

## ONLINE LEARNING STRATEGY DURING COVID-19 PANDEMIC TO GROW SCIENCE'S LEARNING INTEREST

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### Abstract

This research aims to find out and explore information related to the application of online learning strategies used by science teachers during the learning process in Covid-19 pandemic to foster student's interest in learning science. This research method uses the case study method. The subjects in this study were 8 science teachers and 26 students from SMP Negeri 2 Mojokerto City and SMP Negeri 4 Mojokerto City. The selection of this school is based on the ranking of the best public junior high schools in Mojokerto City which refers to the results of the 2019 National Examination, namely SMPN 2 Mojokerto has an average of 70.40 with 284 participants and SMPN 4 Mojokerto has an average of 65.01 with 239 participants. Instruments in this research is a teacher and student questionnaire which is presented in the form of Google Forms and hard files. Data collection techniques in this study were unstructured interviews, observation, and documentation. The data analysis technique in this study is descriptive analysis by determining the percentage of respondents' answers. The results in this study are 63% of science teachers have implemented online learning strategies during the Covid-19 pandemic. The synchronous discussion method is a learning method that is often applied by science teachers when learning online. The conclusion of this research is that the students' interest and attention to the learning strategies and methods applied by the teacher are able to foster students' interest in learning science.

**Keywords:** Strategy, online learning, learning interest

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### INTRODUCTION

Corona Virus Disease (COVID-19) is a pandemic disease that affects the education system in various countries (Wajdi et al., 2020). The United Nations Educational, Scientific and Cultural Organization (UNESCO) recognizes that the coronavirus pandemic has had an impact on the world's education system. The pandemic period occurred in the history of human civilization and has affected human life. The Covid-19 pandemic has enabled all education systems around the world to adopt distance learning, which is driving face-to-face learning to online learning. This is supported by the circular of the Minister of Education and Culture Number 4 of 2020 concerning the Implementation of Education during the Corona Virus Disease (Covid-19) Emergency.

The development of science and technology in the 21<sup>st</sup> century or the industry era 4.0 has added colors to almost every aspects of human life. Due to the availability of tools and facilities supported by modern technology that can help humans meet their needs, all life activities become easier (Erman et al., 2021). Online learning is

clear evidence of scientific development and a solution to the continuing education system during the Covid-19 pandemic. Using computers and accessing the internet is the basis for successful online teaching but it is not guaranteed for learners in developing countries (Zhang, 2020). Teachers and students encountered many problems in the process of distance learning. The research conducted by Basar (2021) found that are many obstacles in the process of distance learning, that is, students don't understand the content of materials delivered through online media, the internet network that often experienced interference, and the lack of mastery of online learning media made the subject matter not delivered optimally. With the current situation, learning strategies are needed as tools and solutions to transfer knowledge to students (Ayu et al., 2021).

Learning strategies are special methods or approaches applied by teachers both in student organization, materials, methods, media, equipment, and time to enable the learning process to proceed correctly (Ragin et al., 2020). Applying learning strategies can support the

learning process run effectively (Cleveland et al., 2017). Online learning is considered by the government as one of the solutions to problems for the continuity of learning from elementary school to university levels so that it can be carried out (Arizona et al., 2020). Online learning uses the internet to access materials, connect with instructors and other learners to get support throughout the learning process with the aim of gaining knowledge, understanding and growing learning experiences (Ally, 2019). At the same time, online learning during the Covid-19 pandemic has caused many obstacles, one of which is that it is difficulty for teachers to stimulate student's interest in learning.

Learning interest is an important aspect of learning (Cheung, 2018). With interest in learning, it will increase students' learning attention (Kayalar, 2017), which in turn affects learning outcomes (Jamilah & Isnani, 2017). The three important aspects that can generate interest in learning are attention, goals, and learning intensity (Cheung, 2018). People who are highly concerned about something, usually interested (Laine et al., 2017). Interest in learning does not arise spontaneously or suddenly, but interest arises from experience, habits, and learning participation in learning (Nugroho & Waslam, 2020). Interest is also closely related to comfort and demand (Sutarto et al., 2020). Studying at home during the Covid-19 pandemic is very different from study habits of face to face students. This can cause boredom. As a result, students' learning interest and motivation have declined (Flora Siagian, 2015). During online learning activities, the majority of students are silent, inactive, and difficult to interact with (Trismayanti, 2020).

Based on the description above, it is poured into a research topic with the title "Online Learning Strategy during COVID-19 Pandemic to Grow Science's Learning Interest". The purpose of this study was to find out and explore information related to online learning strategies used by science teachers during the learning process during the Covid-19 pandemic and to identify sharing media and learning methods while implementing online learning to foster student interest in learning science.

**METHOD**

This research uses case study method. The case study method is used as a reference to examine in depth the online learning strategies, online learning methods, online learning media provided by science teachers so that it affects the interest in learning and student learning outcomes during the Covid-19 pandemic. The participants of this study were science teachers at SMP Negeri 2 Mojokerto City and SMP Negeri 4 Mojokerto City with a total of 8 science teachers and 26 students of class VIII. The demographic data of the respondents will be presented in Table 1 and Table 2.

**Table 1** Demographic Data of Science Teachers

Variable	Category	Frequency	Percentage
Gender	Male	8	100%
Age	< 30 y.o.	2	25%
	30-40 y.o.	3	37.5%

Variable	Category	Frequency	Percentage
	41-50 y.o.	2	25%
	51-60 y.o.	1	12.5%
Teaching Experience	< 10 years	2	25%
	10-20 years	2	25%
	21-30 years	3	37.5%
	31-40 years	1	12.5%
Level of Education	Bachelor	8	100%

**Table 2** Demographic Data of 8<sup>th</sup> Grade Students

Variable	Category	Frequency	Percentage
Gender	Male	17	65.4%
	Female	9	34.6%
Grade	8 <sup>th</sup>	26	100%
Age	14 y.o.	3	11.5%
	15 y.o.	19	73.1%
	16 y.o.	4	15.4%

The instrument of this research consisted of a questionnaire to teachers and students which was validated by 2 lecturers of the Science Department Faculty of Mathematics and Natural Sciences Unesa and 1 junior high school science teacher. The results of the validity assessment by the validator are calculated using a scoring format with a Likert Scale will be presented in Table 3.

**Table 3** Likert Scale Criteria

Category	Percentage
Very Less Valid	20%
Less Valid	21%-40%
Sufficiently Valid	41%-60%
Valid	61%-80%
Very Valid	81%-100%

(Riduwan,2012)

Reliability of the instrument was measured based on the percentage level of agreement by 2 validators and 1 science teacher using formula (1):

$$Percentage\ of\ Agreement\ (R): \left(1 - \frac{A-B}{A+B}\right) \times 100\% \quad (1)$$

(Borich,1994)

Information:

A: The frequency of aspect with the highest value  
 B: The frequency of aspect with the lowest value. The results of instrument validation can be said to be reliable if the criteria for the reliability value are obtained 0.75 or 75% (Borich et al., 1994).

The data collection technique in this study was unstructured interviews using questionnaires related to online learning strategies formulated on Google Forms and hard files accompanied by observations at school. The implementation of this research includes the stages of pre-research, research and data analysis.

The data analysis technique in this study uses descriptive analysis by determining the percentage of respondents' answers. The results of the questionnaire will

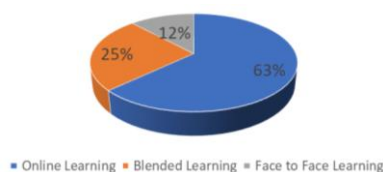
be accumulated and classified based on the topic of study. The data analysis phase begins with an analysis of questionnaires that have been distributed to teachers of each school to classify the strategies used during online learning, the methods and learning media used, obstacles and learning outcomes during online learning. The next stage of analysis is the analysis of student questionnaires to find out the obstacles faced during online learning and student responses during online learning so that students' interest in learning science is known.

In this research, observer's paradox effect is unavoidable, observer's paradox is a situation in which the observed phenomenon is unwittingly influenced by the presence of the observer/investigator. Researchers have ways to minimize the observer's paradox, namely first, participatory observation in which the informant becomes part of the conversation so as to reduce the formality of the interview process. In the process, participants engage in more natural conversations among themselves than with the researcher through questionnaires in the form of hard files so that the recorded data becomes empirical. Then the second way is by using more than one informant to allow the emergence of ideas and topics in a wider context so as to make the process natural.

**RESULT AND DISCUSSION**

Testing the validity and reliability of the instrument carried out by 2 science lecturers and 1 science teacher was declared theoretically valid and reliable. This research contains 6 study topics, namely online learning strategies, online learning methods, online learning media, student obstacles during online learning, online learning outcomes, and student learning interests.

Learning strategy can be interpreted as a pattern of learning activities that are selected and used by the teacher contextually, according to the characteristics of students, school conditions, the surrounding environment and the specific learning objectives formulated (Anitah, 2013). Learning strategies during the pandemic are certainly different from the usual learning strategies, namely face-to-face. This triggered research on learning strategies used by teachers in dealing with learning during the pandemic. The results of the study will be presented through the following diagram in Figure 1.



**Figure 1** Learning strategies during the Covid-19 pandemic

Based on Figure 1, the overall implementation of learning strategies on the topic of substance pressure in the two schools is quite varied. The highest application of learning strategies is online learning, which is 63%, followed by the application of blended learning by 25% and a small number of teachers who have started to apply

face-to-face learning strategies, which is 12%. These results indicate that online learning is still the preferred learning strategy and is widely applied by science teachers. These results are reinforced by the results of research (Mustakim, 2020) which shows a percentage of 46.6% of educators who like online learning models, while blended learning and face-to-face learning models each get a percentage of 26.7%. The results of unstructured interviews stated that online learning was chosen by the teacher as a way to break the chain of the spread of the Covid-19 virus, besides that online learning also made it easier for teachers to prepare for learning because teachers could send material well in advance of learning so that students could read and study the material.

Learning strategies consist of methods and techniques that will ensure that students will actually achieve the goals of online learning. Winarno Surakhmad (1986) states that the method is a way in which its function is a tool to achieve a goal. This applies both to teachers in teaching and for students in learning. The better the method used, the more effective the achievement of the goal. In online learning there are various methods used by teachers to achieve learning objectives. The results of research on online learning methods will be presented in Table 4.

**Table 4** Online Learning Methods During the Covid-19 Pandemic

Learning Methods	Number of Participants	Percentage
Conventional	6	75%
Discussion	8	100%
Videos	5	63%
Individual Assignment	7	88%
Group Assignment	3	38%

Based on table 4, the result show that the discussion method is always applied by all teachers in every online learning process with the percentage reaching 100%. This is because the method is very effective for teachers to encourage the activeness of students. In this case, the discussion method is carried out synchronously directly using the chat feature in the Google Classroom application followed by individual assignments with a percentage of almost 90%. These results are reinforced by the results of Pratiwi's research (2020) which states that the discussion method through social media or online learning applications is very appropriate to be applied to students who experience network problems and make it difficult for teachers to deliver learning materials through Google Classroom, Zoom and other applications so that the best alternative method is discussion method through the comments feature that has been provided by the application.

The learning process is an activity carried out by two parties, namely the teacher as a facilitator and students as learners involving intermediaries to transfer knowledge, skills, and attitudes. The intermediaries in question are learning media and learning resources that support and influence learning success. There are various learning

media used by teachers during online learning. The results of research on online learning media are shown in the following diagram in Figure 2.

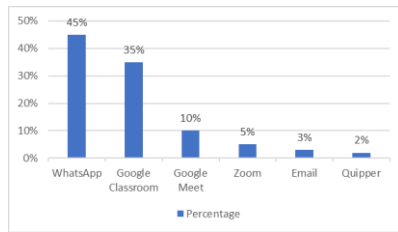


Figure 2 Learning media during the Covid-19 pandemic

Based on Figure 2, it was obtained that 45% of participants used the WhatsApp application as an online learning and communication medium during the pandemic. As we all know, the function of the WhatsApp application makes it easy for teachers and students in several ways such as sending materials, discussion activities and questions and answers that can be done practically and efficiently with the application because both students and teachers are familiar with the application. As many as 35% of participants use Google Classroom as an additional medium for learning with its various features that make it easier for educators to provide homework with objective and transparent values. Another 15% said they used Google Meet and Zoom apps to participate in video learning. Only 5% use online learning applications such as Quipper, Zenius, and messaging applications such as email, hangouts and SMS.

The success of the online learning process is determined by the use of digital technology between teachers and students. The means that support these interactions in online learning are provided by many digital platforms with various different features according to the interaction objectives to be achieved. Data related to variations in the use of digital platforms are presented in the following diagram in Figure 3.

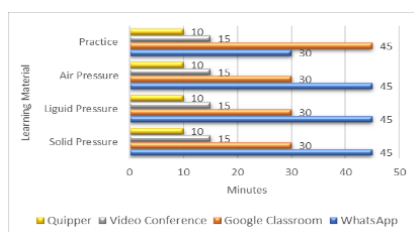


Figure 3 The use of variations in learning medium during teaching and learning on the topic of Substance Pressure using Learning Management System

Based on Figure 3, information is obtained that the use of WhatsApp gets the highest usage rate during online learning as evidenced by the average amount of time used by respondents, which is 41.25 minutes. The Google Classroom application occupies the second position with an average usage time of 33.75 minutes, followed by Video Conference applications such as Google Meet and Zoom and learning applications such as Quipper which

get an average usage time of 15 minutes and 10 minutes, respectively. The results of Lestari's research (2021) show that WhatsApp features in the form of photos, video documents, groups, and calls make it easier for teachers in the learning process. One of the advantages of the WhatsApp application is that when the internet connection is unstable, it can still be run for online learning.

In every learning process, of course, there are obstacles experienced by both teachers and students. The results of research related to the implementation of online learning strategies in schools show that there are several obstacles that are felt by students. The results are presented through the following diagram in Figure 4.

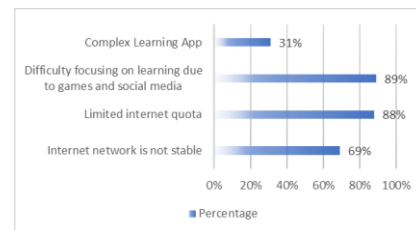


Figure 4. Student obstacles during online learning

Based on Figure 4, information is obtained that there are several obstacles experienced by students in the application of online learning. The internet quota is limited and it is difficult to focus on learning due to games and social media getting the highest percentage, which is almost 90%, followed by statements of an unstable internet network at 69% and a small number of students stating that learning applications are complicated at 31%. As we know that this is a fundamental obstacle for students and has received attention from the school so that the school provides assistance in the form of free internet quotas for all students in need. The results of the research by Fauzy & Nurfauziah (2021) show similarities to the internet network where internet connection is a problem that quite a lot of students complain about with a percentage of almost 75%. Handayani (2020) revealed that the stability of the internet connection is the main factor supporting the online learning process. Without a stable internet connection, online learning cannot run optimally.

Research on online learning strategies certainly requires supporting data to determine the extent of student knowledge and student learning activities during the Covid-19 pandemic. Therefore, researchers collect data on student learning outcomes during online and offline learning to measure student learning conditions before and during the pandemic. Student learning outcomes shown in Table 5.

Table 5 Online and Offline Learning Science Semester Final Test Scores

Criteria	Online Learning	Offline Learning
Minimal Score	20	40
Maximal Score	85	90
Mean	45.6	54.9



Based on table 5, the value of the science semester final test in online and offline learning by analyzing the comparison of these values shows that offline learning gets the highest science semester final test score, while the lowest science semester final test score is obtained when online learning. Based on the results of interviews with science teachers, it was found that offline science learning facilitates students with direct observation, experimentation, and practice learning activities. This will make students easily understand the subject matter of the phenomena that occur around them so that it has an impact on high learning outcomes. This is in line with science learning in the 2013 curriculum which emphasizes a scientific approach (Resmawati et al., 2018).

The application of online learning strategies certainly affects students' interest in learning. Interest in learning is one of the most important factors for the success of students' learning, interest arises from within the students themselves. Factors from outside the interest in learning are how the teacher teaches. The teacher's role is very important to foster student interest in learning, one of which is a fun way of teaching, providing constructive motivation (Riamin, 2016). Interest in learning also has indicators in it which will be presented in Table 6.

**Table 6** Indicators of Student's Interest in Learning

Aspect	Number of Participants	Percentage
Attention	25	96.2 %
Pleasure	20	76.9 %
Involvement	23	88.5 %
Interest	21	80.7 %

Based on table 6 as a whole, information is obtained that the attention aspect occupies the highest percentage in the indicators of students' interest in learning science, which is 96.2% with 25 students expressing attention with an average student interest in learning of 85.58%. This shows the attention and concentration of students to focus during online learning is high. This is supported by Slameto (2013) quoted by Anggraeni (2017) which states that to ensure a good learning effect, students must pay attention to the material they are learning, if the subject is not a concern of students, then they will get bored of learning and no longer like learning. In online learning, students are more active to ask questions and express opinions in online forums (Firman & Rahayu, 2020). Setiawan & Aden (2020) believe that the online learning system reduces social interaction between teachers and students leading to a lack of academic and social control that affects student learning outcomes and behavior.

## CONCLUSION AND SUGGESTION

### Conclusion

Based on the description of the research results above, it can be concluded that 63% of teachers have implemented online learning strategies well during the covid-19 pandemic. The synchronous discussion

method is a learning method that is often applied by science teachers during online learning followed by individual assignments. Majority 50% of teachers and students stated that they used WhatsApp as a medium of communication and learning because the application made it easier for teachers and students. Students' obstacles during online learning are limited internet quota and difficulty focusing on learning, but these results do not affect students' interest in learning because of the high proportion of students to focus on learning. The interest and attention of students to the strategies and learning methods applied by the teacher is able to foster students' interest in learning science.

### Suggestion

Based on the research that has been done, the researcher has several suggestions for further research, such as the need to develop innovations in online learning, both learning media and learning methods so that students are interested and not easily bored while learning. Research on online learning strategies during the Covid-19 pandemic can be used as a reference for other learning strategies. After knowing online learning strategies during a pandemic, further research is needed on post-pandemic online learning strategies.

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