

# PLAN for Informational Text to Foster Students' Reading Literacy

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# **ABSTRACT**

This research investigates the significance of differences in reading comprehension skills between students who were taught using the PLAN strategy and students who were taught using the conventional strategy. Furthermore, this study aims to find out the effectiveness of the PLAN strategy in reading comprehension skills for informational text. This skill supports students in improving their reading literacy. Our study is a quantitative research that used a quasi-experimental method with a pretest-posttest control group design. The result of the analysis requirement indicated that pretest and posttest scores were normal and had homogenous distribution. The results of this research showed significant differences in reading comprehension skills between students who were taught using the PLAN strategy and students who were taught using conventional strategy. The study of the PLAN strategy carried out in this research can still possibly be developed into several further studies by focusing on several other aspects with a variety of new perspectives.

Keywords: Reading comprehension, Reading literacy, Reading literacy, PLAN strategy, Informational text.

#### 1. INTRODUCTION

The development of science and technology in the 21st century requires students to have literacy skills. Literacy development becomes essential as a basic comprehension to prepare knowledge for the future [1]. Good reading skill, especially reading comprehension, is a must for students to become a literate generation who can deal with the rapid flow of information. Reading is a key to getting knowledge. However, reading is not straightforward lifting the words of the page. Reading comprehension is a complex process of identifying, interpreting, and understanding written material perception to solve the problem [2]. In reading comprehension, students are trained to get the ability to understand the text and interpret information based on the features of the text and their knowledge [3]. In other words, reading comprehension is considered the real core of the reading process.

Despite decades of reading comprehension research, international reading scores indicate a degradation. According to the most recent PISA in 2018, students in Indonesia ranked 72<sup>nd</sup> of 77 countries [2]. PISA is a literacy, mathematic, and science survey for 15-year-old adolescents. This score showed that Indonesian students' literacy skills are poor. Many things influence this. One of them is the use of ineffective learning strategies. Strategy instruction may result in a shallow

representation of a text and interfere with the deeper processing of the content [4].

Reading difficulty was the main reason for failing in class [5]. One of the problems in reading comprehension is difficulty in understanding written text. In many instances, some children cannot find their way in the written text they must read [6]. In addition, students also experience difficulties such as poor phonological recoding, poor visual word recognition, struggle to learn to read words fluently, phonological dyslexia, and understanding the meaning of what they read [7]. Learning reading comprehension for informational text has even more complex levels of difficulties, among others: technical vocabulary, high density of facts, unfamiliar content, and cognitively demanding concepts [3].

Previous research has revealed how to improve reading comprehension skills in various ways, including learning strategies applications. One research investigates how to teach reading strategies and analyzes the benefit of intervention studies for the students. The strategies used in the study include clarifying, questioning, summarizing, and predicting [8]. In addition, reading comprehension ability can be improved by making concept maps that represent organized knowledge necessary for effective learning. Concept maps help to answer focus questions that are context-dependent [9].

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This research proposed a PLAN strategy to enhance students' reading comprehension ability for informational text. The PLAN strategy guides students to predict the content of the text and presents it in a concept map that will help them understand the whole content of the text [10]. Based on the preliminary data analysis, the hypothesis that was drawn that there will be a significant difference in reading comprehension skills in students who receive reading comprehension lessons with the PLAN strategy and students who receive reading comprehension learning with conventional strategies; and PLAN strategy is effective to fostering reading comprehension learning for informational text.

#### 2. METHODS

This research is a quantitative research that used a quasi-experimental method with a pretest-posttest control group design. The researchers give a pretest before the learning process and a posttest after the treatment to know students' reading comprehension scores. The quasi-experimental method is the program or policy viewed as an intervention in which a treatment – comprising the elements of the program being evaluated – is tested for how well it achieves its objective as measured by a prespecified set of indicators [11].

The purpose of this research is to investigate the significance of differences in reading comprehension skills between students who were taught using the PLAN strategy and students who were taught using conventional strategy. Furthermore, this study also aims to find out the effectiveness of the PLAN strategy in reading comprehension skills for informational text. The research design [12] [13] is described in Table 1.

Table 1. Pre-test and post-test control group design

Group	Pre-test	Variable	Post-test
EG	O <sub>1</sub>	Χ	O <sub>2</sub>
CG	O <sub>1</sub>	-	O <sub>2</sub>

where EG is the experimental group, CG is the control group, O1 is the pre-test, O2 is the post-test, and X is the treatment with PLAN strategy.

This research has two variables, i.e., dependent and independent variables (see Table 1). The reading comprehension ability acts as a dependent variable, and the PLAN strategy is an independent variable. The population of this research was all the 8<sup>th</sup> graders in State Junior High School 4 Sleman, as many as 127 students. The sample in this research was the randomly selected class from the population using cluster random sampling. This sampling was done by drawing lots of all 8<sup>th</sup> graders in State Junior High School 4 Sleman and taking two classes as the sample. Class VIII B is selected as an experimental group and VIII A as the control group. Then one more class is chosen as an instrument test class.

The instrument in this research was a reading comprehension test. The test that was used in this research is a multiple-choice question. The research instrument must be tested first to determine its validity and reliability. The test instrument was obtained from the instrument test result previously given to a class outside the sample, i.e., class VIII C. The expert judgment carried out the content validity test in this research to know the relevance of the research instrument with learning materials. The construct validity was done with the number of alpha Cronbach in the Iteman software to know the reliability of the instrument, and 0,873 was obtained. It means that this instrument research has high reliability. Based on the instrument test result of 60 questions, 40 questions will be given to the control and experimental groups as pre-test and post-test.

#### 3. RESULTS AND DISCUSSION

# 3.1. Requirement Analysis

Requirement analysis is carried out with normality test and homogeneity test. The result of the distribution normality test was obtained from the pre-test and post-test scores of the control group and experimental group. The distribution normality test used Kolmogorov-Smirnov and Shapiro-Wilk normality test techniques. If the p-value is greater than the significance level of 5% (0,05), the data can be said to be normally distributed.

Table 2. Result of normality test

No	Data	Data Kolmogorov- Smirnov		Result
1	Pre-test CG	0.200	0.550	Normal
2	Post-test CG	0.200	0.179	Normal
3	Pre-test EG	0.074	0.484	Normal
4	Post-test EG	0.155	0.120	Normal

Based on the data in Table 2 of the results summary of the normality test, it is known that the distribution of the pre-test and post-test scores for the control group and experimental group data is normal. This conclusion can be obtained by looking at the p-value, which is more than the significance level of 5%.

After the distribution normality test was carried out, the variance homogeneity test was carried out. A data is homogenous if the calculated significance value is greater than the significance level of 5%. The homogeneity of variances test was assisted by SPSS 20.0 program. The following summarizes the result of the homogeneity of variances of the pre-test and post-test data for the control and experimental group (see Table 3). Based on the data presented in Table 3, it can be seen that the result of the significance of the pre-test was 0.876, and the post-test was 0.103. Both of that data is greater than the significance level of 5%. Thus, it can be concluded that



the pre-test and post-test data of reading comprehension ability in this study had homogenous variances or did not have different variances.

Table 3. Result of Homogeneity Test

Data	Lavene Statistics	df1	df2	Sig.	Result
Pre-test	0.025	1	62	0.876	homogeneous
Post-test	2.747	1	62	0.103	homogeneous

# 3.2. Hypothesis Test

#### 3.2.1. Results of the First Hypothesis Test

The first hypothesis of this study is that there is a significant difference in reading comprehension ability between the group that taught reading comprehension treatment with PLAN strategy and the group that taught by conventional strategy. The differences in reading comprehension ability can be identified by determining differences in the post-test scores.

The data analysis used was an independent sample ttest. The t-test analysis in this study proposes to examine differences between the experimental group treated by PLAN strategy and the control group treated by conventional strategy. The data requirements are declared significant if the p-value is less than the significance level of 5%. The result of the t-test of pre-test and post-tests for the experimental and control groups are presented in Table 4.

**Table 4.** Result of t-test for the experimental and control group

Data	t <sub>count</sub>	df	p-value
Pre-test control group and	0.919	62	0.362
experimental group			
Post-test control group	3.015	62	0.004
and experimental group			

The result of the t-test analysis of the pretest score presented in Table 4 shows that the p-value is greater than the significance level of 5%, which means that there is no significant difference in reading comprehension ability between the control group and the experimental group. In other words, the control and experimental groups had the same reading comprehension ability level. Furthermore, the p-value for the post-test data is smaller than 5% significance level (0.004 < 0.05). It means that the post-test scores between the control and experimental groups have a significant difference.

#### 3.2.2. Results of The Second Hypothesis Test

The second hypothesis in this study is that the PLAN strategy is effective in learning reading comprehension for 8<sup>th</sup> graders of State Junior High School 4 Sleman. The effectiveness of the PLAN strategy in learning reading comprehension can be determined by looking at the differences in the pre-test and post-test scores of the experimental group with t-test analysis and gain score calculation. The result of the t-test analysis for the pre-test and post-test scores of the experimental group is presented

**Table 5.** Result of t-test for the experimental group

Data	t <sub>count</sub>	df	p-value	Result
Pre-test and post-test	21.614	31	0.000	significant
experimental group				

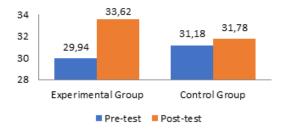
in Table 5.

The data presented in Table 5 shows that the p-value for pre-test and post-test scores of the experimental group is 0.000, which is smaller than the significance level of 5%. The second hypothesis was also tested by calculating the gain scores. The gain scores are the difference between pre-test and post-test scores in the control and experimental groups. Table 6 will show about statistical

**Table 6.** Statistics data of pre-test and post-test scores

Data	Contro	ol Group	Experimental Group		
Data	Pre-test	Post-test	Pre-test	Post-test	
N	32	32	32	32	
Highest score	38	35	36	38	
Lowest score	26	27	24	29	
Average	31.18	31.78	29.94	33.62	
Modus	29	31	30	32	
Median	31	32	30	33.5	
Standard	2.934	2.181	2.928	2.685	
deviation					

data of pre-test and post-test scores.



**Figure 1** Comparison of The Average Pre-test and Posttest Scores.



The average pretest and posttest scores of reading comprehension for the experimental and control group are presented in Figure 1. Blue bars represent the mean of the pre-test scores, and the orange bars represent the mean of the post-test scores. Based on the data from Table 6 and Figure 1, the experimental group's gain score is 3.68, which is greater than 0.60 of the control group's gain score.

#### 4. DISCUSSION

## 4.1. Reading Comprehension Ability

Reading comprehension is an advanced stage of reading. Students have to understand the contents of the reading, choose the contents of reading implemented in their lives, and foster their curios and critical attitude [14]. Therefore, the learning process of reading comprehension needs an effective learning strategy to help students connect their knowledge to new information from the text.

This research was conducted in three stages, namely pre-experimental stage, experimental stage, and postexperimental stage. The pre-experimental stage is carried out by giving a pre-test to the research sample. Based on the result of the pretest score analysis, it is known that the control group and experimental group have the same reading comprehension ability. After doing the pretest, the control group was given reading comprehension learning using conventional strategy, and experimental group was given treatment using PLAN strategy. Learning reading comprehension in the experimental stage was carried out as many as four times. different treatment in learning comprehension for the samples aims to determine differences in reading comprehension ability between the control and experimental groups.

Conventional strategy is a learning strategy commonly used by teachers of State Junior High School 4 Sleman in teaching reading. The application of conventional strategy in this study begins by reading the text, interpreting vocabulary, answering questions related to the test, and concluding the content of the text. Interpreting vocabulary is an essential part of this strategy intended to improve reading comprehension skills. This corresponds with the opinion that attending to students' vocabularies is important in enhancing their ability to read, write, speak, listen, and think [15].

Learning reading comprehension in the experimental group was done by using the PLAN strategy. The PLAN is an acronym for study-reading strategy with four distinct steps that students are taught to use before, during, and after reading. The PLAN strategy is the right strategy in learning to read, especially to improve understanding of science and informational text [16].

PLAN strategy has a more interesting learning process by making predictive concept maps. In addition, the PLAN strategy can encourage students to think actively, evaluate and respond to information in the text, and elaborate on the knowledge they already have with information that has just been obtained from the text.

There are four PLAN strategy steps [10]. The first step is to *Predict*. Students have to predict the content and structure of the text. This activity is also intended to assess the potential for the reading task or purpose. Students create credible maps or diagrams of the author's ideas. Chapter titles are placed in the middle of maps or diagrams and then equipped with subtitles, highlighted words, and information as major and minor branches. This map represents the student's initial prediction of the relative importance of the concepts and the ordered relationship among them. The making of this map is done after student's preview reading.

The second step is to *Locate*. Students are asked to identify all the information into known and unknown by placing checkmarks  $(\checkmark)$  next to the known concepts and question marks (?) for the unfamiliar concepts. These activities help students recognize the knowledge they already have and what they do not know.

After that, students were asked to read the text intensively to get detailed information about the text's content. Then, students are directed to *Add* words, phrases, or ideas to their prediction concept map to complete the information, explain information they do not know, or add concepts they already understand. Suppose students have difficulty extending or confirming the information in the concept map with information from the text. In that case, they can reread or use a dictionary or glossary to check the meaning of certain concepts or regard the point on the prediction map as unimportant to the text's central message. This step is crucial for students to recall the information and apply it in the next step.

The *Note* is the final step. After reading, students note their new knowledge and use it to fulfill their tasks. In this process, students can recreate their concept maps, make a presentation, write the new knowledge in journals, or discuss the concept with their friends. This last step can also be done by making notes on the prediction concept map that has been made and identifying whether their predictions are correct or not [17].

The key to implementing the PLAN strategy is to provide lots of practical guidance and opportunities for students to work together with their friends. Therefore, students can learn to preview a passage, make predictions, determine new and already known information in a concept map, develop and expand their knowledge, and reorganize detailed information from concept maps.

After the reading comprehension learning activity was done, the process was carried out by giving a post-



test to the control and experimental groups. The result of the t-test score of post-test of reading comprehension ability showed a p-value of 0.004 with t<sub>count</sub> 3.015 and df 62. The p-value is smaller than the significance level of 5%. This indicates a significant difference in reading comprehension ability between the control group that was taught using conventional strategy and the experimental group that was taught using PLAN strategy.

# 4.2. The Effectiveness of PLAN Strategy

The effectiveness of the PLAN strategy in reading comprehension learning in 8th grade State Junior High School 4 Sleman can be known after the experimental group gets reading comprehension learning using this strategy. The t-test analysis of the experimental group's pre-test and post-test score data showed that the p-value was 0.000 with t<sub>count</sub> 21.615 and df 31 in significance level 5%. The p-value was smaller than the error standard of 0.05. The test result shows a significant difference in reading comprehension ability between students who are taught using the PLAN strategy and students who are taught using the conventional strategy.

The effectiveness of the PLAN strategy can also be seen based on the increases in the average score for pretest and post-test in the experimental group. The average pre-test and post-test of the experimental group increased by 3.68, while an increase in the pre-test and post-test control group was just 0.60. This shows that the PLAN strategy is more effective than the conventional one.

The readers must use the explicit information contained in the text, background of knowledge, and personal experience to make hypotheses and summarize them into an inferential understanding [18]. Inference-making and background knowledge have strong direct and indirect effects on comprehension [19]. Inference-making plays a stronger direct role in comprehension than vocabulary [20]. This follows the opinion that readers can gain their new knowledge by building a bridge between new knowledge and what they already know [21] [17]. Activities of making inferences and linking the background knowledge with the information of text are stimulated through the stages of reading in the PLAN strategy.

Several factors affect reading ability, including physiological hearing), factors (vision and intellectual/cognitive factors, environmental factors (school and family environment), and psychological factors (motivation and interest) [19]. PLAN is another strategy that is especially helpful for secondary students when trying to comprehend what they read in textbooks [22]. To comprehend text, students need to develop their reading motivation. Motivation in reading is necessary to encourage students to be fond of reading. PLAN strategy can improve students' motivation in learning reading comprehension. This is because the PLAN strategy's steps are not boring [23]. Students are invited to make

concept maps and allowed to decorate according to each other's creativity.

Based on the description, it can be concluded that a strategy that can help students understand reading information is needed in learning reading comprehension. Students need to be involved in active and interesting learning so that the learning process will be fun and make it easier to understand the reading content. The PLAN strategy is proven to create effective learning reading comprehension. Thus, it can be used as an alternative strategy in implementing reading comprehension learning.

Several studies were conducted related to the implementation of the PLAN strategy to improve reading comprehension skills. First, research titled "Improving Reading in a Middle School Science Classroom" discusses how the middle school science teacher would change his instruction over a school year as he was mentored in teaching with the PLAN strategy [18]. That study also discusses whether his students were able to know how they could learn using the PLAN and how they perceived their use of the strategy [24]. That study also examines the effectiveness of PLAN strategy during learning but has not compared it with conventional strategy as was done in this research. Compared to this research, this study uses informational text with varied themes ranging from science, socio-culture, religion, etc., not limited to science texts as in that study.

The other relevant research is a study entitled "The Use of TPRC and PLAN Strategies in Improving EFL Learner's Reading Comprehension" [25]. That research aims to compare the two strategies on students in a university. This is different from this study which examines the effectiveness of PLAN strategy by comparing it with the use of conventional strategy commonly used by the teacher. Thus, the teacher can use the result of this study as a reference to determine more effective strategies in the learning process. This is in line with one of the main goals of teachers to provide effective learning to achieve the best result according to the learning objectives.

The results of this project were limited in several ways. First, this project was conducted in a small school district in Sleman with a limited number of eight grade students. Second, the research was conducted over a relatively short period of time so that students may not be optimal in receiving the benefits of the PLAN strategy. Therefore, the result of this study cannot be generalized to other grade levels or school systems. It is hoped that future research will carry out more in-depth studies with intensive research in a more extended period of time to obtain better results.

## 5. CONCLUSION

Based on the result of the research and discussion described, it can be concluded that there is a significant difference in reading comprehension skills in students



who receive reading comprehension lessons with the PLAN strategy and students who receive reading comprehension lessons with conventional strategy. The difference in reading comprehension ability, as indicated by the results of the t-test scores of the control and the experimental group, was that a p-value of 0.004 was obtained, which was smaller than the error level of 0.05 (0.004 < 0.05). Furthermore, the PLAN strategy is effective to use in learning reading comprehension of informational text. The effectiveness of the PLAN strategy in learning reading comprehension was shown from the calculation of the t-test scores of the pretest and posttest reading comprehension abilities of the experimental group, which showed the t-value of 0.000, which was smaller than the error level of 0.05 (0.000 <0.05). The effectiveness of the PLAN strategy can also be seen in the gain scores of the experimental group, which is 3.68.

The PLAN strategy carried out in this research can still be developed into several further studies by focusing on several other aspects with various new perspectives. Future research can analyze the effect of implementing the PLAN on other language competencies such as writing and speaking. The activity of making a concept map on the PLAN strategy also allows researchers to identify and analyze the correlation between the implementation of the PLAN strategy with students' critical thinking skills, analytical thinking skills, and learning motivation. In addition, further research can develop the PLAN strategy as a basis for making modules or literacy books to guide students in reading activities. The PLAN strategy can also be developed by involving information technology (IT), for example, into applications or games, so that it can allow learning to read using PLAN strategy online and offline.

#### **AUTHORS' CONTRIBUTIONS**

All authors conceived and designed this study. All authors contributed to the process of revising the manuscript, and in the end, all authors have approved the final version of this manuscript.

## **ACKNOWLEDGMENTS**

This research was supported by the International Conference on Madrasah Reform of Ministry of Religion. Therefore, the researchers are grateful to Component 2 Ministry of Religious Affairs, especially the ICMR committee. The researchers thank Dra. Warih Jati Rahayu, M.Si. as the headmaster of State Junior High School 4 Sleman for permitting the team to research the school she leads.

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