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The Effect of Discovery Learning Model on Students' Explanatory Text Writing Skills

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ABSTRACT

This study aims to investigate the effect of discovery learning model to develop students' writing ability of explanatory text of seventh grade students. This research used quasi experimental method with non-equivalent control group design. It consisted of experimental class and control class. The population in this study is class VII with a total of 256 students. In this study, the classes that were used as VII-1 as the experimental class and VII-2 as the control class. The results of the post-test calculation are the average of the experimental class and the control class, the normality test shows that the data is normally distributed and the homogeneity test results show that the data variance is homogeneous. Based on the results the experimental class post-test has an average value of 76.34 and the control class 70,15. The t test of the post-test data shows that αα = 0.05, t-count= 2,02>> t-table = 1,9989 meaning that H0 is rejected, meaning that there is a difference in the writing skills of explanatory texts students who are taught using the discovery learning model and students who are taught using conventional learning method.

Keywords: discovery learning model, writing ability, explanatory text, quasi-experimental research.

INTRODUCTION

The 2013 curriculum was developed to provide opportunities for students to be more active in learning and thinking creatively. In addition, as a professional teacher, they must be able to create creative-innovative learning so that the learning process in the classroom can change behavior and have a goal, namely obtaining maximum learning outcomes for each student [1, 2]. Maximum learning outcomes are obtained from good learning quality [3]. Good learning quality is quality with a learning process that involves students as a whole, while the teacher acts as a facilitator, innovator and motivator [4]. Indonesian language learning in the 2013 curriculum uses a text-based approach so that the basic competencies for Indonesian language subjects contain competencies related to several texts that students must achieve. Text-based learning includes observation texts, descriptive texts, expository texts, explanatory texts and short story texts [5, 6].

Language skills learning covers four aspects, namely listening skills, speaking skills, reading skills and writing skills[7]. Writing skills are very important skills in life, not only in education but also in community life[8]. Writing skills are one of the language skills that students must have. By writing, students can express or express ideas or opinions, thoughts and feelings that they have[7]. In addition, it can develop students' critical thinking and creativity in writing[9]. Writing is a language skill that is used to communicate indirectly or communicate in writing[9] Writing also requires good skills so that what we write can be understood by the reader. Writing skills are one of the factors that are less popular with students. Because most students will feel that they cannot write an essay, including writing an explanatory text.

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Explanatory text is a text that explains or describes natural or social processes or phenomena[10]. The purpose of writing an explanation text is to explain how something works or to provide a statement of how something can happen. Writing an explanation text answers the questions "how" or "why"[11]. Students' skills in writing explanation texts must be improved because with the skills of writing explanation texts, students can find out about natural or social phenomena in their surroundings [12, 13]. Explanation texts can also be in the form of essays that explain or describe the process of a natural or social phenomenon [14], for example the phenomenon of a volcanic eruption or a flood so that students know how natural or social phenomena occur. In order for students' interest in writing to be motivated, a learning model is needed that can stimulate students' ideas in writing explanatory text

Based on an initial observation that have been conducted by researchers with Indonesian language education teachers in Junior high school, there were several students who had not met the minimum completion criteria in writing explanation texts so that the results obtained were not optimal. This is shown from the learning process of giving assignments, namely writing explanatory text exercises, as the minimum completion criteria applied to the Indonesian language subject at this school is 72 out of 100. In reality, the current problem is the use of inappropriate learning models or media in writing explanatory texts. So, teachers must choose a learning model or media that can encourage students that they are able to write. In addition, other factors are the lack of student motivation in learning Indonesian, limited knowledge, ideas, and concepts in writing explanatory texts, and the lack of student interest in learning Indonesian [15] [16].

To overcome the low ability of students in writing explanatory texts, researchers provide a solution with a learning model that can make students more creative and innovative in writing explanatory texts. This learning model is the discovery learning model. The discovery learning model is a learning model that provides opportunities for students to discover a concept [17]. Discovery learning emphasizes more on the discovery of concepts or principles that were previously unknown to students [18][19]. So, the discovery learning model is learning that does not directly present the lessons to be taught, but directs students to find the lesson material that has been previously instructed[20]. The reason the researcher chose this learning model is because the discovery learning model involves students to learn to find out for themselves the process of natural phenomena that occur in the surrounding environment so that students can easily write explanatory texts. Based on the background above, this study focuses on students' writing skills in learning using the discovery learning model.

METHODS AND METHODOLOGY

This study used the Quasi Experimental method with the type of Nonequivalent Control Group Design. The researcher used research with the type of Nonequivalent Control Group Design because the researcher did not form a new class, but used an existing class. This study used two groups consisting of an experimental group using the discovery learning model and a control group using the conventional learning model. The population in this study were seventh grade students of junior high school in Tangerang, hence, the sample were taken only two classes (VII-1 as control class and VII-2 as experiment class). In each class there are 32 students, whereas the total population is 256 students. Data collection techniques are an important factor for the success of the research. This is related to how to collect data, so researchers use test techniques. Before the learning action is carried out in the classroom, a pretest is first carried out to determine the initial abilities of students. After the learning action is carried out in the classroom, a posttest is then carried out to determine the abilities of students related to mastery of the subject matter taught by giving a number of questions. Pretest and posttest are tests used to measure students' abilities or understanding of explanatory text material about landslides. The test used is in form of an essay test. Data analysis techniques in quantitative research used statistical analysis. There are two types of statistics used for data analysis in research, namely descriptive statistics and inferential statistics [21]

RESULTS

Pretest and Posttest Descriptive Data

In the initial stage, researchers process data in the form of descriptive statistics. Researchers summarize and present data in the form of tables, graphs, or histograms. Furthermore, from the results of the pretest and posttest score

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calculations, researchers calculate and determine the mean, mode, median, standard deviation. Below are the result of descriptive statistics:

Table 1. Descriptive Statistics

Type of test	N Sample	Class	Lowest	Highest	Mean	Median	Mode	Std. Deviation
Pretest	32	Control	30	80	57.62	58.3	60.28	13.28
		Experiment	30	85	63.53	63.79	62.8	11.30
Posttest	32	Control	40	87	70.15	71	73.7	12.63
		Experiment	40	90	76.34	78.74	81.9	11.9

The results of the calculation of research data regarding the results of the control class pretest with a total of 32 students. The lowest score was 30 and the highest score was 80. Therefore, from the calculation results, it is known that the mean score achieved during the pretest was 57.62. The median was 58.3. The mode value was 60.28. While the standard deviation was 13.28. In contrary, the results of the calculation of research data regarding the results of the experimental class pretest in writing explanatory texts with a total of 32 students, the lowest score was 30 and the highest score was 85. Therefore, from the calculation results, it is known that the mean score achieved during the pretest was 63.53. The median was 63.79. The mode value was 62.8. While the standard deviation was 11.30.

The results of the calculation of research data on the results of the post-test of the control class with a total of 32 students, the lowest score was 40 and the highest score was 87. Therefore, from the calculation results, it is known that the mean value achieved during the post-test was 70.15. The median was 71. The mode value was 73.7. While the standard deviation was 12.63. While the results of the calculation of the post-test research data for the experimental class in writing explanatory texts with a total of 32 students, the lowest score was 40 and the highest score was 90. Therefore, from the calculation results, it is known that the mean value achieved during the post-test was 76.34. The median value was 78.74. The mode value was 81.9. While the standard deviation was 11.9.

Inferential Statistics

Test of Normality

The chi-square normality test conducted on experimental class data and control class data. The test was conducted to determine whether there were normally distributed samples. The results of the normality test are evaluated by comparing the calculated X^2 value with the X^2 table value. If the calculated X^2 value is smaller than the X^2 table value, then the null hypothesis (Ho) is accepted, which means the data is normally distributed. If the calculated X^2 value is greater than the X^2 table value, then the alternative hypothesis (Ha) is accepted, which means the data is not normally distributed.

Table 2. Test of Normality Result

Type of test	Class	X^2 count	X^2 table	Result	Interpretation
Pretest	Control	2.27	11.07	Accept H_o	Data is normally distributed
	Experiment	2.78	11.07	Accept H_o	Data is normally distributed
Post-test	Control	1.99	11.07	Accept H_o	Data is normally distributed
	Experiment	5.96	11.07	Accept H_o	Data is normally distributed

The pretest value obtained by the control class X^2count = 2.27 < X-table = 11.07 at a significance level of 5% or 0.05 with a total sample is 32. Thus, it can be concluded that the pretest data of the control class is normally distributed. Based on the pretest value obtained by the experimental class, X^2count = 2.78 < X table = 11.07 at a significance level of 5% or 0.05 with a total sample is 32. If X^2 count = 2.7875 < X-table = 11.07, it can be concluded that the pretest data of the experimental class is normally distributed.

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The posttest score obtained by the control class X^2 = 1.99 < X table = 11.07 at a significance level of 5% or 0.05 with a total sample is 32. If X^2 = 1.99 < X table = 11.07 it can be concluded that the control class posttest data is normally distributed. While the posttest score obtained by the experimental class X^2 count = 5.96 < X table = 11.07 at a significance level of 5% or 0.05 with a total sample is 32. If X^2count = 5.9689 < X table = 11.07 it can be concluded that the experimental class posttest data is normally distributed.

Test of Homogeneity

The homogeneity test was conducted using the Fisher test, which is the equality of two variants between the experimental class and the control class. The homogeneity test was conducted to determine whether there was equality of class variance, then it can be said that the group comes from a homogeneous population. The test criteria are the population variance between the same two classes if F-count < F-table then the data is homogeneous, conversely if F-count> F-table then the data is not homogeneous. With a significance level of 0.05 or 5%. The results of the pretest calculation are obtained as follows.

Table 3. Test of Homogeneity Result

Type of test	F-count	F-table	Result	Interpretation
Pretest	1.38	1.82	Accept H_0	Data is homogenous
Post-test	1.12	1.82	Accept H_0	Data is homogenous

The results of the homogeneity test of the pretest of the experimental class and the control class are, F-count = 1.38 and F-table = 1.82, so that F-count = 1.38 < F-table = 1.82. Thus, it can be concluded that both population variants are homogeneous. In addition, the results of the posttest calculation also obtained F-count = 1.12 and F-table = 1.82, so that F-count = 1.12 < F-table = 1.82, so it can be concluded that both population variants are homogeneous.

Test of Hypothesis

Hypothesis testing is done using the t-test formula because the sample comes from a homogeneous and normally distributed population, so to conduct a t-test, The Separate Model T-test formula can be used. Hypothesis testing criteria if t count < t table then H0 is rejected or there is no difference in the writing skills of explanatory texts of students taught using the discovery learning model and students taught using the regular learning model. Conversely, if t count > t-table then H1 is accepted or there is a difference in the writing skills of explanatory texts of students taught using the discovery learning model and students taught using the regular learning model.

Table 3. Test of Hypothesis Result

Type of test	T-count	T-table	Result
Pretest	1.910	1.998	Accept H_0
Post-test	2.020	1.998	Accept H_1

From the analysis of the pretest data, it was obtained that the data were normally distributed and homogeneous. To conduct a comparison test of two classes, a t-test was carried out, namely the t-test The Separate Model T-test. The results of the pretest analysis using the t-test obtained that t count = 1.910 and t table = 1.998 for a significant level of 0.05. From these results, if t count = 1.91 < t-table = 1.9989. Then H_0 is accepted, meaning that there is no significant difference effect on students explanatory writing skills between control and experiment class before using discovery learning method.

From the analysis of the post-test data, it was found that the data were normally distributed and homogeneous. To conduct a comparison test of 2 classes, a t-test was carried out, namely the t-test The Separate Moodle T-test. The results of the post-test analysis using the t-test obtained t-count = 2.02 and t-table = 1.998 for a significance level of 0.05. From these results, if t-count = 2.020 > t-table = 1.9989, then H_1 is accepted, meaning that there is a significant difference effect on students explanatory writing skills between control and experiment class after using discovery learning method.

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DISCUSSION

From the test results above, it was obtained that the mean score explanatory texts writing skills that received learning using the discovery learning model was higher compared to the writing skills of students with conventional learning. During the learning process, each meeting the role of the researcher is only to deliver learning materials from beginning to end, while students only listen and note down the things conveyed by the teacher. When the teacher gives students the task of writing explanatory texts, students only write as much as they can without any stimulation given by the teacher. The learning process results in control class being less stimulated and cannot be developed properly since teacher only used conventional teaching method such and delivered the learning materials using textbook. In fact, students should be given the opportunity to learn and be active in efforts to find learning resources, not just relying on explanations from teachers.

In the opposite, learning experience in the experimental class began with the teacher asking questions by posing problems about the explanatory text which is entitled "Landslides", then students are given stimulation first by watching videos or photos about the occurrence of landslides. After that, the teacher gave students the opportunity to identify and analyze the problems they face. Students identified as many possible relevant problems as possible. Then the teacher gave students the opportunity to collect relevant information from various sources to prove whether the hypothesis is true or not, the teacher also gave students the freedom to collect various relevant information, observe objects from various sources, and ask questions with classmates and even look for information anywhere including in student textbooks, so that students can be trained to solve problems in several ways that they consider correct. After students collected all the data, students processed the data or information that has been found to and start writing explanatory texts. Furthermore, students had to re-check their work and made conclusions based on the results that have been made. Finally, students read it in front of the class. During the learning process, students in the experimental class were very enthusiastic in learning, they were more active compared to the control class. Thus, the results of this study indicate that there is a difference in explanatory text writing skills between students who are taught with the discovery learning model and conventional learning.

This research result has the similar result with other researchers. Munadar (2021), Ariyana et al (2020), Prasetyo and Abduh (2021) result also indicated that discovery learning model can improve students' writing skills [18, 19] [22]. Learning outcomes in classes that used discovery learning have a better transfer effect [23]. The transfer effect in learning is the impact of learning outcomes obtained by students in the past which will influence the learning process and outcomes carried out later, both at school and outside of school and have an impact in the longer term. The discovery learning model can improve students' reasoning and creative thinking skills [24][25]. Students' cognitive skills are trained to find and solve problems with their own efforts to be able to find ideas in writing.

CONCLUSION

The result of this research shows the mean score of the experimental class is higher than the control class, the results of the normality test show that the data is normally distributed and the results of the homogeneity test show that the data variance is homogeneous. The t-test result also indicated that there is a significant different effect in the use of discovery learning model on students' writing skills. Thus, it can be interpreted that there is a difference effect in the writing skills of explanatory texts of students who are taught using the discovery learning model and students who are taught using the ordinary or conventional learning model. The increase in students' explanatory text writing skills cannot be separated from the achievement of learning indicators, the learning outcomes in the class using the discovery learning model went well and encouraged students to be enthusiastic in learning so that students could be actively involved in the learning process. Thus, the use of the discovery learning model went well and was successful.

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The authors declare that there is no conflict of interest.

Miscellaneous:

Any figures, tables, supplements, appendices, or annexes that are placed after the reference. Must include text citations for them in the body of the manuscript.

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