22 (2), 2021, 188-197

Jurnal Pendidikan MIPA

e-ISSN: 2550-1313 | p-ISSN: 2087-9849

http://jurnal.fkip.unila.ac.id/index.php/jpmipa/

Learning Amid The Covid-19 Pandemic: What is The Attitude Towards Science of Middle School Students?

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Abstract: This article aims to find out the attitude toward science of students during online learning in the midst of the Covid-19 pandemic which is reviewed based on the TOSRA indicator. The method used in this study is a descriptive method. The sample used in the study amounted to 55 students of MTs Negeri 2 Bolaang Mongondow. The study was conducted by spreading the 4-point science attitude scale instrument to students as many as 20 statement items. The results showed that the indicators enjoyment of science lessons, leisure interest in science, further study in the field of science, and career interest in science got an average score of 77.38 in the excellent category, 74.54 in the high category, 68.36 in the high category, and 65.72 in the high category. While the overall average value at 71.38 is in the high category. Thus, it can be concluded that the attitude toward science of students in the midst of the covid-19 pandemic is in a good category. The results also showed that the TOSRA indicator is effectively used to measure students' attitudes toward science.

Keyword: learning in a time of pandemic, distance learning, attitude toward science.

Abstrak: *Artikel ini bertujuan untuk mengetahui attitude toward science siswa selama pembelajaran daring di tengah pandemi Covid-19 yang ditinjau berdasarkan indikator TOSRA. Metode yang digunakan dalam penelitian ini adalah metode deskriptif. Sampel yang digunakan dalam penelitian berjumlah 55 siswa MTs Negeri 2 Bolaang Mongondow. Penelitian dilakukan dengan menyebarkan instrumen science attitude scale skala 4-poin kepada siswa sebanyak 20 item pernyataan. Hasil penelitian menunjukan bahwa indikator Enjoyment of science lessons, Leisure interest in science, Further study in the field of science, dan Career interest in science mendapatkan rata-rata skor secara berturut-turut 77,38 pada kategori sangat baik, 74,54 pada kategori tinggi, 68,36 pada kategori tinggi, dan 65,72 pada kategori tinggi. Sedangkan nilai rata-rata keseluruhan di dapat 71,38 berada pada kategori tinggi. Sehingga dengan demikian, dapat disimpulkan bahwa attitude toward science siswa di tengah pandemi covid-19 berada dalam kategori baik. Hasil penelitian juga menunjukan bahwa indikator TOSRA efektif digunakan untuk mengukur attitude toward science siswa.*

Kata kunci: *belajar di masa pandemi, pembelajaran jarak jauh, attitude toward science.*

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DOI: http://dx.doi.org/10.23960/jpmipa/v22i2.pp188-197
Received: 18 November 2021
Accepted: 15 December 2021

▪ INTRODUCTION

The year 2019 is the beginning of the emergence of the COVID-19 outbreak (Corona Virus Disease-2019). The outbreak is the result of SARS Cov-2 (Cucinotta & Vanelli, 2020; Dhama et al., 2020). Considering the global threat, WHO as the world health agency declares COVID-19 as a public health emergency of concern to the world (H. Li et al., 2020). In line with this, WHO also declared the coronavirus as a pandemic on March 11, 2020, because of its impact affecting various sectors of life in the world (G. H.-Y. Li et al., 2021; Blake et al., 2021). The impact of the pandemic in addition to the economic sector, also affects the education sector such as school closures (Munastiwi & Puryono, 2021; Golberstein et al., 2020). As a result, the learning process becomes disrupted and results in changes in teaching strategies. Various new methods in learning have emerged one of them such as the transmission of material information over the web (Ansong-Gyimah, 2020; Reddy et al., 2020). The existence of a pandemic outbreak does not mean the learning process must be stopped, the learning process must continue to be implemented because education is a place to form the character of a competitive student.

The role of the government in this is certainly very important. To prevent the expansion of the covid-19 outbreak, Indonesia has implemented policies since 2020 in the form of distance restrictions for the enactment of physical distancing and social distancing. Similar policies are also in place around the world to lower the infection curve (Blake et al., 2021; Golberstein et al., 2020; Wang et al., 2020). In the field of education, the ministry of education and culture in Indonesia issued SE No. 15 of 2020 on the implementation of learning conducted from home or distance learning in times of emergency due to covid-19 (Winata et al, 2021). Distance learning is one of the solutions so that the learning process can continue (Golberstein et al., 2020; Wang et al., 2020). Not only is Indonesia is facing a changing situation in the country but the UK is also rapidly turning to online learning that has begun in March 2020 (Blake et al., 2021).

The disrupted learning process due to the covid-19 outbreak will certainly have an impact on students' cognitive and affective abilities (Winata et al, 2021). The creativity of a teacher is needed today. The online learning process or PJJ will not work if there is no role from an educator (Joshi et al., 2020). Therefore, with the integration of technology in online learning a teacher is required to master technology. The development of technology today encourage to create of various innovations in learning. The existence of Technology in IPA learning can simulate natural phenomena that students did not previously get when learning through books, such as animation and virtual practicums. Learning resources during the current pandemic are very varied, such as the use of e-modules, presentation of materials through zoom meetings, utilization of YouTube, and virtual lab practicum. For now, the most widely used material delivery medium worldwide is e-learning (Johnson et al., 2021; Bhuvaneswari & Dharanipriya, 2020). This allows it to affect the cognitive and affective dimensions of students.

Attitudes are very important for students, especially attitudes towards IPA lessons (Sharma et al., 2021; Hong et al., 2008; Ellis, 1993; Simpson & Oliver, 1990; Osborne & Collins, 2000). According to Oliver & Simpson (1988) attitude toward science (ATS) is defined as the extent to which a person likes science. Furthermore, Osborne et al (2003) define that ATS represents students' good or bad perception of science, when they are subjects in school and in the community. In addition, one of the important parts in improving learning achievement (Beaton, 1996) and shaping the character of students it to scientific thinking is a good ATS (Fadhil et al., 2015). Thus it can be interpreted that ATS is an expression that is shown as an embodiment of likes or dislikes about an object

about science. When students have a good attitude, it will indirectly affect their science learning achievement (Germann, 1988; Oliver & Simpson, 1988). Similarly, Barmby et al (2008) found that the attitude toward a science of students in junior high school may influence their participation rate in science in the future. A student who likes science will be easier to understand science so that it will have an impact on his learning achievement (Hsu et al, 2019). Conversely, students' bad attitude towards science will affect their low understanding of science.

Online learning allows students to change students' attitudes towards science, whether attitudes are better or vice versa. Therefore, to find out attitude toward science students in pandemic times, formulated problems in this study about how the attitude toward science students MTs N 2 Bolaang mongondow in the pandemic period. The research was conducted aimed at knowing the ATS students of MTs during the learning process conducted online using the instrument Test of Science Related Attitude (TOSRA) which consists of; 1) Enjoyment of science lessons, 2) Leisure interest in science, 3) Further study in the field of science, and 4) Career interest in science (Fraser, 1981).

▪ METHOD

This study uses descriptive methods conducted in MTs N 2 Bolaang Mongondow, north Sulawesi province, Indonesia. Respondents in the study numbered 55 people consisting of 18 students of class VII, 19 students of class VIII, and 18 students IX.

Sampling is done using simple random sampling techniques. This technique can be used when the sample taken in a population is homogeneous. The population in this study amounted to 230 students, but in this study the sample to be used was as many as 55 students. If the population or sample in the study is in large quantities, then the sample can be taken 15-25% Arikunto (2008).

The data in this study was obtained directly from the research subjects. The research was conducted by spreading the instrument science attitude scale (SAS) reviewed from the TOSRA indicator through google form that can be directly filled out by students who have links. TOSRA indicatother has the effectiveness to measure attitude toward science reinforced by the validation of research that has been done (Anwer et al., 2012; Khalili, 1987; Schibeci & McGaw, 1981; Stolarchuk & Fisher, 2001). The attitude scale instrument consists of 20 statement items. The validity of the instrument is guaranteed by validating to the relevant expert. Table 1 shows the number of SAS items per indicator.

Table 1. Number of statements per indicator

No	Dimension	Instrument	Number of questions
1	Enjoyment of science lessons	science attitude scale	5 item
2	Leisure interest in science	science attitude scale	5 item
3	Further study in the field of science	science attitude scale	5 item
4	Career interest in science	science attitude scale	5 item

The statement that will be submitted to students is a type of science attitude scale instrument. The response that has been obtained from students will be processed and presented in the form of tables. By using SAS attitude toward science instruments students can be measured appropriately (Anwar & Bhutta, 2014). Attitude scale assessment techniques in this study used a scale of 4, 3, 2, 1 (Strongly Agree, Agree, Disagree, Strongly Disagree). Before interpreting the data, the student's ATS average

score is sought with the calculation of overall score divided by the maximum score, then multiplied by 100 %.

As for looking at the average criteria of student attitude categories on each indicator, it can be seen based on criteria with grades 0-25 is a very low category, 26-50 low category, 51-75 high category, and 76-100 is an excellent or high category (Sinaga, 2017).

▪ RESULT AND DISCUSSION

At the time of the learning pandemic is still implemented, one of the efforts made by the government is to implement online learning policies throughout the region. The deployment of the SAS instrument aims to find out whether attitude toward science MTs N 2 bolaang mongondow students during pandemic times get better or vice versa. After data analysis, the average ATS value of students during online study is described as in table 2.

Table 2. Average ATS score of each indicator

No	Indicator	Average Score (%)	Category
1	Enjoyment of science lessons	77.38	Excellent
2	Leisure interest in science	74.54	High
3	Further study in the field of science	68.36	High
4	Career interest in science	65.72	High
	Overall average score	71.38	High

The magnitude of achievement of students' attitude toward science scores during the current pandemic is 71.38% which is in a very high or very good category after being interpreted based on the criteria obtained as shown in table 2.

The graph 1 shows the comparison of attitude toward science values that can be from the results of instruments shared in terms of the Enjoyment of science lessons indicator, Leisure interest in science, Further study in the field of science, and Career interest in science.

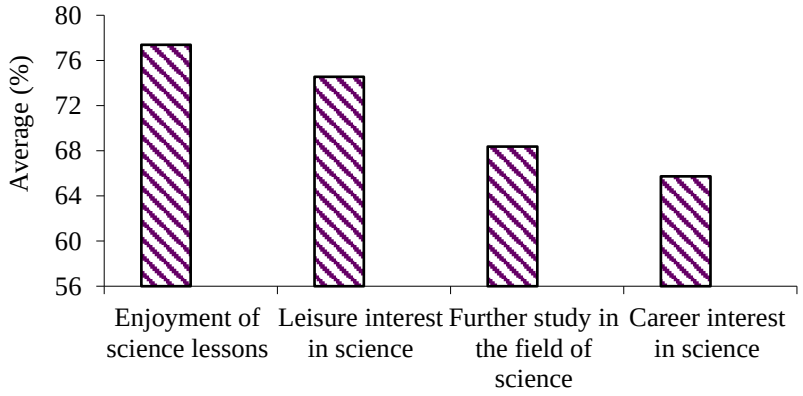

Figure 1. Average attitude toward science based on 4 indicators

Indicator Enjoyment of Science Lessons

On the enjoyment of science lessons indicator shows a positive attitude seen from the average value of 77.38 which is in the category is very good (chart 1). This shows that

students have a sense of pleasure in science even though the learning process is done online. This is in line with what is expressed by Kurniawan et al (2019) ATS is indicated by likes or dislikes, as well as expressions of accepting or rejecting an object related to science. Students who have a sense of pleasure in science will tend to be active when science learning takes place. While students who do not like science will tend to be passive when science learning takes place. In addition, a student who likes science will be easier to understand science so that it will have an impact on his learning achievement Hsu et al (2019)

Students' pleasure in learning science is due to several factors such as the use of learning resources and the way teachers teach. Learning in the midst of the current pandemic, technology is very important to be integrated as a more flexible learning method and encourage students to have professional skills talent (Trujillo Maza et al., 2016). Based on the criteria obtained, it is known that the use of learning resources in MTs N 2 Bolaang mongondow is good so that it triggers a good student attitude towards science. The use of learning resources and the way teachers present learning materials will certainly support a fun learning process.

Indicator Leisure Interest in Science

On the Leisure interest in science indicator, you get an average value of 74.54 which is in the high or good category (chart 1). Although the average rat value on this indicator is lower than the enjoyment of science lessons indicator, students' interest in science is still relatively high. This shows that students' interest in science at MTs N 2 Bolaang Mongondow is not influenced by the learning process conducted online. Students' pleasure in learning also affects the interest in willing to learn as shown by the acquisition of average scores on indicators of interest in science. When they have a sense of pleasure in learning, it will create a pleasant learning environment so that the interest in science will also increase. Students' sense of interest in science can be seen when they tend to be more active in participating in everything related to science (Hoffler et al., 2019). With the interest of students to high science will trigger a good attitude towards science. In addition, the sense of interest can affect the attention of students so that it will also increase their intelligence (Adodo, 2013).

Indicator Further Study in The Field of Science

In the Further study indicator in the field of science, the average value is 68.36 (graph 1). The value on this indicator is lower than the indicator of pleasure in sc ience and interest in science. Although there are differences, the interest in further studies in the field of science is also still classified as a high category. This shows that students and students at MTs 2 N Bolaang Mongondow are more than 50% interested in further study in the field of IPA.

Students' interest in further study in the field of IPA can be influenced by their pleasure and interest in the course of science learning. This is evidenced by the achievement of the student attitude pleasure indicator gets a very good category and on the interest indicator, the student's attitude is also relatively good. When students are interested in continuing in science, they will tend to dig into science-related information and add time to study. Thus, they will have a thought about his career in the future (Wiza et al., 2019).

Indicator Career Interest in Science

The Career interest in science indicator shows that many of them are motivated and have an interest in a career in IPA. This is indicated by an average value of 65.72 (graph 1). Although this indicator gets the lowest average value of other indicators, the average score obtained is still in the high category. The factors that encourage students' interest in a science career are influenced by their high curiosity and ideals related to science. This is evidenced by the results of the distribution of SAS instruments on career indicators in the field of science. Fulmer (2014)states that attitudes change slowly due to internal factors of the students themselves, thus affecting all perceptions about science as well as interest in pursuing a career in science. Therefore, a good attitude towards science is needed by students. Similarly, Barmby et al (2008) found that students' attitude toward science may influence their participation rate in science in the future. It can be seen that indicators of the pleasure of studying science, interest in science, and they want to continue their studies in the field of science affect the interest of students for a career in natural science.

Based on the indicators that have been mentioned, ATS students MTs N 2 Bolaang Mongondow are in the high category. This shows that the attitude toward science of students during pandemic times is still good. With these findings, it can be seen that the current pandemic period does not affect students' attitudes towards science learning. The factors that affect the attitude of students can be reviewed from internal and external factors. Internal factors usually come from the student itself, namely related to motivation, likes, and interest in learning. When students have a good attitude toward science, it will indirectly also affect their learning achievement (Germann, 1988; Oliver & Simpson, 1988; Bybee & McCrae, 2011; Newell et al., 2015) as well as an interest in a career in science (Fulmer et al., 2019). Sim ilarly, Barmby et al. (2008) found that ATS students in junior high school may influence their participation rate in science in the future. A student who likes science will be easier to understand science so that it has an impact on his better learning achievement (Hsu et al, 2019). Conversely, the bad attitude that students have towards science will have an effect on understanding science and low learning achievement.

External factors that affect student ATS usually come from the environment, such as the way teachers teach even parents, making it difficult for students to do online learning. In addition, the existence of technology that has benefits in online learning, among students there are also several obstacles, including, lack of capacity of laptops, mobile phones, networks, and lack of knowledge of students in applying technology (Layali & Al-Shlowiy, 2020; Mousavi et al., 2020; Rafiq et al., 2020). Of course, it will have an impact on student attitudes that are not good, and affect low learning achievement. The findings also show that the TOSRA instrument is effectively used to measure students' attitude toward science in the current pandemic. Research conducted by Kurniawan et al (2019) also showed that attitude toward science is reviewed from indicators contained in TOSRA is in the good category.

▪ CONCLUSION

From the results of data analysis that has been conducted based on the distribution of Attitude Scale instruments in MTs N 2 Bolaang Mongondow, it can be concluded that the Enjoyment of science lessons indicator with an excellent category has a percentage of 77.38. Then the Leisure interest in science indicator with a high or good category has a percentage of 74.54. Further study indicator in the field of science is in the high category

with a percentage of 68.36. While the Career interest in science indicator with a high category has a percentage of 65.72. The overall average score was 71.38 with a high category. Although there are significant differences from the four indicators, all are in the good category. This shows that the attitude toward science of students reviewed from 4 TOSRA indicators in MTs N 2 Bolaang Mongondow during the pandemic period is relatively good.

Advice for future research can link ATS to various cognitive dimensions, such as critical thinking, creativity, collaborative, and its ability to communicate. The researchers could also emphasize attitude toward science in students' gender types, as well as analyze whether the presence of technology can affect ats students who are in remote areas with difficult access to technology.

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