

The Analysis of Problems and Alternatives in Teaching and Learning Science in SMPN 1 Soe During The Covid -19 Pandemic

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Abstract: *Pandemic Covid-19 had a significant impact on the education sector, requiring learning to be done online. This causes the science learning process in junior high school Negeri 1 Soe, changing the face-to-face learning system to online learning with using WhatsApp as a science learning medium. This study aims to analyze constraints and alternatives in the science learning process at SMP Negeri 1 Soe during the Covid-19 Includes 3 main components, namely planning, implementation and evaluation of learning. This research was carried out on 16 students and 1 teacher of science subjects using the approach qualitative descriptive. Data collection techniques used are questionnaires, interviews, and documentation. While the data analysis technique used is the Miles and Huberman model data analysis through 3 stages, namely data reduction, data display and drawing conclusions. The result of this study shows that students experience obstacles and difficulties such as, students do not have laptops, smartphone, inadequate internet network, minimal internet quota and difficulty doing the science practicum method. Based on these obstacles, the teacher provides an alternative for distributing student books containing materials and homework to students according to the time and schedule of science lessons. This is done to overcome several obstacles and reduce the burden on students during the online science learning process during the Covid-19 pandemic.*

Keywords: *Alternative; Covid-19; Constraint; Science Learning*

1. INTRODUCTION

Learning is a process that every individual undergoes in developing oneself, from a person who is considered unable to become able. The learning process is carried out intentionally, planned, and consciously, resulting in a change in the individual, from not knowing to knowing, from unable to becoming able, from not being able to read to being able to read, and so on. (Asiyah et al., 2021) In essence, learning is a form of interaction between teachers and students in providing education with various learning sources. Priharlin (Priharlin, 2018) stated that "Learning is an educational teaching and learning activity that involves students and teachers. Recently, the world has been disturbed by a global event, which is the spread of the Covid-19 virus

or Coronavirus Disease 2019 caused by the severe acute respiratory syndrome coronavirus 2 or SARS-CoV-2. This condition first appeared in Wuhan, China. The disease attacks the respiratory system of humans and infects the lungs with an incubation period of approximately 14 days. Symptoms of the virus include fever, runny nose, cough, and others. The spread of the disease has been very rapid worldwide, leading the World Health Organization (WHO) to declare it a global pandemic on March 11, 2020. Therefore, the government recommends that individuals who feel they are at risk of being infected should practice self-isolation to prevent the spread of the coronavirus (Yuliana, 2020).

Covid-19 not only causes fear among the public but also brings about significant changes in

all sectors worldwide, especially in the education sector. As a result, the government has implemented several new policies to prevent, contain and break the chain of Covid-19 transmission. One such policy in Indonesia is set through the issuance of Presidential Regulation No. 21 of 2020 on Large-Scale Social Restrictions (PSBB) ([Government of the Republic of Indonesia, 2020](#)). Since the implementation of this policy, one sector that has felt its impact is the education sector, especially in the process of student learning in schools. According to [Nafrin et al., \(2021\)](#), the Covid-19 pandemic that has occurred globally has transformed the conventional teaching and learning process conducted in classrooms to distance learning by utilizing online learning systems from kindergarten to university level. This is emphasized in the circular letter of the Minister of Education and Culture No. 4 of 2020 on the Implementation of Education Policy in the Emergency Period of the Spread of the Corona Virus Disease (Covid-19) ([Ministry of Education and Culture of the Republic of Indonesia, 2020](#)). his policy has created new problems for schools that are not yet prepared to implement online learning. In the case of SMP Negeri 1 Soe, the implementation of science learning during the Covid-19 pandemic was done through the WhatsApp application. The teacher prepared materials, instructional videos, and assignments that would be sent to students through a WhatsApp group so that students could learn the material and complete the assigned tasks by the deadline set by the teacher. However, during the implementation of online learning, some difficulties were encountered, such as students not having access to laptops or smartphones, difficulty due to a lack of internet access in their homes, limited internet quota, and struggles with conducting science laboratory experiments. These challenges tend to make students feel bored and disengaged during the process of online learning.

It should be noted that SMP Negeri 1 Soe is in a rural area of TTS district, categorized as one of the 3T areas. Consequently, online learning is not effective due to limited access to resources and infrastructure for learning. To overcome these challenges, several solutions have been proposed.

The science teacher will distribute student books containing the material and assignments, which will be delivered to each student's home. Students will then read and complete the assignments and return them according to a schedule set by the teacher. This is to overcome the limitations and reduce the burden on students during the online learning process. To address these issues, this study aims to identify the challenges and alternatives to the science learning process at SMP Negeri 1 Soe during the Covid-19 pandemic.

2. RESEARCH METHOD

This study used a qualitative approach, specifically ([Moleong, 2014](#)) descriptive approach to illustrate or describe the challenges and alternatives in the process of learning science at SMP Negeri 1 Soe during the Covid-19 pandemic, which consisted of 16 participants, including 16 students and one science teacher at SMP Negeri 1 Soe. According to [Sugiyono \(2012\)](#), qualitative research is a naturalistic research method aimed at understanding phenomena that are experienced by research subjects holistically through description in the form of words and language in a natural setting. The instruments used in this study were interview guides, questionnaires, and documentation, while the data collection technique used was triangulation, specifically through interviews, questionnaires, and documentation. The data analysis technique used in this study was Miles and Huberman's model, which involved three interactive steps: data reduction, data presentation, and conclusion drawing.

3. RESULTS AND DISCUSSION

Since the emergence of the Covid-19 pandemic, the science teacher of class VIII-5 at SMP Negeri 1 Soe has been conducting online learning using the WhatsApp application. The teacher created a WhatsApp group and prepared teaching materials, instructional videos, and related tasks, which were then sent through the group chat to the students. The students studied each material and instructional video sent by the teacher and completed the assigned tasks, which were then sent back to the teacher according to the

school curriculum schedule. Based on the data from questionnaire analysis and interviews, it is shown that during the learning process of science using WhatsApp groups, students experience several difficulties such as a lack of understanding of the material sent by teachers, unstable internet connection and minimal internet quota, as well as some students who do not have devices for online learning resulting in an ineffective learning process. Amalia (Amalia et al., 2020) states that the challenges include inadequate internet quota, unstable internet connection, and a lack of understanding among students towards the material provided. The findings also indicate that the school has not utilized the Learning Account issued by the Ministry of Education and Culture, which is an electronic account with the domain @belajar.id. Although this account is issued by the ministry and can be used by students, educators, and education staff as an account to access electronic-based learning applications such as Zoom, Google apps, and others. This is due to the lack of readiness of teachers and students to use electronic-based learning applications, as they are not yet proficient, resulting in the school choosing to use WhatsApp groups instead. The results of the survey analysis on the constraints faced by students can be seen in Table 1.

Table 1. Results of student survey analysis

Statements	Percentage Results (%)	
	Yes	No
I am happy to participate in online/remote learning process for Science during the Covid-19 pandemic.	31.25	68.75
I feel burdened by the Science learning process during the Covid-19 pandemic.	62.5	37,5
I experience difficulties in the area where I live while participating in the Science learning process during the Covid-19 pandemic	62,5	37.5
I am interested in the Science learning process that uses learning resources more than one during the Covid-19 pandemic.	62,5	37.5
I feel motivated during the Science learning process using practical methods during the Covid-19 pandemic.	37.5	62,5

Statements	Percentage Results (%)	
	Yes	No
I am able to participate in Biology learning process optimally during the Covid-19 pandemic.	37,5	62.5
I am able to learn Science more focus during the Covid-19 pandemic.	18.7	81.25
I am able to overcome the constraints during the Science learning process appropriately and easily during the Covid-19 pandemic.	25	75
I am able to apply alternatives in the Science learning process optimally	37.5	62.5
I feel supported during the Science learning process by the school facilities during online learning.	31.2	68.75
I feel supported during the Science learning process by parents/guardians during online learning	25	75

Based on the results of research conducted during online learning, the analysis of student questionnaires showed that 81.25% of respondents were not focused on learning science during the Covid-19 pandemic, while 18.75% of respondents were more focused on learning science during the Covid-19 pandemic. Students who did not have access to tools such as smartphones or laptops/computers were constrained, as indicated by the results of the analysis of student and teacher questionnaires, with 62.5% of respondents burdened by science learning during the pandemic. Meanwhile, 37.5% of respondents were not burdened by science learning during the pandemic. Students also faced obstacles during practical or experimental methods. The analysis of teacher and student questionnaires revealed that 68.75% of respondents did not enjoy learning science through online learning during the Covid-19 pandemic, while 31.25% of respondents enjoyed it. According to the analysis of the teacher and student questionnaires, 62.5% of respondents were unable to fully participate in science learning during the Covid-19 pandemic, while 37.5% were able to do so. Learning refers to a planned interactive process between teachers and students

to achieve learning objectives. Generally, learning consists of three phases: planning, implementation, and evaluation ([Asiyah et al., 2021](#)).

A. Learning Planning Phase

Learning during the Covid-19 pandemic is an important stage to be carried out in educational institutions to achieve the goals set by teachers and students. During the planning phase in the pandemic, teachers develop creative and innovative strategies, models, methods, techniques, and learning media. However, field research shows that teachers did not make any changes to the lesson plans during the pandemic, indicating that there were no efforts made by teachers to develop innovative and creative learning strategies, models, methods, techniques, and media. Based on interviews with teachers regarding the development of innovative and creative learning strategies, models, methods, techniques, and media during the Covid-19 pandemic, an IPA teacher stated that they only used available learning resources such as the Maestro IPA student book and WhatsApp as a learning source with a group chat. However, [Fauzy & Nurfauziah \(2021\)](#) pointed out that the use of WhatsApp as a learning source caused various problems experienced by students during online learning, such as intermittent internet connections and limited phone storage space. [Erni et al. \(2020\)](#) also mentioned that network constraints can hinder online learning. Therefore, it can be concluded that students faced more challenges in the area where they live. As a solution, the IPA teacher provided alternatives to overcome these challenges. For students with unstable internet connections in their residential areas, the teacher would deliver tasks to their homes in the form of soft copies or handbooks provided by the school, such as the IPA Maestro book. The IPA Maestro book also includes various topic summaries and tasks provided by the school. For students with limited phone storage space, the teacher provided alternatives such as deleting previously studied or completed files so that the new learning material can be saved on the phone's memory. Students can also replace their

memory cards with larger ones to store various learning materials.

B. Implementation Phase of Online Science Learning

The implementation phase of online science learning poses its own challenges for teachers and students at SMP Negeri 1 Soe. Based on an analysis of interviews with science teachers, it was found that "the learning process is conducted actively, involving all students and developing high-level thinking skills, resulting in effective learning processes in accordance with the educational goals of the unit. "Science teachers mentioned that during the learning process using WhatsApp groups, students faced various obstacles. Students had difficulty understanding the materials sent by the science teachers in the form of PDF files, and the materials sent were not varied enough, resulting in students becoming easily bored and losing focus during online learning processes. As [Dimiyati \(2017\)](#) explained, study fatigue is one of the problems frequently experienced by students, leading to a decrease in their study motivation, a sense of apathy, and a decrease in their academic achievement. This suggests that a lack of motivation and apathy while studying is likely caused by study fatigue. One alternative suggested by science teachers to overcome these obstacles is to provide multiple sources of learning materials, using practical or experimental methods to engage students, and creating interesting and simple video lessons to keep students interested and focused during the online learning process. Science teachers also mentioned that they would send video lessons to students for observation and require students to summarize their observations and submit their conclusions to the school based on the predetermined science curriculum, while still maintaining health protocols.

C. Learning Evaluation Phase

Evaluation phase of learning is a way to measure and assess whether the set goals have been achieved or not. This is obtained from the results of interviews on "Assessment of learning processes and outcomes used as a basis for improvement and implemented systematically."

Assessment basically includes assessing knowledge, attitudes, and skills as activities carried out to measure students' mastery of the material taught. It was found that during the Covid-19 pandemic, the science teacher at SMP Negeri 1 Soe was able to assess students' knowledge well. This is as revealed by the science teacher that during the test, students were brought to school while maintaining health protocols. This step was chosen to assess students' learning achievements during the Covid-19 pandemic. Assessment of attitudes is an activity carried out by educators to obtain descriptive information about students' behavior. The science teacher stated that the implementation of attitude assessment by science teachers at SMP Negeri 1 Soe has become increasingly difficult during the Covid-19 pandemic. This is because the interaction between teachers and students during the learning process is limited, so some teachers find it difficult to make attitude assessment instruments. From the results above, it can be said that the implementation of learning evaluation during the Covid-19 pandemic cannot be maximally carried out by science teachers at SMP Negeri 1 Soe as required by the curriculum. This is because teachers find it difficult to make assessment instruments to assess students' attitudes and skills during science learning in the Covid-19 pandemic. In line with the research by Fitrah & Ruslan (Fitrah & Ruslan, 2021), during the implementation of learning evaluation during the Covid-19 pandemic, teachers face various problems such as confusion in designing assessment instruments, low student participation, and weak student activity. Therefore, the curriculum and all subject teachers took an alternative that could be used in assessing attitudes or skills, such as techniques that were usually used during face-to-face learning will be used again during the Covid-19 pandemic because these techniques are still relevant for assessing students' attitudes and skills during online learning.

4. CONCLUSION

Based on the results of the research conducted, it can be concluded that there is a need for a planned approach to achieve the learning

objectives desired by the teacher and students. Learning generally consists of three phases, namely planning phase. The challenges faced by students are unstable internet networks and full memory in their phones. One alternative to overcome the challenges faced by students is for the teacher to provide tasks in the form of soft copies, handbooks such as the Maestro IPA book. Meanwhile, during the student phase, the challenges faced include difficulty in understanding the material sent by the teacher in the form of PDF files and the sent material being less varied, which makes students become quickly bored and their concentration in learning decreases. The teacher provides alternatives to deal with student challenges by using multiple learning sources and creating simple learning videos. As for the evaluation phase, the IPA teacher at SMP Negeri 1 Soe faces difficulties in making assessment instruments to assess the attitudes and skills of students, thus taking an alternative that can be used in assessing attitude and skills, namely the traditional technique used during face-to-face learning, which is still relevant in assessing student attitudes and skills during the COVID-19 pandemic.

5. ACKNOWLEDGEMENTS

There are several suggestions that can be given during learning activities during the pandemic period, including the following. Encourage teachers to enhance their knowledge and skills through online learning during the Covid-19 pandemic and use various teaching media to better explain teaching materials to students. For teachers, create a more enjoyable learning environment during the pandemic and use multiple teaching media to engage students while they learn at home. Teachers can also provide simple practical tasks that can be done at home with the help of parents. For students, it is recommended to learn together or discuss with classmates who live nearby while following all health protocols. Students can keep interesting notes to motivate themselves while learning at home.

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