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Study From Home: An Analysis of Learning Difficulties of Biology in Junior High School Students During Online Learning

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ABSTRACT

This research aims to discover students' learning difficulties during online learning, especially in science and biology subjects. This study used a descriptive method with a survey technique on the eighth-grade students at SMPN Siak Hulu. The research sample was obtained using a multilevel sampling technique with 191 students. The research instrument used a validated online learning difficulties questionnaire comprising 36 items. The data collection technique was done by distributing online questionnaires via Google Forms and then analyzed descriptively. The results showed that the level of student learning difficulties during online learning was in the medium category, with a percentage of 69.27. The conclusion obtained from the results of this study is that class VIII students of SMPN Siak Hulu experience learning difficulties during online learning in biology science subjects, especially at the level of understanding the material.

Belajar dari Rumah: Sebuah Analisis Terkait Kesulitan Belajar IPA Biologi Siswa SMP Selama Pembelajaran Online

ABSTRAK: *Tujuan dari penelitian ini adalah untuk mengetahui kesulitan belajar siswa selama pembelajaran online khususnya pada mata pelajaran IPA biologi. Penelitian ini menggunakan metode deskriptif dengan teknik survei pada siswa kelas VIII di SMPN Siak Hulu. Sampel penelitian diperoleh menggunakan teknik sampling bertingkat yang berjumlah 191 orang. Instrumen penelitian menggunakan angket kesulitan belajar online yang telah divalidasi dan terdiri dari 36 item. Teknik pengumpulan data dilakukan dengan menyebarkan angket online melalui google form kemudian dianalisis secara deskriptif. Hasil penelitian menunjukkan tingkat kesulitan belajar siswa selama pembelajaran online berada pada kategori sedang dengan persentase sebesar 69.27. Kesimpulan yang diperoleh dari hasil penelitian ini bahwa siswa kelas VIII SMPN Siak Hulu mengalami kesulitan belajar selama pembelajaran online pada mata pelajaran IPA biologi terutama pada tingkat pemahaman materi.*

INTRODUCTION

Learning can be understood as a phase of personal behavior changes resulting from interaction with experience and the environment, which involves cognitive processes. According to Ferreira et al. (2019), learning is an interpersonal process that cannot be separated from human development, not only about the systematic acquisition of knowledge and skills but also a continuous and interactive process of developing meaning. This statement agrees with Haka et al. (2020). Learning not only makes students know the science but also empowers creative thinking skills and independence. Nuraeni & Syihabuddin (2020) revealed that students often cannot or are less successful in achieving their learning goals. This concept indicates that in the learning process, students experience difficulties and become obstacles in achieving learning outcomes.

Learning difficulty is a condition where students cannot learn optimally, have difficulty receiving or absorbing lessons from educators, and competencies or achievements obtained need to meet the established standard criteria. The existence of learning difficulties can have an impact on learning outcomes because students are hampered in acquiring new knowledge, especially in online learning. Students need time to adjust to this change so that it affects their learning absorption (Khaeroni & Nopriyani, 2018; Utomo et al., 2021).

Online learning is a teaching and learning activity assisted by the Internet network. All teaching and learning activities are online in the distance learning format (e-learning). Students can learn anytime and anywhere through learning facilitated by the system without being limited by space and time. (Anas & Murti, 2021; Belawati, 2019; Dilling & Vogler, 2022). According to Lestari et al. (2022), online learning is an educational process such as distance learning via the Internet. Online teaching provides opportunities for students and teachers to learn through hands-on teaching experiences but also by observing the instructions of others (Kim, 2020). Haidi & Hamdan (2022) state that online learning is a form of education in which students acquire knowledge in a completely virtual (internet-based) learning environment. Thus, students can learn flexibly.

The results of Arifa's research (2020) and Simanjuntak et al. (2020) show that online learning faces various obstacles, including the readiness of human resources, starting from educators and students to parents. Barriers are faced by students, such as feelings of boredom that arise because learning is monotonous, where the teacher gives assignments to students in large numbers. Adequate device availability, internet quota, and network are also things that students need to pay attention to. These obstacles make students experience difficulties in online learning, including in biology subjects.

Biology is a branch of science that studies the structures and processes associated with living organisms. Biology is a complex subject that covers a wide range of disciplines. Learning biology requires various verbal and written process skills to produce good cognitive, psychomotor, and affective abilities (Koć-Januchta et al., 2022; Nehm, 2019; Simorangkir et al., 2020). In line with Yulianti's research (2017), students tend to memorize material, not understand and develop concepts, so they think learning biology is complex. Haka et al. (2022) state that biology learning seems challenging to memorize and requires students to think.

Wulandari & Djukri (2022) argue learning process forces teachers to be more creative in carrying out education. Therefore, many platforms offer exciting features to keep learning going, according to Andyhapsari & Djukri (2021) and Purnamasari & Suryadarma (2022) to the platforms that can be used for online learning, namely Google Meet, Zoom, Google Classroom, Ruangguru, and Zenius Education.

Based on the results of observations and interviews conducted at SMPN Siak Hulu, it can be seen that the implementation of learning is done online because the pandemic condition does not allow for face-to-face learning. According to Castillo-Cuesta et al. (2022), in online learning activities carried out by students, only the work on assignments is given by the teacher. This finding is similar to research by Merris & Sari (2022), in that the teacher only monitors the implementation of students in answering the tasks given so that there is no interaction in learning. Most teachers use the WhatsApp application to carry out this online learning, and some teachers also use Google Classroom. Implementing online learning makes it difficult for teachers to control students directly, so many students are found to be negligent about their duties. This study aims to determine the difficulties in learning science biology experienced by students during online learning in class VIII SMPN Siak Hulu.

METHOD

This research uses descriptive methods through survey techniques. Quantitative data acquisition is made by scoring based on the answers to the respondent's questionnaire. The study was conducted at SMPN Siak Hulu on eighth-grade students. The sampling technique used is proportional stratified random sampling based on students' academic abilities. The research sample was 191 students.

The implementation of the research began at the preparatory stage, namely the licensing process for the school principal to conduct research. It then determined the sample, namely class VIII students of SMPN Siak Hulu. The data collection instrument was a modified questionnaire from Irmayanti et al. (2017) dan Utami & Cahyono (2020). The questionnaire consists of 36 statement items with four alternative answers. The questionnaire indicators consisted of the level of interest in biology science lessons during online learning, the level of understanding of biology science subject matter, technological capabilities, pedagogical abilities, technical constraints, process constraints, and family attention and support during online learning.

The next stage is implementation, and the questionnaire is distributed to respondents online via Google Forms. The implementation of this research was carried out in December 2020. After the implementation, the final stage is evaluation. All data obtained, processed, and analyzed is to be described qualitatively. Questionnaire data that has been collected is then scored to be calculated quantitatively. The Percentage of students' learning difficulties is calculated using the following formula Sudijono (2008).

$$P = \frac{f}{n} \times 100\%$$

Description:
P = Percentage obtained
f = Frequency of questionnaire answers
n = Number of samples

Learning difficulties experienced by students during online learning in science biology subjects can be seen using the results shown in Table 1 below.

Table 1. Learning Difficulty Percentage Criteria

No.	Learning Difficulty Intervals	Category
1.	86% - 100%	Poor
2.	71% - 85%	Low
3.	56% - 70%	Medium
4.	41% - 55%	High
5.	25% - 40%	Excellent

(Modified from Dinatha & Laksana, 2017)

RESULTS AND DISCUSSION

Learning during the pandemic in class VIII SMPN Siak Hulu occurred online or through distance learning. Online learning is considered less effective because there is no direct face-to-face process, causing various obstacles and difficulties. Therefore,

researchers want to know students' learning difficulties when studying online, especially in natural science biology.

Students learning difficulties in biology science lessons during online learning can be seen from a questionnaire survey. Based on research carried out on class VIII students of SMPN Siak Hulu by distributing questionnaires to a sample of 191 people, consisting of 7 indicators and 36 statements, the results are shown in Table 2.

Table 2. Data Analysis of Student Learning Difficulty Indicators During Online Learning

No.	Indicator	Percentage (%)	Category
1.	The level of interest in science biology lessons during online learning	69.32	Medium
2.	The level of understanding of biology science subject matter during online learning	61.30	Medium
3.	Technical ability	75.09	Low
4.	Pedagogical ability	81.15	Low
5.	Technical constraints	66.34	Medium
6.	Process constraints	61.60	Medium
7.	Family care and support during online learning	70.11	Medium
	Average (%)	**69.27**	**Medium**

The data in Table 2 shows that students' learning difficulties during online learning in science biology subjects in class VIII SMPN Siak Hulu are in the medium category with a score of 69.27%. The indicator that has the most influence on the causes of student learning difficulties is the level of understanding of biology science subject matter during online learning, with a value of 61.30% in the medium category. This indicator is the most influential compared to other indicators because, during online learning, students find it difficult in terms of mastering subject matter, especially Biology, because there is no face-to-face meeting, no practicum, and no material explanation. Students who usually study face-to-face and are directly explained by the teacher now feel confused because of the lack of reason given by the teacher but are still forced to understand through doing assignments. Learning styles can affect understanding of the subject matter (Anwar, 2021; Maulah et al., 2020). In contrast to Agustiawan & Nurcahyo (2022), biology learning can still be done online using a technology that combines three-dimensional objects in real-time through media, such as Augmented Reality media.

An indicator that does not significantly affect students' learning difficulties during online learning is a pedagogical ability, with a score of 81.15%, followed by an indicator of technical ability, with a value of 75.09%, which is in the low category because the teacher has explained the material through modules, audio, or video. Still, students feel unhappy because the teacher must convey the examples or their application when learning online. The application of online learning in Indonesia is more task-oriented. Students are given assignments, and then the teacher provides assessments and comments on assignments completed by students as a form of evaluation (Syarifudin, 2020). Then the teacher tried to use technology using learning applications like Google Classroom and WhatsApp as much as possible (Yustini et al., 2021). Purwanto et al. (2020) stated that the quality of teaching and learning programs during online learning could be influenced by the competence of teachers in using technology.

The indicator of interest in biology science lessons during online learning is included in the moderate learning difficulty category with a score of 69.32% because students feel less interested in biology science lessons that are carried out online.

Then the various obstacles students face regarding technology and supporting facilities mean that not all students can carry out online learning to the fullest extent possible. Most students do not like online learning because it is challenging to master and understand the subject matter due to the lack of direct explanation from the teacher (Megawanti et al., 2020; Naidoo et al., 2022).

The next indicator is technical constraints in the medium category, with a value of 66.34% because students have limited devices (do not have personal smartphones), limited internet quota, and an unstable internet network. In line with what was stated by Syarifudin (2020) and Utomo et al. (2021), various obstacles are faced during online learning to replace face-to-face learning, such as limited signals and a lack of supporting devices because not all students come from affluent families. Students who need the proper equipment to study must find the right information technology equipment (i.e., computers or laptops, smartphones) and facilities (i.e., mobile data, Wi-Fi, and internet connections). These facilities are crucial to ensure comfortable and smooth online learning (Bringula et al., 2021; Romli et al., 2022).

The process constraints indicator is in the medium category with a value of 61.60% because students feel uncomfortable studying at home. After all, they play more or are told to help their parents, so they do not concentrate on online learning. Online learning carried out at home is less conducive than at school. Many students feel that studying at home makes it difficult to focus due to unfavorable home conditions or distractions from other family members; for example, students are often asked by their parents to help with homework during the learning process (Haidi & Hamdan, 2022; Rosdiana, 2021). In addition, students need to be more focused because they feel bored having to study independently to find information on the Internet (Megawanti et al., 2020; Utomo et al., 2021).

The last indicator, namely family attention and support during online learning, is in the medium category with a value of 70.11% because the responses of students' families to online learning seem burdensome, especially from a financial perspective. However, there are also those whose answers are mediocre. Even so, it is better if learning is done face to face. The family plays an essential role in educating and teaching knowledge to children, especially parents (Sari et al., 2021). In addition to providing knowledge to children, parents also need to supervise children's behavior, especially when using supporting devices such as smartphones. The existence of supervision and assistance from parents can help find out what obstacles students experience in learning so that online learning can run optimally (Amaruddin et al., 2020; Haidi & Hamdan, 2022; Utomo et al., 2021).

Based on this discussion, further efforts are needed from various parties to reduce the obstacles and difficulties that arise during online learning so that the learning process can run as it should. Building ICT infrastructure and integrating it into the curriculum to support the overall development of student learning is an essential criterion for successful online learning (Romli et al., 2022). Meanwhile, from the student's perspective, crucial factors for the success of online learning are accessibility (the suitable connection or device) and autonomy (the ability to set goals, manage time, and avoid distractions), and student-centered learning (Bringula et al., 2021; Rapanta et al., 2020)

CONCLUSIONS AND SUGGESTIONS

Learning that is carried out online makes it difficult for students to understand the material provided by the teacher because there is no direct face-to-face process. The emergence of learning difficulties for class VIII students of SMPN Siak Hulu during online learning in science biology subjects is influenced by the level of understanding of the material because, during online learning,

students find it challenging to master science biology subject matter. After all, there is no face-to-face meeting, practicum, or material explanation. Further research can be carried out by expanding studies on student learning difficulties during online learning.

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