



# The Effect of Learning Everyone is a Teacher Here in Combined Differentiate Learning on Science Literation Ability and Learning Motivation

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**Abstract:** This study aims to determine the effect of the learning strategy Everyone is A Teacher Here combined with a differentiated learning strategy on scientific literacy skills and learning motivation on environmental pollution material. This research method is a quasi-experimental design with a pretest-posttest control group design. The sampling technique is by means of cluster random sampling. The instruments used in this study were descriptive tests and motivation questionnaires. Results Based on the data analysis of scientific literacy ability, the posttest average in the experimental class was 74.2 while in the control class it was 60.89 with the results of hypothesis testing (t-test) obtained tcount (3.59) > ttable (1.68) indicates that H0 is rejected and H1 is accepted. Furthermore, based on the results of the motivational data analysis, the average percentage in the experimental class was 85.01% while in the control class it was 74.98%, with the results of hypothesis testing (t-test) obtained tcount (9.20) > ttable (1.68) indicates that H0 is rejected and H1 is accepted. The results of this study indicate that there is an influence of the learning strategy Everyone is a Teacher Here combined with a differentiated learning strategy on scientific literacy skills and learning motivation for environmental materials for class X MIPA UPT SMA Negeri 1 Wajo.

**Keywords:** Differentiate Learning; Everyone is Teacher; Learning Motivation; Science Literacy Ability

## Introduction

Advances in science and technology in the 21st century present new challenges for students, where students must be able to actualize and live a certain level of life (Tabroni et al., 2022). The solution to make it happen is to take an education. Education is important in this century to ensure that students not only acquire the ability to use information technology and media, but also the ability to learn and innovate. One of the skills needed is scientific literacy skills (Narut & Supardi, 2019; Robbia & Fuadi, 2020). Literacy ability is the ability to understand, communicate, and use scientific knowledge to develop positive attitudes and choices about oneself and the environment and make decisions based on

scientific information (Adriyawati et al., 2020; Yuliati, 2016).

PISA (Program for the Evaluation of International Students) is a worldwide educational assessment that aims to track the effects of the education system on reading, math, and science achievement. Since the PISA evaluation was conducted, namely in 2000, 2003, 2006, 2009, 2012, and 2015, Indonesia has participated in the evaluation. According to the 2015 PISA survey, Indonesia is ranked 62 out of 70 countries (Effendi-Hasibuan et al., 2019; Kuswidyanarko et al., 2017; Sulistyorini et al., 2019), remaining in the bottom 10 for science learning achievement. According to the 2015 PISA assessment, the average score of science learning achievement in Indonesia is 403, compared to the global average of 493 (Kastberg et al., 2016). However, the

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average score is an increase from the previous year. According to PISA results in 2012, Indonesia's average score in science learning is 382 (Afina et al., 2021). The low average of scientific literacy in PISA shows that many Indonesian students are unable to apply the scientific principles taught to natural events around them (Rubini et al., 2018; Setiawan et al., 2017). Implementing learning strategies that increase learning motivation is one way to overcome the above problems (Rohmawati, 2022). This will encourage students to be involved in the learning process so as to achieve the success of the product, process, and scientific attitude. One of them is by combining the Everyone is a Teacher Here learning strategy and the differentiated learning strategy.

Everyone is a Teacher Here learning is a good learning strategy used to encourage individual and group involvement in the classroom (Impati & Jamila, 2018; Suprijono, 2015). Students act as "teachers" for other students by using this learning strategy. Students have the opportunity to learn new things, explain scientific events, draw conclusions based on facts, and understand the characteristics of science through the use of the Everyone is a Teacher Here learning strategy (Fitri et al., 2019). In addition, learning Everyone is a Teacher Here can motivate students, reduce learning boredom, and encourage participatory learning.

Differentiated learning strategies are methods or philosophies to teach information effectively to all students in a class with various backgrounds. This includes ways to acquire content, process, construct, or reason ideas, and develop learning products and measures to ensure that all students in the class can learn (Marlina, 2019). Differentiated learning is used to address each student's needs, learning preferences, or learning styles. Differentiated learning is one step towards autonomous learning, where teachers are free to choose the teaching system and students are free to adopt the learning method that best suits their needs.

From teaching experience at SMA Negeri 1 Wajo shows that there are still many students who have low learning motivation because they are bored with the learning strategies given because they are not in accordance with their learning styles. In addition to low learning motivation, scientific literacy skills also need to be considered. So that teachers need to apply learning strategies that are able to answer these problems because with high learning motivation, the scientific literacy ability of students can also be affected. Therefore, the researchers combined the two learning strategies at SMA Negeri 1 Wajo in the subject of Biology with environmental pollution material and examined the results of scientific literacy skills and students' learning motivation after their application.

## Method

### *Research Design*

This research is quasi-experimental research which is defined as a research method used to seek certain treatments for others in uncontrolled conditions. The design used in this study was a pretest-posttest control group design. In this design, there were two groups that were chosen randomly, then given a pretest to determine the initial state of whether there was a difference between the experimental group and the control group.

### *Population and Samples*

The population in this study were students of class X MIPA UPT SMA Negeri 1 Wajo which consisted of 4 classes, namely class X MIPA 1 to class X MIPA 4 which consisted of 136 students. The sample in this study were students in two classes from 4 existing classes, namely students in class X MIPA 1 and designated as the experimental class and students in class X MIPA 2 being designated as control classes with the sampling technique used by the researcher, namely the cluster random sampling.

### *Instrument*

The instruments used in this research are tests and questionnaires. The instrument used to measure students' scientific literacy skills on the material being studied is in the form of description questions and to measure students' learning motivation by using a learning motivation questionnaire.

### *Procedure*

The stages achieved in conducting this research consist of 3 main stages including the preparation stage, the implementation stage and the final stage. The research preparation stage includes: (1) taking care of a pre-research letter at the Faculty of Teacher Training and Education, Puangrimaggalatung University, (2) conducting observations at schools to obtain information on the learning system that has been carried out on biology subjects, especially environmental material for background, (3) selection of learning methods to be used, preparation of lesson plans (RPP), which are used in the learning process, (4) compiling research instruments, and (5) consulting research instruments with supervisors. Then the implementation of the research includes: (1) delivering the goals, objectives and working methods to students regarding the Everyone is a Teacher Here learning strategy and differentiated learning strategies, (2) providing a pre-test of scientific literacy skills in the control class and experimental class with material environmental pollution, (3) carrying out a different learning process and continued with the learning process Everyone is a

Teacher Here on environmental pollution material by educators, (4) carrying out a post-test of scientific literacy skills in the control class and experimental class with environmental pollution material, (5) distributed a questionnaire on learning motivation in the experimental class. Furthermore, the final stages of the study include: (1) collecting pre-test and post-test data on scientific literacy skills from the experimental class and control class, as well as a learning motivation questionnaire from the experimental class, (2) conducting pre-test and post-test assessments of literacy skills. students' science with scores on the rubrics that have been made, (3) analyzing all the results of the research data obtained, (4) concluding the results of data analysis and compiling research reports in accordance with predetermined systematics.

*Data Analysis Techniques*

Data analysis techniques in this study analyzed the data used, including the N-Gain test, normality test, homogeneity test, and hypothesis testing using t test.

**Result and Discussion**

Based on the research results of scientific literacy skills by combining Everyone is a Teacher Here learning combined with differentiated learning strategies, students' test results were obtained on the description of the subject matter of Environmental Pollution Biology. Data from the test instrument through the students' pretest and post-test learning outcomes get the results in the Table 1.

**Table 1.** Pretest and Posttest Data for Control Class and Experiment Class

Score	Control Class		Experiment Class	
	Pre-test	Post-test	Pre-test	Post-test
Max	65	80	73	90
Min	32	45	33	45
Average	48.95	60.89	53.16	74.2

The Table 1 shows the results of the pretest and post-test in the two sample classes. Where the average value of the control class before treatment obtained 48.95 and after being given treatment it obtained an average of 60.89. Similar to the experimental class, the average value before being treated was 53.16 and after being treated, the average value was 74.2.

Then the data on students' learning motivation in this study had 30 questions. Learning motivation scale with five choices, namely always, often, sometimes, rarely, and never. The following is the value of the learning motivation questionnaire instrument in the control class and the experimental class.

**Table 2.** Results of the Recapitulation of the Values of the Learning Motivation Questionnaire Learners

Statistics	Class	
	Control	Experiment
Highest Score	125	135
Lowest Score	100	116
Total number	2137	3188
Average amount	112.47	127.52
Average percentage	74.98%	85.01%
Description	High	Very High

The Table 2 shows the results of the recapitulation of the value of the learning motivation questionnaire in the two sample classes. Where the highest score in the experimental class is 135 and the lowest score is 116, while the highest score in the control class is 125 and the lowest score is 100. The total number in the experimental class is 3188 and the average number is 127.52, while the control class has a total of 2137 and the average number is 112.47. Then the average percentage value in the experimental class is 85.01% in the very high category, while the average percentage value in the control class is 74.98% in the high category. Furthermore, the results of the t-test in both classes can be seen in the Table 3.

**Table 3.** Hypothesis Test Results of Scientific Literacy Ability

Class	t-test result		Results	Test decision
	t <sub>count</sub>	t <sub>table</sub>		
X MIPA 1	3.59	1.68	t <sub>count</sub> > t <sub>table</sub>	H <sub>1</sub> accepted
X MIPA 2				

Based on the data in Table 3 shows t<sub>count</sub> > t<sub>table</sub> that is 3.59 > 1.68. In accordance with the criteria for hypothesis testing, it can be said that H<sub>1</sub> is accepted and H<sub>0</sub> is rejected. This indicates that using the Everyone is a Teacher Here learning strategy combined with differentiated learning can have a good influence on students' scientific literacy skills at UPT SMA Negeri 1 Wajo.

**Table 4.** Hypothesis Test Results of Learning Motivation Questionnaire

Class	t-test result		Results	Test decision
	t <sub>count</sub>	t <sub>table</sub>		
X MIPA 1	9.20	1.68	t <sub>count</sub> > t <sub>table</sub>	H <sub>1</sub> accepted
X MIPA 2				

Based on the data in Table 4 shows t<sub>count</sub> > t<sub>table</sub> that is 9.20 > 1.68. In accordance with the criteria for hypothesis testing, it can be said that H<sub>1</sub> is accepted and H<sub>0</sub> is rejected. This indicates that by using the learning strategy Everyone is a Teacher Here combined with differentiated learning can have a good influence on student motivation at UPT SMA Negeri 1 Wajo.

This research was conducted at UPT SMA Negeri 1 Wajo in the even semester of the 2021/2022 academic year. The study was conducted once a week following the schedule of subjects at school. The stages carried out before the research were making learning tools such as lesson plans and test questions. The data collection techniques carried out at the time of the study were in the form of tests and questionnaires. This test aims to measure the scientific literacy ability of students which is carried out before the treatment and the final test before being given treatment. While presenting a questionnaire to measure students' learning motivation.

This research took place in 2 meetings per class. At the first meeting of both the control class and the experimental class, the researcher introduced himself to the students in turn. After that, it was continued with a pretest to determine the students' initial scientific literacy skills before being given treatment on environmental materials. From the data from the pretest control class, the lowest score was 32 and the highest score was 65 with an average of 48.95, it can be said that the literacy ability of students was in the very low category. While the results of the experimental class pretest the lowest value is 33 and the highest value is 73 with an average of 53.16 which belongs to the very low category. At the next meeting in the experimental class, the researchers began to apply Everyone is a Teacher Here learning combined with differentiated learning on environmental pollution material. While the control class researchers only applied conventional learning methods in this case lectures.

After the treatment in each control and experimental class, students were given a post-test. In the control class the lowest score was 45 and the highest was 80 with an average of 60.89. In the experimental class the lowest score was 45 and the highest score was 90 with an average of 74.2. When data on the scientific literacy ability of students in both classes was obtained, the researchers conducted a hypothesis test to see whether there was an effect or not, it was said that if  $t_{count} > t_{table}$  then  $H_0$  was rejected and  $H_1$  was accepted. Furthermore, the analysis of the learning motivation questionnaire which consists of 30 statements with five scales, namely the answers are always, often, sometimes, rarely, and never. The minimum score that may be owned by the respondent is 30, while the maximum score is 150. The results of the recapitulation of the value of the learning motivation questionnaire can be concluded that in the experimental class the highest score is 135 and the lowest score is 116, while in the control class the highest score is 125 and the lowest score is 100.

Then it shows  $t_{count} > t_{table}$  which is  $3.59 > 1.68$  and the t-test of the learning motivation questionnaire shows  $t_{count} > t_{table}$  that is  $9.20 > 1.68$ . In accordance

with the criteria for hypothesis testing, it can be said that  $H_1$  is accepted and  $H_0$  is rejected. This indicates that by using the learning strategy Everyone is a Teacher Here combined with differentiated learning can have a good influence on student motivation at UPT SMA Negeri 1 Wajo.

Based on the calculation results, it can be concluded that using the Everyone is a Teacher Here learning strategy combined with differentiated learning strategies in teaching can affect the scientific literacy ability and learning motivation of students (Amaliyah et al., 2020; Fitri et al., 2019; Nurul, 2020). This is in line with the results of research conducted by Fitriah et al. (2020) about the effect of the application of Everyone is a Teacher Here on science learning outcomes in terms of critical thinking skills with research results that there is a significant interaction between learning methods and critical thinking skills on students' science learning outcomes. This is in accordance with what was stated by Lestari et al. (2015) which stated that learning using Everyone is a Teacher Here in addition to being able to train students to speak, this learning also trains them to think deeply, analyse, evaluate based on their facts, experience and knowledge then conclude and train students to think at a higher level so as to improve students' scientific literacy skills. Indirectly students will also learn to do or do something (learning to do), such as formulating ideas, making conclusions, solving problems, and so on, this will also help students to improve their literacy skills.

Then the research conducted by Lubis et al. (2019) on the effect of the Everyone is a Teacher Here method on student motivation and learning outcomes with the results of the study that the use of the Everyone is a Teacher Here method had an effect on student motivation and learning outcomes (Sembiring, 2020). This is because learning Everyone is a Teacher Here is an appropriate learning strategy used to get class participation as a whole and individually (Suprijono, 2015). So that it encourages student participation from the beginning in the learning process and can also increase student motivation in the learning process. When students are active in the learning process, it means that students dominate the learning activities. With this students actively use the brain, both to find the main idea of the subject matter or solve problems.

Furthermore, in the literature review conducted by Wahyuni (2022), about a differentiated approach in science learning with the results of a literature review analysis, namely the application of a differentiated approach is able to improve student learning outcomes and can be applied in science learning because it is able to accommodate students' learning needs. Tomlinson (2001) said that we can categorize student learning needs, at least based on 3 aspects, namely student

learning readiness, student interest, and student learning profile. Based on the three aspects in categorizing student learning needs, we can conclude that to optimize learning and of course the results of student learning, learning is needed that is developed according to student learning needs, thus encouraging the growth of high learning motivation because students learn with the learning styles they want.

## Conclusion

The scientific literacy ability of students of class X MIPA 1 in the subject of biology material on environmental pollution has increased by using the learning strategy Everyone is a Teacher Here combined with a differentiated learning strategy compared to class X MIPA 2 using conventional methods. So that the use of the learning strategy Everyone is a Teacher Here combined with a differentiated learning strategy can affect scientific literacy skills and students' learning motivation on environmental pollution material for class X MIPA UPT SMA Negeri 1 Wajo.

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## Conflicts of Interest

The authors declare no conflict of interest.

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