does not allow for effective dialogue. Students are usually only given teaching materials and assignments by teachers.

Based on the student's responses, it is clear that the online learning tools WhatsApp and Google Classroom are ineffective in assisting students in interacting with teachers and peers. One of the things that can help students achieve better learning outcomes is student interaction. In elementary schools, online learning via WhatsApp is unsuccessful [7]. Students' science learning outcomes using WAG online were lower than those using WAG offline, according to Ekantini's research [13]. The convenience of using GC and having access to it does not guarantee good learning [14].

The most effective way to learn online is to use various online sources. The utilization of many media also affects interactions during learning. In one subject, teachers can use a variety of

applications. Teachers can use Zoom as a live broadcast platform, Google Classroom as a web-based virtual classroom interaction platform, and WAG as a chat tool to facilitate more brief interactions in online classes [15].

There was no significant variation in students' perceptions of interactions in online learning across grade levels (Chi-square analysis, $\chi^2 = 0.99$; $df = 2$; $p > 0.05$). Male and female students' perceptions of the interactive feature were equally insignificant (Chi-square analysis, $\chi^2 = 0.45$; $df = 2$; $p > 0.05$). It is because the perspectives of the majority of students are nearly identical.

Aspects of online learning independence are task completion, responsibility, and discipline. More than a third of students (38.7%) have a negative attitude toward the concept of independence. However, about the same proportion of students hold favorable perceptions (37.2 percent).

Online learning flexibility is supposed to promote student discipline and responsibility in the classroom. On the other hand, students need to be made aware of the advantages of online learning. Only 37.2 percent of pupils were found to be disciplined and accountable in their task completion.

To boost student accomplishment, independent learning is required, particularly in online learning [16]. It is because there is a strong link between learning independence and learning outcomes [17]. Independent learning should be considered and developed because of its value.

More students in classes X and XII have favorable attitudes toward independence, while more students in class XI have negative perceptions. The median test, however, revealed no significant differences in students' perceptions of

independence across grade levels (Chi-square analysis, $\chi^2 = 0.85$; $df = 2$; $p > 0.05$). Male and female students' perceptions were also not significantly different (Chi-square analysis, $\chi^2 = 0.87$; $df = 2$; $p > 0.05$).

Accessibility in online learning is measured by the number of learning materials available, the depth of the material, and the ease with which the material may be understood. Over a third of students (36 percent) had a favorable impression of accessibility. Meanwhile, 25.5 percent of students had an unfavorable impression of this characteristic.

One of the advantages of online learning is easier and wider access to learning resources. As a result, the use of online learning will aid student comprehension. However, the study's findings revealed something different. According to Sadikin [18], vast sources of information still need to improve students' comprehension.

There is only a tiny difference in the number of students with good, neutral, and negative perceptions between classes, according to student perceptions. The median test also revealed that students' perceptions of independence did not change significantly across grade levels (Chi-square analysis, $\chi^2 = 0.78$; $df = 2$; $p > 0.05$). The median test on male and female students' perceptions revealed that this element also revealed the same thing (Chi-square analysis, $\chi^2 = 0.95$; $df = 2$; $p > 0.05$).

More than half of students (57.6%) negatively perceive online learning enrichment. Students need to be inspired to learn more about Biology and be interested in understanding how to use it through online learning.

Students' enthusiasm and motivation show their embrace of online learning. Students' lack of interest in learning resources and their unwillingness to investigate them might be evidence that online learning is not widely embraced. As a result, most students choose to learn Biology in person rather than online.

The median test revealed no significant differences in students' views of enrichment based on their grade level (Chi-square analysis, $\chi^2 = 0.72$; $df = 2$; $p > 0.05$). Over half of the pupils in each class had a negative attitude toward online learning enrichment. Male and female students have different perspectives on this issue. According to the median test results, there were no significant variations between male and female students' views (Chi-square analysis, $\chi^2 = 0.87$; $df = 2$; $p > 0.05$).

Students' perceptions of online Biology learning are similar, which could be attributed to the same demand factor. One of the internal elements that can influence a person's view is their needs. Two types of influences influence perception: internal and external. Exterior aspects include external appearance, stimulus attributes,

and ambient conditions [19], whereas internal factors include experience, needs, assessments, and expectations.

This study supported a prior study that found no differences in attitudes about online learning between male and female students [20-23]. However, analysis on the same subject shows variances in student perceptions across grade levels in this study [24]. Students' age, mentality, hobbies, and experiences all impact this.

CONCLUSION

In every aspect of online learning except enrichment, the percentage of students with good impressions is about equal to the percentage of students with negative perceptions. More than half of students (57.6%) have a poor impression of online learning's enrichment aspect. The attitudes of students in grades X, XI, and XII about online learning are the same. The attitudes of male and female students about the use of online learning are the same. Using the WhatsApp Group (WAG) and Google Classroom (GC) programs to implement Biology online learning at SMAN 1 Kediri is less effective. Students prefer face-to-face learning over internet learning.

REFERENCES

- [1] Murphy, M. P. (2020). Covid-19 and Emergency E-Learning: Consequences of The Securitization of Higher Education For Post-Pandemic Pedagogy. *Contemporary Security Policy*, 41 (3), 2-10.
- [2] Mustofa, M. I., Chodzirin, M., Sayekti, L., & Fauzan, R. (2019). Formulasi Model Perkuliahan Daring Sebagai Upaya Menekan Disparitas Kualitas Perguruan Tinggi. *Walisongo Journal of Information Technology*, 1 (2), 151-160.
- [3] Zhang, W., Wang, Y., Yang, L., & Wang, C. (2020). Suspending Classes Without Stopping Learning: China's Education Emergency Management Policy in The Covid-19 Outbreak. *Journal of Risk and Financial Management*, 13 (3), 1-6.
- [4] Abidin, Z., Rumansyah, & Arizona, K. (2020). Pembelajaran Online Berbasis Proyek Salah Satu Solusi Kegiatan Belajar Mengajar di Tengah Pandemi Covid-19. *Jurnal Ilmiah Profesi Pendidikan*, 5 (1), 2620-8326.
- [5] Suwanto., & Fajri, H. (2018). Persepsi Orang Tua terhadap Proses Bimbingan Belajar Anak di Rumah. *Jurnal Susunan Artikel Penelitian*, 3(1), 2549-2845.
- [6] Yamane, Taro. (1967). *Elementary Sampling Theory*. New Jersey: Prentice-Hall.
- [7] Anggraini, A.I., Suwanto, & Iskandar, D. (2020). Analisis Aktivitas Pembelajaran Biologi pada Google Classroom di Masa

- Pandemi Covid-19. *Jurnal Pendidikan Surya Edukasi*, 6 (2), 168 – 174.
- [8] Daheri, M., Juliana., Deriwanto., & Amda, A.D. (2020). Efektivitas WhatsApp Sebagai Media belajar Daring. *Jurnal Basicedu*, 4 (4), 775 – 783.
- [9] Paciwara, R. & Coline, M. (2020). Analisis Pembelajaran Daring Terhadap Kejenuhan Belajar Mahasiswa Tadris Biologi IAIN Jember di Tengah Pandemi Covid-19. *Jurnal Pendidikan Biologi*, 1(1), 29-38.
- [10] Rustaman, A. H. (2020). Efektivitas Penggunaan Aplikasi Daring, Video Conference Dan Sosial Media Pada Mata Kuliah Komputer Grafis 1 Di Masa Pandemi Covid-19. *Jurnal Ilmu Sosial Dan Pendidikan*, 4 (3), 557–562.
- [11] Mpungose, C. B. (2020). Is Moodle or WhatsApp the Preferred E-Learning Platform at a South African University? First-Year Students' Experiences. *Education and Information Technologies*, 25(2), 927 – 941.
- [12] Aziz, A. L. (2013). Pengaruh kemudahan pengguna terhadap kemanfaatan pada sikap pengguna e learning survey pada mahasiswa jurusan administrasi bisnis, fakultas ilmu administrasi universitas brawijaya malang angkatan 11. *Jurnal administrasi bisnis*, 6(2), 1 -7.
- [13] Ekantini, A. (2020). Efektivitas Pembelajaran Daring pada Mata Pelajaran IPA di Masa Pandemi Covid-19: Studi Komparasi Pembelajaran Luring dan Daring pada Mata Pelajaran IPA SMP. *Jurnal Pendidikan Madrasah*, 5 (2), 187 – 193.
- [14] Permata, A., & Bhakti, Y. B. (2020). Keefektifan Virtual Class dengan Google Classroom dalam Pembelajaran Fisika Dimasa Pandemi Covid-19. *Jurnal Inovasi Pendidikan Fisika dan Riset Ilmiah*, 4 (10), 27 - 33.
- [15] Naserly, M. K. (2020). Implementasi Zoom, Google Classroom, Dan Whatsapp Group Dalam Mendukung Pembelajaran Daring (Online) Pada Mata Kuliah Bahasa Inggris Lanjut. *Journal of Chemical Information and Modeling*, 4 (2), 155–165.
- [16] Ningsih, R., & Nurrahmah, A. (2016). Pengaruh Kemandirian Belajar dan Perhatian Orang Tua Terhadap Prestasi Belajar Matematika. *Jurnal Formatif*, 6 (1), 73-84.
- [17] Nasution, N., Rahayu, R. F., Yazid, S. T. M., & Amalia, D. (2018). Pengaruh Kemandirian Belajar Terhadap Hasil Belajar Siswa. *Jurnal Pendidikan Luar Sekolah*, 12 (1), 9 – 14.
- [18] Sadikin, A., & Hamidah, A. (2020). Pembelajaran Daring Di Tengah Wabah Covid-19. *Jurnal Ilmiah Pendidikan Biologi*, 6(2), 214 – 224.
- [19] Prasetijo, R., & Ihalauw, J. J. O. I. (2005). *Perilaku Konsumen*. Yogyakarta: ANDI.
- [20] Syazali, M., & Ilhamdi, M. L. (2022). Implementation of online learning and its impact on student science competency. *Jurnal Pijar MIPA*, 17(2), 192-198.
- [21] Fani, V. G., & Mawardi, M. (2022). Flipped classroom learning system based on guided inquiry using moodle on acid-base solutions. *Jurnal Pijar Mipa*, 17(3), 361-368.
- [22] Fauzan, F., Fathurrohman, M., & Syamsuri. Perbedaan Persepsi dan Kemandirian Belajar Siswa SMA Terhadap Pembelajaran Daring Ditinjau Dari Gender. *Jurnal Penelitian dan Pengajaran Matematika*, 2 (2), 136 -151.
- [23] Makhrus, M., Rokhmat, J., Kosim, K., & Harjono, A. (2022). Development of learning media and online test based smartphone android in physics learning on work and energy topic. *Jurnal Pijar Mipa*, 17(3), 420-423.
- [24] Bawafi, A. S. (2021). *Persepsi Siswa dalam Pembelajaran Daring Mata Pelajaran Geografi Di SMA Santo Antonius Jakarta Timur*. (Skripsi). Universitas Negeri Jakarta.