The Effect of Guided Inquiry Learning Method on Science Learning Outcomes in Grade V Students of SD Negeri 1 Amparita

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Abstract

Learning is still centered on the teacher so that students are still passive. Lack of teacher attention to the potential of students in terms of group cooperation, building their own knowledge by collecting data or hypothesizing and less involved in activities that are fun and move children's motoric. This is because the teacher has not used innovative learning methods so that it causes low student learning outcomes, so research is needed to test this. The purpose of this study was to determine the effect of guided inquiry learning method on science learning outcomes of grade V students of UPT SD Negeri 1 Amparita, Sidrap Regency. This research approach is quantitative with experimental type. This study consists of two variables, namely the guided inquiry learning method as the independent variable and science learning outcomes as the dependent variable, with a research design of Nonequivalent Control Group Design. The population used was all grade V students, namely class Va as an experimental class with 27 students and class Vb as a control class with 26 students without being randomized. The data obtained were analyzed with descriptive statistics and inferential statistics. The results of descriptive analysis showed that the increase in the average value of science learning outcomes of the experimental class was higher than the average science learning outcomes of the control class. The t-test analysis using the Paired Samples T-Test test shows that the significance value of 0.000 is smaller than α = 0.05 and the t-count is greater than the t-table, thus H0 is rejected and H1 is accepted. It can be concluded that the guided inquiry learning method has an effect on science learning outcomes about the human respiratory system in class V UPT SD Negeri 1 Amparita Sidrap Regency.

Keywords: Guided Inquiry; Learning Method; Learning Outcomes

Introduction

In Curriculum 2013 in elementary schools there are 5 subjects that are thematized, one of which is Natural Science (IPA). Science subject matter is closely related to students and their environment. Science learning in elementary schools is a learning that is able to increase students' knowledge about the surrounding nature and its contents through the experience of a series of scientific processes systematically such as investigation, preparation, and testing of an idea. This is in line with Trianto's opinion (2010) that:

> Science is a science that studies symptoms through a series of processes known as scientific processes that are built on the basis of scientific attitudes and the results are realized as scientific products composed of the three most important components in the form of concepts, principles and theories that apply universally.

Based on this, it can be said that science learning in elementary school is to understand nature systematically, so that science does not only rely on mastery of products such as mastery of concepts, facts, and principles but rather the process of finding facts, concepts and principles. This is because science learning is very broad, not limited to verbal mastery but also empirical activities.

Science subject matter will be more effective if taught using the right learning media and learning strategies or methods. The learning process should be directed to create active, innovative, creative, effective and fun conditions. This is in line with Santrock (2010) who states that "effective teachers have good teaching strategies and are supported by methods of goal setting, teaching design, and classroom management". Effective means appropriate. The effectiveness of learning strategies or methods facilitates the absorption of subject matter by students.

Learning is classified as good, if students learn with direct experience where students actively participate (student center). Learning methods with one direction only (teacher center) are certainly not in accordance with the characteristics of students who are at the concrete operational stage. This is in line with the theory put forward by Peaget in Santrock (2010) which states that the third stage of children's cognitive development occurs at the age of 7-11 years or the age of elementary school children and in general they think concrete / real operational. Students will get good learning results, if during the learning process they can understand the material well.

The learning method used must pay attention to the relationship of learning situations with students' real life (Pratiwi, 2022). One of the appropriate learning strategies or methods for science subjects is inquiry. In learning with the inquiry method, students in their groups directly find out and investigate the material provided. The learning activities carried out are develop scientific thinking and creativity in solving problems. The choice of this learning method is because the characteristics of science subjects are closely related to investigation, activities carried out systematically trying to find their own conclusions or answers to existing problems. This is explained by Kuorilsky (Hamalik, 2001) inquiry-based teaching is a student-centered strategy in which groups of students inquire into an issue or seek answers to the content of the question through a clearly outlined procedure and group structure.

Learning with the inquiry method will bring students to interesting learning so that whatever is done will be recorded in their memory because they themselves discover the concepts and principles of science through investigative activities. The inquiry learning method directly develops students' potential such as observing (seeing), doing (doing), involving themselves in learning (undergoing), and experiencing directly (experience) (Yorks & Kasl, 2002).

The above opinion is summarized in Hardini & Puspitasari (2012) which states that "science learning should be carried out through scientific inquiry to foster the ability to think, work and behave scientifically and communicate as an important aspect of life skills". The type of inquiry that is appropriate to use is guided inquiry or guided inquiry, this is because this learning method is in accordance with the characteristics of elementary school students who still need the guidance of a teacher.

Based on the results of observations and conducted on July 26-28, 2021 in Class V UPT SD Negeri 1 Amparita, Sidrap Regency, researchers found the main problem in learning science, namely that the teacher in teaching dominates learning. Such learning is teacher-centered so that students as learning objects become passive, in the sense that students only sit, stand still, listen and record the subject matter. The position of students in this case has not been given the opportunity to build their own knowledge. Such learning is ineffective and unpleasant for students.

During the learning process, the teacher does not carry out learning orientation. The teacher does not bring students to the process of thinking about the problem to be solved or formulating the problem. Students do not make presumptions / temporary answers from the subject matter or propose hypotheses. Students do not conduct in-depth investigations of the information to be obtained or collect data. Students do not try to convince themselves and find the truth of the material studied or test hypotheses, and students still do not express the essence of the results of their investigations or formulate conclusions. When the teacher gives project assignments with the aim of strengthening students' understanding, the teacher does not provide enough guidance to students. This is because the teacher does not provide student worksheets that contain guidelines for learning activities. The weakness is that students have difficulty in learning and can result in unsatisfactory products.

On the other hand, teachers pay less attention to students in learning. It was seen when the teacher paid less attention when students asked questions and did not reprimand students who were noisy or re-conditioned the class to be conducive. This resulted in some students who were less focused and some were noisy so that they disturbed other students in doing their assignments. A disrupted learning process can result in non-optimal expected results. Good cooperation is needed so that the results are good. Learning must still be under the guidance of the teacher considering the characteristics of elementary school students who still need guidance or direction (Brophy, 1988).

If this is allowed to happen, it cannot accommodate students' ability to develop their potential so that knowledge as a science product and empirical / scientific activities as a science process in students is considered to be reduced. The impact will affect student learning outcomes in science subjects. The learning outcomes in question are further explained by Hamalik (Rusman, 2017) which states that "learning outcomes can be seen from changes in perception and behavior, including behavioral improvement". Such learning outcomes are not something that can be achieved easily, something "different" must occur in students before it is said to be a learning outcome.

The above problems need to be anticipated by using learning methods that are student-centered and able to accommodate the potential of students. The learning method in question is the guided inquiry method in science learning. Learning using the guided inquiry method is needed because it is closely related to science subjects and the real conditions of students. This opinion is in line with Syafri (2016) that "in terms of the meaning of the word 'inquire' means to ask, ask for information or investigate and 'inquiry' is an investigation". Guided inquiry learning can accommodate students to conduct an investigation of the material studied. Such inquiry learning places students as active learning subjects. As the name implies, the selection of this learning method is based on the characteristics of elementary school students who still need the guidance of a teacher.

Similar research by Arimurti (2012), a 2008 student of Yogyakarta State University regarding the effect of guided inquiry method with the title "The Effect of Guided Inquiry Method on Student Learning Achievement in Science Subjects of Grade IV SD Paliyan II Gunungkidul in 2011/2012", found that the students' learning achievement was not affected by the guided inquiry method. that the guided inquiry method has a positive effect on student learning achievement in science subjects in grade IV SD Paliyan II Gunungkidul, with the results of the analysis calculating the comparison of the average score between the experimental group of 7.70 and the control group of 6.48 and the results of the t test calculation obtained tcount of 0.812 with a significance of 0.00.

Based on the above thoughts and realities, the researcher is interested in conducting experimental research with the title "The Effect of Guided Inquiry Learning Method on Science Learning Outcomes in Grade V Students of UPT SD Negeri 1 Amparita, Sidrap Regency".

The foregoing was carried out to determine the effect of the guided inquiry learning method on the science learning outcomes of class V students of UPT SD Negeri 1 Amparita, Sidrap Regency. For students, this research is expected to be useful in the development of science learning using guided inquiry learning methods, students can develop an understanding of the concept of lessons which ultimately obtain optimal learning outcomes and students can more easily understand science subject matter by using guided inquiry learning methods. As for the teacher as a researcher, it can be an alternative to choosing a varied learning method, so that students are motivated to learn, can find out the ability and empirical / scientific process of each student in conducting investigations and understanding the effect of guided inquiry learning methods, and can develop and disseminate knowledge about innovative learning methods applied in the learning process.

The research approach used is quantitative research with experimental research type. There are two variables, namely guided inquiry learning method as the independent variable and science learning outcomes as the dependent variable. The research design used is Nonequivalent Control Group Design. The population used was all grade V students, namely class Va as an experimental class with 27 students and class Vb as a control class with 26 students without being randomized. The data obtained were analyzed with descriptive statistics and inferential statistics. The results of descriptive analysis are seen from the average value of the science learning outcomes of the experimental class compared to the control class. Inferential statistics using t test analysis, namely using the Paired Samples T-Test test, by comparing tcount with ttable.

Methods

The method used in this research is quantitative research with the type of experimental research that uses two variables, namely the guided inquiry learning method as an independent variable and science learning outcomes as the dependent variable. This research uses a quasi-experimental design with the form of nonequivalent control group design. The population in this study were all UPT students of SD Negeri 1 Amparita for the 2021/2022 academic year, totaling 205 students. Sampling using non probability sampling technique with purposive sampling type so that the sample is obtained, namely Class V UPT SD Negeri 1 Amparita Sidrap Regency consisting of class VA of 27 people as the experimental class and class VB of 26 people as the control class.

Data collection techniques used in this study were tests and documentation studies. Data collection was carried out by giving a pretest of 1 (one) meeting each in the experimental class and control class to determine the initial ability of students. Furthermore, providing treatment in the form of using the guided inquiry learning method for 2 (two) meetings in the experimental class while the control class was carried out without treatment or in the form of conventional methods. Finally, giving a posttest of 1 (one) meeting each in the experimental class and control class to see the final score that describes the learning outcomes or the level of mastery of science material regarding the human respiratory system. Data were analyzed with descriptive statistics and inferential statistics. Descriptive statistics analyzed pretest and posttest results in experimental and control classes to see student learning outcomes in the form of mean, median, mode, standard deviation, minimum, maximum, and sum before and

after applying the guided inquiry learning method. Inferential statistics were conducted to test the research hypothesis using the Paired-Samples T-Test test. Before that, the data prerequisite test was carried out using the data normality test and data homogeneity test. The conclusion obtained is the result of the Paired Samples T-Test test analysis, which compares the tcount with the ttable. With the condition that the Paired Samples T-Test test must show a significance value smaller than $\alpha = 0.05$ and tcount greater than ttable so that the study can be said to have a positive effect.

Results and Discussion

1. Research Description

The research conducted at UPT SD Negeri 1 Amparita, Sidrap Regency is an experimental study with a research design of nonequivalent control group design. Experimental research has guidelines that have been systematically prepared before researching. This is explained in Jaedun (2011) which states that experimental research is research that is carried out deliberately by researchers by giving certain treatment / treatment to research subjects in order to generate an event / situation that will be investigated how the consequences are.

The data obtained is then managed using statistical principles then the results provide an overview of the relationship between variables. This type of research provides data on the effect of guided inquiry learning method on learning outcomes. The implementation of this research was carried out in class V consisting of class Va as the experimental class and class Vb as the control class. The research was first conducted on August 23, 2021 for administering the pretest to the experimental class. Then, on August 24, 2021, the pretest was given to the control class. Furthermore, on August 26, 2021, treatment was given to the experimental class on science learning on the subject of respiratory organs and mechanisms of chest breathing and abdominal breathing, on August 28, 2021, treatment was given on science learning on the subject of diseases of the respiratory organs and their causes. The treatment given is by applying the guided inquiry learning method. The next activity on August 30, 2021 is giving the final test or learning outcomes test (posttest) in the experimental class and on August 31, 2021 giving the posttest in the control class. Before giving the test, the researcher first conducted a content validity test. Content validity is the validity that states the representation of the aspects measured in the instrument. Content validity is made with the help of using an instrument grid. In the lattice there are competency standards, basic competencies and indicators as benchmarks and item numbers of questions or statements that have been elaborated from indicators. The items of the instrument that will be validated are then consulted with experts who are in accordance with the discipline of the instrument that has been made.

Researchers consulted instruments that had been made to validators / experts in the field of natural sciences as a subject in this study. The instrument submitted by the researcher is 40 numbers of multiplechoice questions that have the same weight and are related to the subject matter of the human respiratory system. The number of questions that have been determined by the validator is adjusted for indicators that become the initial benchmark and are more specialized in questions about the human respiratory system. After being validated, it resulted in an instrument totaling 20 multiple choice numbers. The results of the validated instrument are the same weight and form of questions in carrying out the pretest and posttest. The pretest and posttest questions each amounted to 20 numbers of questions that were made similar so that they could measure student achievement / learning outcomes. The following is research data based on pretest and posttest results that have been obtained by students.

2. Descriptive Statistics Test Results

a. **Description of Student Pretest Score in Experimental Class before Given Treatment in the form of Guided Inquiry Learning Method**

Statistical results related to the initial test scores or pretests of students in the experimental class, namely the class that will be given treatment in the form of using guided inquiry learning methods, the results of the pretest scores obtained by students before treatment, can be presented as follows.

Table 1. Description of Student Pretest Score in Experimental Class before Given Treatment in the form of Guided Inquiry Learning Method

Statistics	Statistics value
Sampel Size	27
Mean	41,48
Median	40
Mode	40
Standard Deviation	1,134
Minimum	20
Maximum	65
Sum	1120

Based on table 1, it can be seen that the average score obtained from 27 students is 41.48 with a median value of 40 and a mode value of 40. While the standard deviation obtained is 1.134 with a minimum score of 20 and a maximum score of 65. In addition, the sum value obtained in this data is 1120. Regarding the frequency of each pretest score / score obtained by students in the experimental class can be presented as follows.

Table 2. Frequency Distribution of Student Pretest Scores in the Experimental Class

Value	Frequency	Cumulative Frequency
20	1	1
25	1	2
30	4	6
35	4	10
40	6	16
45	4	20
50	3	23
55	1	24
60	1	25
65	2	27

Based on table 2, it can be seen that the pretest score of experimental class students with the highest frequency is score 40 with a frequency of 6 students or 22.22% while the least frequency is score 20, 25, 55, and 60 with a frequency of 1 student or as much as 3.70%. The description of the pretest scores illustrates the mastery of experimental class students with the subject matter of the human respiratory system is still low. Complete results can be seen in appendix 19 page 134.

b. Description of Posttest Score of Students in Experimental Class after Given Treatment in the form of Guided Inquiry Learning Method

Statistical results related to student posttest scores in the experimental class, namely student learning outcomes after being given treatment in the form of using guided inquiry learning methods, the results of posttest scores obtained by students after treatment, can be presented as follows.

Table 3. Description of Student Posttest Scores in the Experimental Class after Being Given Treatment in the form of Guided Inquiry Learning Methods

Statistics	Statistik Value
Sampel Size	27
Mean	77,78
Median	80
Mode	75
Standard Deviation	1,289
Minimum	55
Maximum	100
Sum	2100

Based on table 3, it can be seen that the average score obtained from 27 students is 77.78 with a median value of 80 and a mode value of 75. While the standard deviation obtained is 1.289 with a minimum score of 55 and a maximum score of 100. In addition, the sum value obtained in this data is 2100. Regarding the frequency of each posttest score / score obtained by students in the experimental class can be presented as follows.

Table 4. Frequency Distribution of Student Posttest Values in the Experimental Class

Value	Frequency	Cumulative Frequency
55	2	2
60	3	5
65	1	6
70	1	7
75	6	13
80	5	18
85	3	21
90	2	23
95	2	25
100	2	27

Based on table 4, it can be seen that the posttest scores of experimental class students with the highest frequency were 75 with a frequency of 6 students or 22.22% while the least frequency was 65, 70 and 95 with a frequency of 1 student or 3.70%. The description of the posttest scores illustrates the mastery of experimental class students with the subject matter of the human respiratory system is high. Complete results can be seen in appendix 19 pages 134-135.

c. Description of Student Pretest Score in Control Class

The statistical results related to the pretest scores of students in the control class, namely the class that was not given treatment or taught using conventional methods, the results of the pretest scores obtained by students before being taught with conventional methods, can be presented as follows.

Table 5. Description of Students' Pretest Score in the Control Class

Statistics	Statistics Value
Sampel Size	26
Mean	40,77
Median	40
Mode	30
Standard Deviation	1,102
Minimum	25
Maximum	65
Sum	1060

Based on table 5, it can be seen that the average score obtained by 26 students is 40.77 with a median value of 40. While the standard deviation obtained is 1.102 with a minimum score of 25 and a maximum score of 65. In addition, the sum value in this data is also obtained, namely 1060. Regarding the frequency of each pretest score obtained by students in the control class can be presented as follows.

Table 6. Frequency Distribution of Student Pretest Scores in the Control Class

Value	Frequency	Cumulative Frequency
25	3	3
30	5	8
35	2	10
40	5	15
45	3	18
50	5	23
55	1	24
60	1	25
65	1	26

Based on table 6, it can be seen that the pretest scores of control class students with the most frequency are scores 30, 40 and 50 with a frequency of 5 students or 19.23% while the least frequency is scores 55, 60 and 65 with a frequency of 1 student or 3.85%. The description of the pretest scores illustrates that the mastery of control class students with the subject matter of the human respiratory system is still relatively low. low. Complete results can be seen in appendix 19 pages 135-136.

d. Description of Student Posttest Score in Control Class

The statistical results related to the posttest scores of students in the control class, namely the untreated class, the results of students' posttest scores after being taught with conventional methods, can be presented as follows.

Table 7. Description of Student Posttest Scores in the Control Class

Statistics	Statistics Value
Sampel Size	26
Mean	63,08
Median	65
Standard Deviation	15,94
Minimum	35
Maximum	85
Sum	1640

Based on table 7, it can be seen that the average score obtained by 26 students is 63.08 with a median score of 65. While the standard deviation obtained is 15.94 with a minimum score of 35 and a maximum score of 85. In addition, the sum value obtained in this data is 1640. Regarding the frequency of each posttest score obtained by students in the control class, it can be presented as follows.

Table 8. Frequency Distribution of Student Posttest Values in the Control Class

Value	Frequency	Cumulative Frequency
35	1	1
40	4	5
45	1	6
50	1	7
55	2	9
60	4	13
70	3	16

75	3	19
80	6	25
85	1	26

Based on table 8, it can be seen that the posttest score of control class students with the most frequency is score 80 with a frequency of 6 students or 23.07% while the least frequency is score 35, 45 and 50 with a frequency of 1 student or 3.85%. The description of the posttest scores illustrates the mastery of control class students with the subject matter of the human respiratory system is better than the pretest scores. Complete results can be seen in appendix 19 pages 135-136. If the posttest scores which are the learning outcomes of experimental and control class students are grouped based on the science learning ability of class V UPT SD Negeri 1 Amparita Sidrap Regency with the value of the Minimum Learning Completeness Standard (SKBM) of 70, the frequency and percentage of math learning completeness are obtained as follows.

Table 9. Science Learning Completeness on the Subject of Human Respiratory System of Experimental and Control Classes

Value	**Category**	**Experiment**		**Control**	
		Frequency	**Percentage**	**Frequency**	**Percentage**
< 70	Tidak tuntas	6	22,22%	13	50%
≥70	Tuntas	21	77,78%	13	50%

Table 9 show that students in the experimental class who were classified as complete in learning science on the subject of the human respiratory system were 21 people with a percentage of 77.78% and students who were not complete were 6 people with a percentage of 22.22%. Meanwhile, students in the control class who were classified as complete in learning science on the subject of the human respiratory system were 13 people with a percentage of 50.00% and students who were not classified as complete were 13 people with a percentage of 50.00%. These results illustrate that more students in the experimental class completed learning science on the subject of the human respiratory system compared to the control class, in other words that the level of mastery of students on the material of the human respiratory system is higher in the experimental class than the control class.

3. Results of Inferential Statistical Analysis

a. Prerequisite Test

The requirements that must be met before testing the hypothesis are normality testing and homogeneity testing. All calculations were carried out using the computer assistance of the Statistical Package for Social Sciences (SPSS) version 22 program.

1) Normality Test

The normality test is carried out to determine whether the data is normally distributed or not, with the test criteria if the significance obtained is> 0.05 then the data is declared normally distributed. Conversely, the data is declared not normally distributed, if the significance obtained <0.05. Based on the results of data analysis using SPSS version 22, the normality test data in the experimental class is obtained as follows.

Table 10. Normality Test

Experiment Class (α = 0,05)	
Pretest	***Posttest***
ρ- Value > α	*ρ- Value* > α
0,154 > 0,05	0,93 > 0,05

Based on table 10, it can be concluded that the sample is normally distributed because the significance value is greater than the value of α = 0.05 with the pretest test results, namely ρ = 0.154 > α = 0.05 and the posttest test results, namely ρ = 0.93 > α = 0.05. The complete data can be seen in appendix 20 page 137.

2) Homogeneity Test

The homogeneity test is carried out to determine whether two or more data groups have the same variance (homogeneous) or different, with the test criteria if the significance obtained is> 0.05 then the data is declared homogeneous. Conversely, the data is declared inhomogeneous, if the significance obtained <0.05. Based on the results of data analysis using SPSS version 22, the normality test data in the experimental class is obtained as follows.

Table 11. Homogeneity Test

Experiment Class (α = 0,05)
ρ- Value > α
0,523 > 0,05

Based on table 11, it can be concluded that the sample has the same or homogeneous variance because the significance value is greater than the value of α = 0.05 with the test results, namely ρ = 0.523> α = 0.05. The complete data can be seen in appendix 21 page 138.

b. Hypothesis Test

Based on testing the analysis requirements, the pretest and posttest scores of the experimental class were normally distributed and the sample variance was declared homogeneous. Furthermore, the results of hypothesis testing using the Paired Samples T-Test test are entered into the following test steps.

1) Formulating a hypothesis

Statistical Hypothesis: H_0: $\mu_a = \mu_b$ atau H_1: $\mu_a \neq \mu_b$

H_0 : There is no difference in science learning outcomes about the human respiratory system between before and after the use of guided inquiry learning methods.

H_1 : There are differences in science learning outcomes about the respiratory system between before and after the use of guided inquiry learning methods.

Description:

μ_a = Average pretest score of experimental class

μ_b = Average posttest score of experimental class

2) Determining t count and significance (2-tailed)

From the output of the Paired Samples T-Test test, it is found that the t count = 21.892 and the Sig. (2-tailed) = 0.000 with a significance level of α = 0.05.

3) Determine t table

t table can be seen in the statistics table at a significance level of 0.05: 2 = 0.025 with a degree of greatness (df) 27-1 = 26, the results obtained for the t table = 2.056.

4) Testing criteria

Ho is rejected if:

Sig. (2-tailed) < 0.05 or

-t count < -t table or

t count > t table

5) Making Conclusions

The results of the analysis obtained the value of Sig. (2-tailed) = 0.000 < α = 0.05 or tcount > t table (21.892 > 2.056) thus H0 is rejected and H1 is accepted, it can be concluded that there is a difference in science learning outcomes about the human respiratory system between before and after the use of guided inquiry learning

methods, in other words there is an effect of guided inquiry learning methods on science learning outcomes about the human respiratory system in class V students of UPT SD Negeri 1 Amparita, Sidrap Regency. The complete data can be seen in attachment 22 page 139.

This experimental research was conducted in class V UPT SD Negeri 1 Amparita Sidrap Regency with a total sample of 53 students consisting of 27 students in the experimental class and 26 students in the control class. The research design used was nonequivalent control group design. It is explained in Sugiyono (2010) that in this design, there are two classes, namely the experimental class and the control class which are not randomly selected. Both classes were then given a pretest to find out the initial situation. The pretest results are good if the scores of the two classes are not significantly different. Then the experimental class is given treatment in the form of guided inquiry learning method and the control class is not given treatment. At the end of learning, both classes were given a posttest, the effect of the treatment was that the experimental class value increased from pretest to posttest and was higher than the control class value.

The description of the data described in the research results has shown the effect of the guided inquiry learning method on science learning outcomes in Grade V Students of UPT SD Negeri 1 Amparita, Sidrap Regency. Based on the results of descriptive statistical analysis using the SPSS version 22 program, the lowest pretest score of the experimental class was 20 and the lowest pretest score of the control class was 25 while the highest pretest score of the experimental class and control class was 65. The mean pretest scores obtained by the experimental class and control class were 41.48 and 40.77, respectively. This shows that students in both classes have almost the same ability or level of mastery of human respiratory system material before getting treatment.

Then, after being given the treatment, the lowest and highest posttest scores of the experimental class were 55 and 100 respectively, while the lowest and highest posttest scores of the control class were 35 and 85 respectively, meaning that the lowest and highest posttest scores in the experimental class were better than the lowest and highest scores in the control class. The mean posttest scores obtained by the experimental and control classes were 77.78 and 63.08, respectively. This shows that the mean posttest score of the experimental class is higher when compared to the mean posttest score of the control class, in other words, the level of mastery of human respiratory system material is better in the experimental class than the control class. The increase experienced from the mean score of the pretest to the mean score of the posttest obtained by students in the experimental class and control class shows a change that occurs after learning. Changes in knowledge after learning in the experimental class are greater when compared to changes in the control class.

Changes in knowledge after learning illustrate the learning outcomes themselves, this is because the experimental class was given treatment in the form of a guided inquiry learning method, namely in the learning process students are given the opportunity to seek and find their own answers to the problems studied with guidance from the researcher. This is in line with Sanjaya (2014); Yuliandari, et al. (2023) that learning with inquiry is student-centered learning by teaching students to maximally seek and find their own answers to existing problems with or without teacher guidance.

Science learning is closely related to practicum activities that can improve science process skills in order to welcome the 21st century. Toharudin, Hendrawati and Rustaman (2014) science skills are skills that can be used to understand any phenomenon that occurs. These skills are needed to obtain, develop and apply concepts,

principles and laws that exist in science. This can be done by doing six skills according to Dimyati & Mudjiono (2002) explaining that various skills in process skills consist of basic skills and integrated skills. Basic skills consist of six skills, namely: observing, classifying, predicting, measuring, concluding, and communicating. This is applied in the learning process by using the guided inquiry learning method. In this study, two meetings were conducted on science subjects with different subjects. At the first meeting with the subject matter of respiratory organs and respiratory mechanisms and abdominal breathing begins with the orientation stage. At this stage the teacher fosters a responsive atmosphere or conditions students to be ready to receive learning. Then, students together with the teacher formulate a problem that is a puzzle whose answer is certain. At this stage students are still awkward in asking a question related to the subject matter to be studied. However, thanks to the direction and explanation from the teacher, students propose a question that is related to the subject matter, namely "how do humans breathe with chest breathing and abdominal breathing?". After that, students formulate a hypothesis which is a temporary answer to the problem formulation. At this stage, students were very active in asking what is meant by hypothesis and how to make a hypothesis because they had never made a hypothesis. Previously, this was a new thing for them. The hypothesis made by students is based on the theory obtained in the textbook.

The next stage is collecting data. In the first meeting, students worked together in their groups to make a simple breathing apparatus model. At this stage, students are very active and enthusiastic in making a model of the respiratory apparatus, they are competing to make it very well and look attractive. At first they cut the hose to a predetermined size, cut the pointed end and glue it with wax glue to form the letter Y. After that, take two small balloons and tie each of them to the two short branches of the hose. Next, students take an aqua bottle and cut the center of the aqua bottle using a knife / scissors, and make a hole in the bottle cap the size of the diameter of the hose using a nail that has been heated. Then, students work together to insert a plastic hose tied with a balloon into the bottle cap hole. Then tightly cover the mouth of the bottle with plasticine so that there is no gap. Finally, take a large balloon and cut off the bottom, then cover the bottle hole with the cut balloon, and tie it with a rubber band to make it strong.

The next stage is for students to test the hypothesis that has been made using a tool that has been made in the data collection stage. The test is done by blowing the hose at the mouth of the bottle to see the mechanism of chest breathing and pulling the balloon at the bottom of the bottle downward to see the mechanism of abdominal breathing. In the Student Worksheet (LKS) provided, students record answers that are considered acceptable according to the tool. data collection tools and draw the tools that have been made. In this stage students test the theory obtained in the book. The last stage is formulating conclusions, namely describing the findings obtained based on the results of hypothesis testing.

In the second meeting, guided inquiry learning in science learning with the subject matter of diseases of the respiratory organs and their causes. At the beginning of learning is done with the orientation stage. At this stage the teacher fosters a responsive atmosphere or conditions students to be ready to receive learning. Then, students together with the teacher formulate a problem that is a puzzle whose answer is certain. In the second meeting, students enthusiastically asked questions related to the activities to be carried out, and students and teachers decided on the most appropriate question, namely "why is smoking harmful to human health?". After that, students formulate a hypothesis which is a temporary answer to the problem formulation. In this stage,

students work together to find the answer based on the theory obtained in the textbook and relate it to the real world of students, for example, the writing of the dangers of smoking on cigarette packs.

The next stage is collecting data. In the second treatment, students worked together in their groups to make a model of a cigarette smoking device by preparing an aqua bottle and perforating the bottle cap with the same diameter as a cigarette. Then, insert the cigarette into the hole of the aqua bottle cap until the filter part of the cigarette is all in. Next, students put water into the bottle until it is full and close the aqua bottle with a lid that has been installed with a cigarette. After that, students burn the cigarette in the bottle cap. Then, give a hole at the bottom of the bottle for water flow. The hole serves to release water so that it will attract cigarette smoke into the aqua bottle. Students do this until one cigarette burns out and the water in the bottle runs out and the cigarette smoke collected in the bottle does not come out. And finally close the water hole using insulation.

The next stage is for students to test the hypothesis that has been made using a tool that has been made at the data collection stage. In this stage students test the theory obtained in the book. Testing is done by opening the bottle cap and replacing it with a piece of tissue. After that, students tie the tissue with a rubber band so that it is not easily separated, then students squeeze repeatedly and slowly the aqua bottle until all the cigarette smoke comes out slowly through the tissue sheet. Students are careful not to leak the tissue, and finally, students open the tissue at the mouth of the bottle and observe what happens to the tissue / see the files that appear.

In the Student Worksheet (LKS) given, students record answers that are considered acceptable according to the data collection tools and draw the tools that have been made. The last stage is to formulate conclusions, namely describe the findings obtained based on the results of hypothesis testing. The whole series of activities is carried out guided by the LKS work instructions and teacher guidance and the results of the investigation are recorded on the LKS given.

The learning process using the guided inquiry learning method makes students actively involved in proving the theory they are learning by collecting facts obtained through the investigation process or scientific procedures. This is in line with the opinion expressed by Ulfa (2017) which states that:

> Inquiry learning is learning that optimally involves all students' abilities to seek and investigate something (objects, people or events) systematically, critically, logically, and analytically so that they can formulate their own findings with confidence.

The table of mathematics learning completeness derived from student posttest scores shows that in the experimental class there were 21 students who scored in the complete category with a percentage of 77.78% and 6 students who scored incomplete with a percentage of 22.22%, while in the control class there were only 13 students who scored in the complete category with a percentage of 50% and 13 students who scored incomplete with a percentage of 50%. This data shows that the completeness of learning in the experimental class taught using the guided inquiry learning method is better than the control class taught with conventional methods. This is because the guided inquiry learning method is able to develop students' thinking process. This is explained in Hardini (2012) which states that "science learning should be carried out in a scientific inquiry to foster the ability to think, work and behave scientifically and communicate as an important aspect of life skills".

The results of inferential statistical analysis for hypothesis testing, first conducted prerequisite test analysis. The prerequisite tests carried out are normality test and

homogeneity test. The normality test results showed that the pretest and posttest data of the experimental class were declared normally distributed. Likewise, the homogeneity test results show that the data has the same variance or homogeneous. The prerequisite test results state that the data is suitable for hypothesis testing. The results of hypothesis testing using the Paired Samples T-Test test show that the -count value is smaller than -t table or t count is greater than -t table, thus H0 is rejected and H1 is accepted. So it can be concluded that there are differences in science learning outcomes about the respiratory system between before and after the use of guided inquiry learning methods, thus it can be stated that there is an effect of guided inquiry learning methods on science learning outcomes about the human respiratory system in class V UPT SD Negeri 1 Amparita Sidrap Regency. This is in line with Arimurti (2012) that the guided inquiry method has a positive effect on student learning achievement in science subjects of grade IV SD Paliyan II Gunungkidul, with the results of the analysis calculating the comparison of the average score between the experimental group of 7.70 and the control group of 6.48 and the results of the t test calculation obtained tcount of 0.812 with a significance of 0.00.

Constraints or weaknesses in the use of guided inquiry learning methods are limited time and difficulty in controlling student activities, so it is expected that teachers in using guided inquiry learning methods in the learning process can plan and manage time (time allocation) properly and correctly, taking into account that the time provided is commensurate with the talents and abilities of students and motivating students to carry out their tasks with optimal attention. Next is the lack of student experience in conducting guided inquiry learning because this learning method has never been applied by teachers at this school. This is in line with Fathurrahman's opinion (Setyanto (2017) that:

> The weakness of this method is that it requires preparation and implementation that takes quite a long time. The inquiry method is also less effective to apply if it is not supported by complete equipment as needed. Therefore, the preparation of tools and students in learning must be done as well as possible.

The weaknesses that have been described can be minimized and covered by the advantages of the guided inquiry learning method. Although difficult, this method has been implemented well and students are given the opportunity to search and find their own answers to the problems given based on guidance from the teacher with satisfactory results.

Conclusion

Based on the results of the research and discussion, it can be concluded that there is a positive effect of guided inquiry learning method on science learning outcomes about the human respiratory system in class V students of UPT SD Negeri 1 Amparita, Sidrap Regency. This is evidenced by the results of hypothesis testing using the Paired Samples T-Test test at a significant level of 5% or 95% confidence level, namely the Sig. (2-tailed) = 0.000 < α = 0.05 or the value of tcount> ttable (21.892> 2.056) thus H0 is rejected or H1 is accepted.

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