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## The Effect of Think Talk Write Strategy toward Students' Information Literacy in Immune System Concept

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**Abstract:** Students' lack of information literacy skills are influenced by some factors, including educators' use of a learning strategy and their inability to link it to their students. The purpose of this study is to ascertain whether or not the Think Talk Write strategy enhances students' literacy abilities regarding immune system content. A non-equivalent pretest-posttest design and a quasi-experimental design were used in this research. Fifty-two of 11<sup>th</sup> grade students dari MAS Raudhatul Akmal Batang Kuis served as the sample who was chosen by cluster random sampling technique. An information literacy questionnaire was used as research instrument which was developed by following the information literacy principles. The ANCOVA test was used to analyze the data. The implementation of Think Talk Write strategy had a significant impact on students' information literacy skills.

**Keywords:** Think Talk Write strategy, information literacy, biology learning.

**Abstrak:** Kurangnya keterampilan literasi informasi siswa dipengaruhi oleh beberapa faktor, salah satunya adalah penggunaan model pembelajaran oleh pendidik dan ketidakmampuan mereka menghubungkannya dengan siswa yang menjadi fokus pengembangan literasi informasi di sekolah. Tujuan penelitian ini adalah untuk mengetahui apakah strategi pembelajaran Think Talk Write dapat meningkatkan kemampuan literasi siswa terkait materi sistem imun. Metode penelitian menggunakan desain pretest-posttest non-equivalent dan quasi-experimental design. Penelitian ini menggunakan sampel sebanyak 52 siswa kelas XI di MAS Raudhatul Akmal Batang Kuis yang dipilih dengan teknik cluster random sampling. Instrumen penelitian yang digunakan adalah angket informasi berdasarkan prinsip literasi informasi. Tes ANCOVA digunakan untuk menganalisis data. Penerapan strategi pembelajaran Think Talk Write memberikan pengaruh yang signifikan terhadap kemampuan literasi informasi siswa.

**Kata kunci:** pembelajaran Think Talk Write, literasi informasi, pembelajaran biologi.

### ▪ INTRODUCTION

The development of the current digital era requires us to be able to adapt to existing conditions, such as how to access various information so whether we like it or not and inevitably have to follow it so as not to be crushed by existing developments. In (Muhajang & Pangestika, 2018) states that is the ability to search, browse, analyze a the needed effectively to acquire new knowledge. Information literacy relates to language skills, because the concept of "information" here is considered as message content or communication content, while media literacy is an ongoing part of efforts to avoid the negative effects of media commercialization and can be associated with efforts to make the habit of using media in a more controlled manner under surveillance. The current definition of literacy is not just the concept of being able to read and write but is inseparable from language, genre and cultural skills (Winoto, 2022); (Desvianti, 2020) information literacy is made to develop communication needs and points of view of various populations.

Purwaningtyas (2018) states that information literacy is a part that must be mastered by each individual in managing, evaluating and understanding any information obtained and being able to communicate it back to others in a straightforward and factual manner. Muhajang & Pangestika (2018) states that information literacy is the ability to search, search, analyze information and connect with language skills, because the concept of "information" here is considered as message content or content, while literacy sustainable media with efforts to avoid the negative effects of media commercialization, so that it can be linked to efforts to make the habit of using media in a more controlled manner under supervision. Teaching information literacy through collaboration often experiences ability problems for students (Reed et al., 2022).

Information literacy has characteristics in the form of a person's ability to perform and be able to find information storage (Juditha, 2019). This skill must be mastered by all people, especially the younger generation who focus on students. In the world of education, mastery of literacy in students is very important in supporting the competencies they have. Competence can help each other if students can master literacy, or it can be assumed that members of the younger generation are literate and able to discern relevant information of students' lives (Irianto & Febrianti, 2017). This is important considering that information literacy must be the main focus for students in learning at school.

The application of information literacy learning has been widely implemented in schools, especially during a pandemic. One of them is by changing the learning system from conventional to digital. Learning that is done at home forces teachers to be more creative in making technology-based learning resources in an effort to improve information literacy systems for students. There are three ways to increase student information literacy (Gani et al., 2020). Learning that is applied in fostering literacy usually uses the demonstration method with the help of picture series media because it is able to create effective learning and can improve students' literacy abilities (Monigir, 2020). However, there are several weaknesses, including requiring quite a long time and quite expensive costs in buying media materials used in learning. So that an update is needed, (Wahyuni & Efuansyah, 2018).

Based on relevant literature to the previous work, research by Arni (2020) in the application of the Think Talk Write learning strategy to cognitive learning outcomes in protist material which was tested on the control class and experimental class that obtained results in its application there is an influence of the Think Talk Write learning strategy on biology learning outcomes in protist material for class X SMA Negeri 13 Takalar through the Think Talk Write learning strategy can be seen from the results of inferential statistics with hypothesis testing where the experimental class (in both categories) and the control class (in the sufficient category) has a probability value of  $0.006 < 0.05$ , meaning that there is an influence. In addition, Antasari (2019) explained that in his research regarding the effect of the Think Talk Write learning strategy on junior high school student learning outcomes it was stated if a significant influence was found on the use of the Think Talk Write Learning strategy on student mathematics learning outcomes in Algebraic Operations material in class VIII SMP Negeri 1 Dolok Pardamean Academic Year 2017/2018. The Think Talk Write Learning strategy is higher than the conventional Learning strategy. So that this becomes a source of reference if it is linked to Biology learning, it is hoped that it will also have an influence and achieve the goals of learning activities. Then in line with Malik et al (2022) in his research related to the effect of Think Talk Write learning on student learning outcomes, it was found that the use of the Think

Talk Write model in learning human motion system material significantly influences student learning outcomes through the post test pretest with analyzed using the t test obtained  $3.536 > 2.200$ . From this research it is also a source of reference in this study also based on the material linked and in this case the researcher developed it for other biology learning materials.

The learning strategy and its testing of learning materials need development. As in Jayanti, (2021) states that by applying the Problem Based Learning (PBL) learning strategy combined with the Jigsaw learning strategy can improve information literacy skills. The mastery of information literacy has increased, namely only on indicators of identifying, evaluating and using information effectively to formulate existing problem-solving solutions. However, there are implications from this research, namely for educators, which in this case is related to the context of higher education, not aimed at students who are the object of developing an information literacy system in learning at school. Think Talk Write learning is to familiarize students with thinking and communicating with friends, teachers, and even with themselves, developing meaningful problem-solving to understand teaching material, developing students' critical and creative thinking skills.

A variety of learning methods is needed that can facilitate the development of students' information literacy. Then in subsequent research the Think Talk Write type learning strategy was carried out to determine the information literacy of high school students (Artayasa et al., 2021). A Followed by (Suwanto et al, 2021) states that learning Thinking Talk Write (Think Talk Write) in Indonesian language learning materials for writing skills in elementary schools can improve student learning outcomes with a positive correlation. 6% and SMA/equivalent 53.2%. Therefore, it can be concluded that learning thinking talk writing on Indonesian language learning materials for writing skills in elementary schools can improve student learning outcomes with a positive correlation. 6% and SMA/equivalent 53.2%. So, it can be concluded that learning thinking talk writing on Indonesian language learning materials for writing skills in elementary schools can improve student learning outcomes with a positive correlation.

It is known that there are many significant results from the application of Thinking Talk Write (Think Talk Write) to learning materials which encourage further research by applying them to other materials. Thus the update of this research includes updates from previous research that has been carried out by integrating it with topics that discuss material about the problems of everyday life, especially in the field of Biology, in this case it is related to the material on the immune system. So based on the background above, the purpose of this study was to determine the effect of the Think Talk Write model on students' information literacy skills in other materials tested, one of which was in the immune system material. It is hoped that the results of this study can be used as a reference source in developing the effect of the Think Talk Write model on students' abilities.

## ▪ **METHOD**

### **Participants**

Thirty students from eleventh graders of MAS Raudhatul Akmal was acted as the experimental group, and twenty-two students as the control group. Sample was chosen using a cluster random sampling technique.

### Research Design and Procedures

This study was carried out at MAS Raudhatul Akmal Batang Kuis. utilizing a non-equivalent pretest-post test design and a quasi-experimental method. A random control class and an experimental class served as the treatment in the study. The Think Talk Write learning strategy was used as the independent variable, and the student learning outcomes in relation to information literacy were used as the dependent variable. Before and after using the Think Talk Write learning strategy to improve students' information literacy skills, both the control group and the experimental group took a pre-test. The information literacy questionnaire had 18 statements that students were required to check off during this activity.

### Instruments

The data collection instrument was a questionnaire (instrument test) consisting of 18 validated question instruments and adjusted them to the following indicators. The questionnaire provided is closed, in the form of a statement adjusted to the answer choices in the form of a Likert scale 1-4 where 1 (strongly disagree), 2 (disagree), 3 (agree) and 4 (strongly agree).

**Table 1. Questionnaire indicators**

<b>Literacy Aspect</b>	<b>Indicator</b>	<b>Statement</b>
Formulate information needs	- Identify the topic of the problem from the information needed	- I can determine the topic myself without having to be determined by the teacher
	- Create keyword terms according to information needs	- I am able to find information using keywords or terms needed to find the information I am looking for
	- Make a research statement framework that relates to the topic of information sought	- I am able to make a conceptual framework statement in finding the information I am looking for
	- Describe the relationship between the concepts of information to be found	- I am able to put together a description of the information concepts I am looking for
Finding and accessing information	- Determine the source of information to be used	- I can determine keywords to search for information that is in accordance with the topic of the task given by the teacher
	- Access the required information sources	- I can use search (and or not) to search for

		information
		- Apart from books, I use the internet, dictionaries, magazines, articles to get information
Select and sort information	<ul style="list-style-type: none"> <li>- Able to get the information found</li> <li>- Analyze the suitability of the information found</li> <li>- Able to read quickly to determine the information sought</li> <li>- Make a note of the information found.</li> </ul>	<ul style="list-style-type: none"> <li>- I can sort information according to what I need</li> <li>- I can distinguish information in the form of fact, opinion or fiction.</li> <li>- I can find the information I need.</li> <li>- I can read quickly in determining the information needed</li> <li>- I am able to make note-points important in finding the required information</li> </ul>
Evaluate information as needed	<ul style="list-style-type: none"> <li>- Ability to compare new knowledge with existing knowledge to determine added value to the information found</li> <li>- Bring together main ideas to form a new concept for the information found</li> <li>- Conduct self-assessment of information skills directly</li> <li>- Be able to see data sources contained in that information</li> </ul>	<ul style="list-style-type: none"> <li>- I can read the results of tasks that I have done well</li> <li>- I can check information to get accurate information</li> <li>- I can sort information in a logical order</li> <li>- I understand the information conveyed in the form (diagrams, structures, illustrations) and can compare which information is more relevant for my use</li> </ul>
Follow ethics related to access and use of information resources	<ul style="list-style-type: none"> <li>- Able to be responsible by writing down sources of information in writing, both reference sources and bibliography</li> </ul>	<ul style="list-style-type: none"> <li>- I can make a bibliography of the information I get</li> <li>- I can find reference sources from scientific articles</li> </ul>

**Data Analysis**

Analysis of Covariance (ANCOVA) was used as the method of data analysis. By controlling for other quantitative changes, ANCOVA aims to determine the effect of treatment on changes in response. The homogeneity and normality tests are the ANOVA

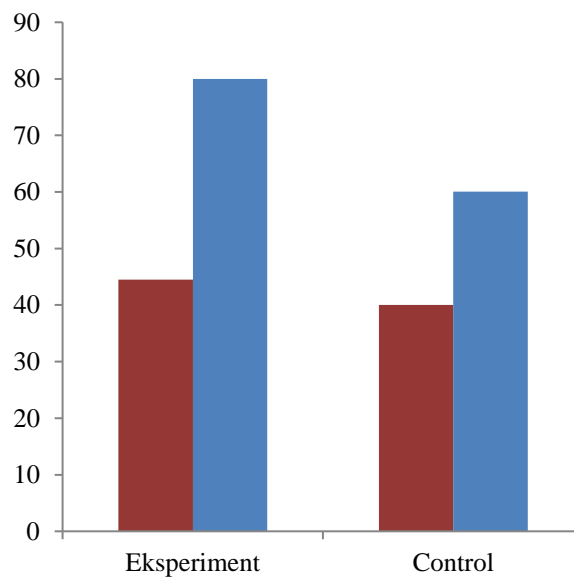
requirements tests in this study. SPSS version 25 for Windows was used for the ANCOVA test.

## ▪ **RESULT AND DISSCUSSION**

Based on the results of several tests, the following is a determination of how the Think Talk Write learning strategy affects students' information literacy in the immune system content:

### **Descriptive Analysis**

This test was conducted to explain how research data, such as the amount of data, maximum and minimum values, average values, and standard deviations (standard deviations), were obtained. Figure 1 depicts the descriptive findings.



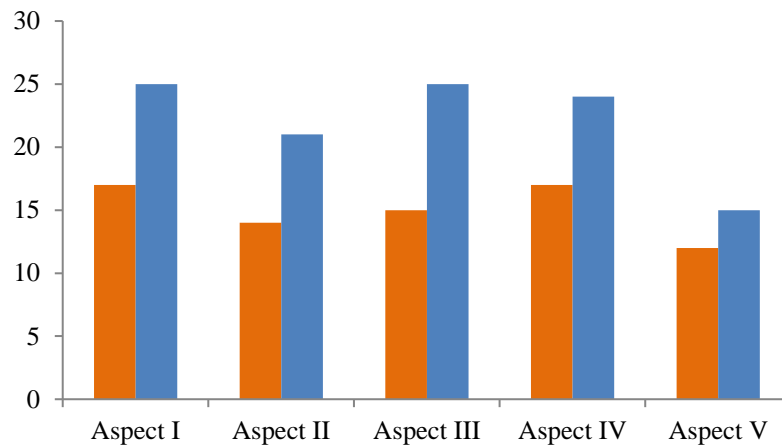
**Figure 1.** Descriptive Statistics in pretest (red) and posttest (blue)

According to Figure 1, the results of the student information literacy obtained from the results of the pretest and posttest scores in learning activities are increasing. of 44.49 with a standard deviation of 5.5, whereas the experimental class's mean (mean) post-test had a standard deviation of 5.8 and was 80.00. The control group's average pre-test value was 40.00, with a standard deviation of 3.4, while the control group's average post-test value was 60.00, with a standard deviation of 7.8. According to these data, the application of the Think Talk Write learning strategy improves learning outcomes in the experimental class in comparison to the control class. Conventional learning strategys typically improve information literacy among students, with an average of 80.00 in the high category.

### **Literacy Analysis**

An analysis of literacy aspects was carried out in order to explain the results obtained in each aspect through a questionnaire for the control class and the experimental class with pretest and posttest which are explained in the following diagram. Literacy aspect I: Formulate information needs, aspect II: Finding and accessing information,

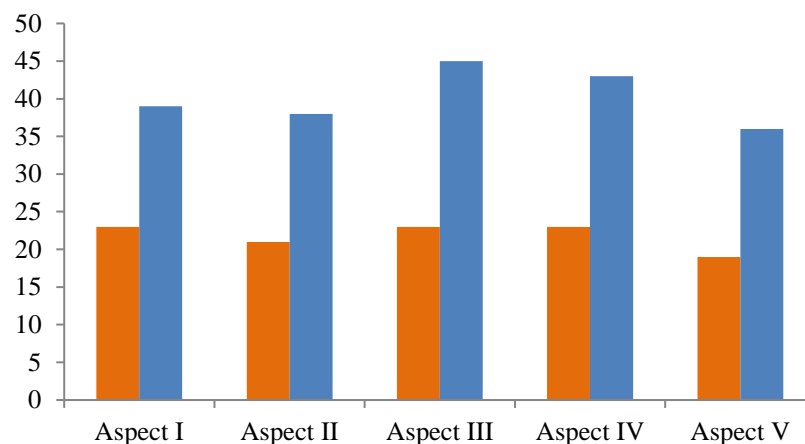
aspect III: Select and sort information, aspect IV: Evaluate information as needed, aspect V: Follow ethics related to access and use of information resources.



**Figure 2.** Literacy skills analysis in control group. Pretest and posttest presented in orange and blue, respectively

Based on the results of the analysis of the control class in fig 2 explaining that in aspect I the results were obtained by 17% (pretest) and 25% (posttest) and the difference in the increase was obtained by 8%. Then proceed to aspect II, the results are 14% (pretest) and 21% (posttest) and the difference in the increase is 7%. Then in aspect III the results were obtained by 15% (pretest) and 25% (posttest) and the difference in the increase was obtained by 10%. Then in aspect IV the gain was 17% (pretest) and 24% (posttest) and the difference in the increase was obtained by 7% and in aspect V it was obtained by 12% (pretest) and 15% (posttest) and the difference in increase was obtained by 3%.

Then proceed to the analysis related to the results in the experimental class as shown in figure 3.



**Figure 3.** Literacy skills analysis in experimental group

In the results of the experimental class analysis in fig 3 explaining that in aspect I the results were obtained by 23% (pretest) and 39% (posttest) and the difference in the increase was obtained by 16%. Then in aspect II the results were obtained by 21% (pretest) and 38% (posttest) and the difference in the increase was obtained by 17%. Then in aspect III the results were obtained by 23% (pretest) and by 45% (posttest) and the

difference in the increase was obtained by 22%. Then in aspect IV, it was obtained by 23% (pretest) and 43% (posttest) and the difference in increase was obtained by 20% and finally in aspect V it was obtained by 19% (pretest) and 36% (posttest) and the difference in increase was obtained by 17% . When compared to the results of the difference in each aspect of the control class with the experimental class, a significant increase in level was obtained.

### Linearity Test

The linearity test looks for a significant linear relationship between the two variables being examined. The linearity test's findings are presented in table 1.

**Tabel 2.** Linearity Test

		Sum of Squares	df	Mean Square	F	Sig.
Experiment and control group	(Combined)	194.197	7	27.742	3.877	.015
	Linearity	151.253	1	151.253	21.140	.000
	Deviation from Linearity	42.944	6	7.157	1.000	.463
Within Groups		100.167	14	7.155		
Total		294.364	21			

Based on the data for the significance value (sig): The Deviation from Linearity Sig value can be derived from the previous output. of  $0.463 > 0.05$ . Thus, a significant linear relationship between the experimental and control class variables can be drawn. The normality test is used to see if the sample has the potential to be normally distributed. If the significance value is greater than 0.05, it can be considered normal. Both control class data and experimental class data were used to test the hypothesis. The results of the normality test applied to the sig data. The posttest and pretest data in the experimental and control group has  $\text{sig} > 0.05$ . It is possible to draw the conclusion that these data have a normal distribution. A homogeneity test is the next step. A homogeneity test is performed at this point to demonstrate that two or more groups of sample data from the population share the same variance. The basic rule for making decisions in the homogeneity test, according to Widiyanto (2010), is that the variances of two or more population groups are homogeneous if the significance value, or sig, is greater than 0.05. The significance value is 0.277 ( $\text{sig} > 0.05$ ) so that it is possible to assert that the data's variance is uniform.

### ANCOVA test

The data in table 3 indicate that the significance level for the class variable is  $0.000 > 0.05$ , indicating that the posttest value received different treatment. Therefore, it can be concluded that the Think Talk Write model influences students' information literacy skills. ANCOVA results can be seen in table 3.

**Tabel 3.** ANCOVA Test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	5167.470a	2	2583.735	58.709	.000
Intercept	4128.368	1	4128.368	93.807	.000



Pretest	90.547	1	90.547	2.057	.158
Class	4687.563	1	4687.563	106.513	.000
Error	2156.453	49	44.009		
Total	269740.000	52			
Corrected Total	7323.923	51			

The first is **Think**, at this stage students are invited to think more creatively in determining the main ideas of the problem or important points can be taken from an article given by the teacher or activities in answering questions and thinking about possible solutions, then students are able to make small notes on an article that has been read and then be able to rewrite things that are not understood using their own language. The next stage is in the form of **Talk**, at this stage students are emphasized to be able to hone how to speak or discuss with friends and teachers during the learning process. In this aspect students are given the opportunity to express the ideas that are in their minds from the results of literacy sources that they get from books and other forms of information. The process of issuing these opinions is carried out in discussion activities between groups by accommodating ideas and reflecting on each other's opinions expressed to others. This activity is able to make students more active and courageous to appear to speak in front of many people. Then the last stage is **Write**, in this last stage participants are required to be able to rewrite what they get after going through the first and second stages of activities. The article contains information, namely first the basis of the concept used, the relationship with the previous material, the settlement model and the solutions obtained. The writing must use its own language that is easily understood by the writer and the reader.

In this case added that the Think Talk Write learning strategy based on the activities carried out makes students more self-trained, confident in expressing creative and innovative ideas. It was also added that when student were used to talking or discussing with other friends in discussion forums during the learning process, these students have a more confident character in conveying the ideas they want to convey. The last stage is to make students creative in systematically writing down the results of the understanding they get in discussions to make it easier to understand the learning material as outlined in the form of written text using their own language which is to understand. This is in line with (Anwar, 2017) stating that deep learning as well as in Think Talk Write learning helps students understand themselves in the value of self-confidence between study groups and is able to synergize learning with other students.

This is in line with Widyasuti (2019) stating that Think Talk Write learning can be done to build thoughts in creating ideas, expressing ideas and sharing ideas with friends, and writing down the results of their thoughts in the learning process carried out in class. This process gives students the opportunity to solve problems and then be able to express them to the people around them and be able to solve these problems directly. Also added by Erlija (2018) there are several advantages to the Think Talk Write model, namely, 1) Students are trained to think logically and systematically, 2) students are able to express ideas and ideas from the learning process in their own writing, 3 ) able to train students to express ideas orally and in writing properly and correctly., 4) can encourage students to be more active in participating in the learning process, 5) students are trained to construct their own knowledge as a result of the student's writing, 6) students are trained to be more independent in completing a problem, 7) Students are able to create self-confidence and courage when issuing their his opinion.

The relationship between Think Talk Write learning strategy and increasing information literacy in students is found in the first aspect, namely formulating the information needed. At the think syntax stage, indicators are needed that must be looked for in identifying the problems contained in the questions and the article text given by the teacher, so that students know what information is needed to solve the problem. The second aspect is being able to find and access information through print and digital media. The third aspect of students in solving problems is being able to sort out the information obtained so that it fits the topic of the problem to be solved. Then the next aspect is being able to evaluate the information obtained from print media, digital media and from the exchange of opinions between friends which are discussed through the talk or deliberation stage in resolving the main issues that occur.

The final stage is the ethical aspect related to access and use of information sources. At this stage occurs in the syntax write or write. In writing, the results of the information obtained must come from trusted sources and are valid research results and can be tested for truth. The writing which is the result of a scientific article must include the author and the sources obtained as proof of truth and ethics which must be made during the writing process or the write stage. This aspect was obtained based on previous research written by Jayanti (2021). Previous research is relevant to the obtained outcomes, such as studies (Sritaman et al., 2014), which can use the Think Talk Write learning strategy to improve reading comprehension and critical thinking abilities in Indonesian language instruction. The findings of the study by Putriani et al. (2017) was able to explain the Think, Talk, and Write learning strategy's stages. The following study, conducted by Artayasa et al., (2021) details the overall results of the Think Talk Write strategy for high school students' information literacy, which shows that this learning strategy produces quite competent students' information literacy. Based on this, the research conducted further improves the results of information literacy by combining the stages of the Think Talk Write learning strategy and aspects of information literacy in it. This results in the child's ability to increase more than before in the process of learning and knowledge.

#### ▪ **CONCLUSION**

The current study concluded that the Think, Talk, and Write learning strategy is effective and provides a significant effect on the students' information literacy skills at MAS Raudhatul Akmal Batang Kuis. In addition, the research conducted can serve as a guideline for Biology teachers to be more active in creating innovative learning models for students as well as being taken into consideration in improving the quality of education in the field of student information literacy. Suggestions in research that this research requires media facilities and tools that support student information literacy activities, furthermore it is expected that future research will conduct further research with different materials and samples.

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