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THE EFFECTIVENESS OF THE THINK TALK WRITE (TTW) LEARNING MODEL ON STUDENTS' SCIENTIFIC COMMUNICATION SKILLS ON ECOSYSTEMS

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ABSTRACT

Learning model plays a crucial role in improving students' communication skills. This research aims to determine the level of effectiveness of the Think Talk Write learning model on students' scientific communication skills on ecosystem material in class X MAS Al-Wardah. This type of research is descriptive research using a one group pretest-posttest design. The data collected in this research is attitude data on scientific communication skills and written scientific communication skills which are constructed based on six indicators of scientific communication skills. Attitude data on scientific communication skills were collected using the observation method and data on students' written scientific communication skills were collected using the test method. The research results showed that students' scientific communication skills attitudes increased with a gain factor of 0.31 in the medium category and also students' scientific communication skills in writing with an average gain of 0.4 in the medium category. Based on these results, it can be concluded that the Think Talk Write learning model is still less effective in improving students' scientific communication skills.

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INTRODUCTION

Minister of Education and Culture Regulation Number 21 of 2016 concerning Primary and Secondary Education Content Standards states that communication is a skill that students need to have. These skills are the abilities needed to face the challenges of the 21st century (Trilling and Fadel, 2009; Pacific Policy Research Center, 2010; Zubaidah, 2016). However, the reality is that currently students' communication skills still experience problems.

Students' scientific and mathematical communication skills are still in the deficient category (Nurlaelah et al., 2020; Mardiyah and Kadarisma, 2021). This is because most of them still feel afraid, lack self-confidence and find it difficult to express opinions or ask questions that they do not understand (Fitriah et al., 2020; Muamar and Afria, 2019).

Based on the results of observations at Al-Wardah Private High School, Tembung District, Percut Sei Tuan Regency, especially in class X, it is known that learning is still teacher-centred. The methods used are lectures and assignments sourced from textbooks. The model used is discovery learning but it is not applied in the classroom. Students tend to be passive in the learning process and when asked questions, they are unable to express their opinions. This was made clear by the results of interviews with teachers who said that they felt embarrassed when asked to speak and could not carry out presentation activities well in front of the class.

From the explanation above, it can be seen that there is a problem regarding the low level of communication skills among students. This problem must be addressed because if left unchecked it will have an impact on students' understanding of concepts and their learning outcomes (Sugiarti et al., 2015). In addition, the report on Careers in Science & Engineering identified that scientific communication skills are important for survival (Sarwanto, 2016). This skill is really needed in the world of work because it is useful in conveying ideas and thoughts clearly, and can make it easier to build good cooperation between people. So the government has included it as one of the competency standards for graduates.

There are several ways that can be applied to improve these skills, including by implementing various student-centered learning models or methods (Muamar and Afria, 2019). One learning model that can be applied is the Think Talk Write (TTW) type.

The TTW type learning model is a cooperative learning model that begins with the thinking stage through reading, talking through discussions, presentations and writing by writing down the results of the discussion (Khusna et al., 2017). According to Huinker and Laughlin (in Hapsan and Harjuna, 2019), this activity can develop concept understanding and communication skills because in the learning system students can practice speaking and thinking in solving problems given by the teacher. This is made clear by research conducted by Pradani (2020), namely, getting students used to discussing can improve communication skills. Apart from that, this learning model can also make students more active in communicating their ideas in writing (Hapsan and Harjuna, 2019). It can also help students' social skills because it will foster enthusiasm for interacting with friends or learning resources (Rabawati, 2020).

Based on this background, this research aims to determine the effectiveness of the Think Talk Write (TTW) learning model on students' communication skills on Ecosystem material at the Al-Wardah Private MA.

METHOD

This research is in the form of descriptive research because it aims to describe students' scientific communication skills after being given the TTW learning process. The research design used was a Pre-Experiment Design in the form of One Group Pretest-Posttest Design. Before the treatment there will be a pretest. In this way, the results of the treatment can be known more precisely, because they can be compared with the situation before the treatment was given.

Data collection techniques in this research used two methods, namely observation and test questions. The observation sheet aims to measure and directly observe students' scientific communication skills in the learning process related to students' attitudes in obtaining and conveying information. The test aims to measure students' scientific communication skills during the learning process related to students' written knowledge of concepts. These two instruments were constructed based on indicators of student communication skills according to Levy et al. (2009), namely *Information retrieval, Scientific reading, Listening and observing, Scientific writing, Information representation, and Knowledge presentation*. The data obtained is quantitative data which will be analyzed descriptively by calculating scores. The following is the assessment format used to calculate the percentage value of

observation results and test questions (Rudibyani, 2019):

$$\textbf{Percentage value} = \frac{Total\ score\ obtained}{Total\ score\ per\ indicator} \times 100\%$$

RESULTS AND DISCUSSION

Observations of students' scientific communication skills attitudes were carried out during the learning process, namely from the beginning to the end of learning activities in class. Based on the results of the research that has been carried out, it can be seen that the attitudes of students' scientific communication skills taught using the TTW type learning model on ecosystem material were categorized as very deficient at the first meeting and had increased at the last meeting. This was confirmed by the students' test results which were classified as low in the pretest and increased in the posttest. The value of students' scientific communication skills was obtained from the accumulation of six indicators of scientific communication skills according to Levy et.al. (2009).

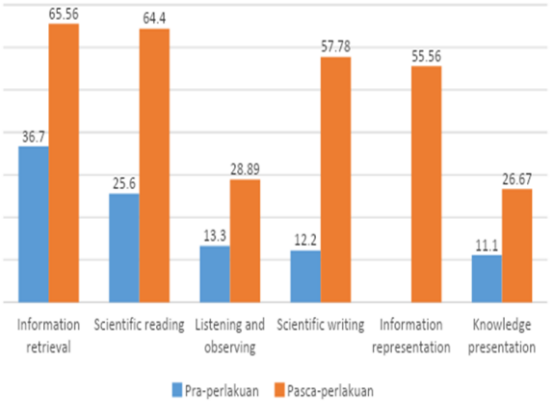

Image 1. Results of indicator data analysis

The learning carried out at the first meeting with information retrieval activities showed very poor results. This is because students' ability to access valid sources of information is still relatively low. Most of them prefer internet blog pages to find materials related to ecosystems compared to valid sources such as textbooks, articles and scientific journals. This is proven by those who cannot include relevant reasons and include reference sources when answering test questions. However, in subsequent meetings, this activity increased because the teacher guided students to look for more reliable reference sources and this was in accordance with the TTW learning model which provided opportunities for students to be more active in searching for lesson concepts via the internet or books (Dewi et.al., 2020).

In the second indicator, namely scientific reading, the average student cannot read the energy pyramid and does not want to read the available reading material. Meanwhile, at the next meeting, getting used to working on the LKPD personally made them more often read the entire contents of the reading to get information as discussion material. Students are able to sort reading material that is relevant to ecosystem learning material. In the test, they were also able to read and understand scientific literature in the form of the energy pyramid. This is because in TTW learning students are guided to continue searching for and utilizing relevant and valid information to complete assignments (Artayasa et.al., 2021).

In the listening & observing activity at the first meeting, most students were not active and enthusiastic when listening to the teacher's explanation. They also tend not to be able to draw conclusions from the results of the discussion or the results of the day's learning. Even in test questions, students cannot observe the pictures in the questions. However, after the treatment was carried out, students began to actively participate in learning by following directions and answering questions given by the teacher. Students can also write conclusions from the results of their discussions. Even when answering test questions, they were able to observe the types of ecosystem interactions in the pictures. This is in line with research conducted by Arista and Putra (2019), which explains that the TTW method can increase their desire to find out about subject matter and provoke them to put forward ideas which can later be conveyed in writing.

Learning carried out at the first meeting with scientific writing activities indicated low results. This is caused by students who cannot write answers to test questions in their own language. They tend to rewrite information obtained from books or the internet without processing it. However, at the next meeting, after getting used to answering the LKPD personally before the discussion was held, some students were able to process the information obtained and not copy it completely. This is because the TTW learning model can familiarize students with writing answers to questions in their own language (Siswanto and Ariani, 2016).

The information representation indicator can be seen if there is a decrease after treatment. This is because during the pretest, students can present answers in another form, namely in the form of graphs, even though their answers are still wrong. Meanwhile, during the posttest, students

were able to answer correctly but were unable to present their answers in another form. In learning and discussion activities, students very rarely use concept maps/graphs in their notes.

In the last indicator, namely, knowledge presentation, the average student is still embarrassed when asked to present the results of their group discussion. They are also unable to conclude the results of the discussion and tend to reread the group discussion answers. At the last meeting, some students were getting used to and confident in conveying the results of the discussion and were able to conclude them. This is in accordance with the view expressed by Artika and Sumbawati (2019), that TTW can train students to be more confident in expressing their opinions orally. Likewise with the opinion of Pradani (2020) and Oktavia et.al., (2024), who stated that this strategy can facilitate students to carry out active discussions and presentations.

Table 1. Results of the n-gain test for attitudes towards communication skills and written communication skills

Indicator	Average value			Information
	Pre-treatment	Post-treatment	N-*gain*	
Attitude observation	17,07	42,7	0,31	Currently
Written test	15,77	48,9	0,4	Currently

From table 1, it can be seen that the application of the TTW learning model is still less effective in improving students' scientific communication skills. However, achieving the percentage of scientific communication skills in attitude and writing taught using the TTW type learning model can make a sufficient contribution in improving these skills. This is because the TTW model accustoms students to be more active in participating in lessons, starting from working on LKPD personally by looking for relevant and reliable information both from books and the internet, then managing the information and writing the answers using their own language, and finally discussing by bringing together the answers. each and present the results of their work with a group of friends.

CONCLUSION

Based on the research results obtained, it can be concluded that the effectiveness of the TTW learning model in improving scientific communication skills is still in the less effective category. The level of effectiveness of the TTW learning model on students' scientific communication skills attitudes on ecosystem material in class X MAS Al-Wardah with three meetings was obtained at 0.4 which is included in the medium category. And the level of effectiveness of the TTW learning model on students' written scientific communication skills was obtained at 0.307977, which is included in the medium category.

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