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Efforts to Improve Learning Outcomes in the Main Material of Buffer Solutions Using a Science Literacy-Based Guided Inquiry Model

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Abstract: Efforts to Improve Learning Outcomes in the Main Material of Buffer Solutions Using a Science Literacy-Based Guided Inquiry Model. This study aims to see the increase in learning outcomes on the subject matter of the buffer using a literacy-based model in class XI SMA Eria Medan. The study population was all students of class XI MIA SMA Eria Medan, namely nine classes. Each class of students. The sampling technique in this study was purposive sampling. The sample chosen was class XI MIA 2 as an experimental class treated with a science literacy-based inquiry model and class XI MIA 6 as a control class treated with conventional models, namely lectures and questions and answers. This study uses test and non-test instruments that have been tested and have been valid. Firstly, the learning outcome data were tested for normality and homogeneity, where the results were obtained by both groups of samples are homogeneous and normally distributed. Hypothesis testing is carried out using the t-test of one party, namely the right side, with the results of this study at a significance level of 4% ($\alpha = 0.04$) indicating that $t_{count} > t_{table}$ (5.0573 > 1.8568) then Ho is rejected. Thus, it shows that there is an effect of guided inquiry learning models based on scientific literacy on learning outcomes. The walking test was carried out to see the relationship between student activity and student learning outcomes. The results showed that $t_{count} > t_{table}$ (0.582 > 0.294) then H_0 was rejected. Thus, a significant display between student activities and student learning outcomes in the guided inquiry learning model based on scientific literacy. The contribution of student activities to the improvement of student learning outcomes in the experimental class was 42.8%.

Keywords: Learning Outcomes, Student Activities, Guided Inquiry, Science Literacy, Buffer Solutions

Abstrak: Upaya Peningkatan Hasil Belajar Pada Materi Pokok Larutan Penyangga Dengan Menggunakan Model Inkuiri Terbimbing Berbasis Literasi Sains. *Penelitian ini bertujuan untuk mengetahui peningkatan hasil belajar pada materi pokok larutan penyangga dengan menggunakan model inkuiri terbimbing berbasis literasi pada siswa kelas XI SMA Eria Medan. Populasi penelitianya itu seluruh siswa kelas XI MIA SMA Eria Medan yaitu Sembilan kelas. Masing-masing kelas berjumlahkan 32 hingga 34 siswa. Teknik pengambilan sampel dalam penelitian ini adalah purposive sampling. Sampel terpilih yaitu kelas XI MIA 2 sebagai kelas eksperimen yang diberi perlakuan model inkuiri terbimbing berbasis literasi sains dan kelas XI MIA 6 sebagai kelas kontrol yang diberi perlakuan model konvensional, yaitu ceramah dan tanya jawab. Penelitian ini menggunakan instrumen tes dan non tes yang telah diujicobakan dan telah valid. Data hasil belajar siswa terlebih dahulu diuji normalitas dan homogenitasnya, dimana*

hasil yang didapat kedua kelompok sampel homogen dan berdistribusi normal. Uji hipotesis dilakukan dengan menggunakan uji t-satu pihak yaitu pihak kanan, dengan hasil penelitian ini pada taraf signifikansi 4% (α = 0,04) menunjukkan bahwa $t_{hitung} > t_{tabel}$ (5,0573 > 1.8568) maka Ho ditolak. Dengan demikian, menunjukkan ada pengaruh model pembelajaran inkuiri terbimbing berbasis literasi sains terhadap hasil belajar. Uji korelasi dilakukan untuk mengetahui hubungan aktivitas siswa terhadap hasil belajar siswa. Hasil penelitian menunjukkan bahwa $t_{hitung} > t_{tabel}$ (0,582>0.294) maka H_0 ditolak. Dengan demikian, terdapat korelasi yang signifikan antara aktivitas siswa dengan hasil belajar siswa pada model pembelajaran inkuiri terbimbing berbasis literasi sains. Kontribusi aktivitas siswa terhadap peningkatan hasil belajar siswa pada kelas eksperimen yaitu sebesar 42,8%.

Kata kunci : *Hasil Belajar, Aktivitas Siswa, Inkuiri Terbimbing, Literasi Sains, Larutan Penyangga*

▪ INTRODUCTION

One branch of that education is chemistry. Chemistry education in general has a very important role, because chemistry is the basic science for the development of technology. Chemistry is a subject that is considered difficult by students, so students are less interested in learning it. These difficulties are related to the character of chemistry, such as concepts, materials and calculations. In addition, students tend to think of it as a burden, not a hobby (Marpaung, 2013). In chemistry learning, student interest is very small, this is because students have differences in learning speed, the contents of the book are less motivating, students have their own learning styles, and the material presented is less related to daily life so that students' learning experiences are small (Dartin,2010).

The success of the teaching and learning process can be observed through student learning outcomes. One of the learning problems that have an impact on the low learning outcomes of students is the difficulty of applying the learning model in the teaching and learning process effectively and the selection of an inappropriate learning model in delivering teaching material. The teaching and learning process not only requires students to memorize concepts or involves memory skills, but also links the concepts understood with everyday life or what is called the aspect of scientific literacy (Resty Suciati, 2011).

Learning through various activities such as observation, problem solving and drawing conclusions is learning with an inquiry model (Yasmin, 2015). The guided inquiry learning model is one type of inquiry learning model (Zulfiani, 2009). According to Cindy (2006) through guided inquiry students are trained to develop thinking skills, teamwork and make it easier for students to learn. In addition, according to Dewi, the guided inquiry learning model emphasizes students to be active, increase interest, motivation, and learning independence, train courage, communicate and try to gain their own knowledge through the process of discovery and problem solving. The stages of the guided inquiry model consist of 1) student orientation towards the subject matter, 2) formulating problems with teacher guidance, 3) formulating hypotheses with teacher guidance, 4) collecting data, 5) testing hypotheses, 6) drawing conclusions and communicating them (Sanjaya, 2008).

Learning that involves the use of varied learning resources, inquiry processes and decision making related to everyday life is a scientific literacy-based learning concept. Learning that begins with a scientific problem, is continued by formulating temporary answers and a process of investigation to solve problems through literature and laboratory activities, then, the understanding gained from the problem solving process is used to

make decisions in everyday life. This is what is meant by guided inquiry learning based on scientific literacy (Eka Nurul Qomaliyah, 2016). Scientific literacy, including chemical literacy, really needs to be taught to students so that they can live in the midst of a modern 21st century society. Various efforts have been made in various countries including Indonesia to improve students' scientific literacy and chemical literacy, for example the attempt to launch a new curriculum in 2013 (Rahayu, 2017).

One of the learning models referred to in the 2013 curriculum is the guided inquiry learning model. Guided inquiry is a learning model that is better than conventional learning models, and is able to improve student achievement in cognitive abilities (Matthew and 3 Kenneth, 2013). Arlianty (2016) also argues that guided inquiry is a learning model that has a positive influence on learning achievement. Through the guided inquiry model, it is hoped that it can be an alternative to train students' critical thinking skills in learning chemistry.

Several previous studies have shown a number of effects of using the guided inquiry learning model in classroom learning. Yulian, Suratno and Asyiah (2015), found that the guided inquiry learning model with the experimental method had increased results on student activity and learning outcomes. The learning outcomes of students' cognitive aspects obtained by students were 68.97 and the average value of learning activities obtained by students was 73.90 in the control class, while in the experimental class the cognitive aspects of learning outcomes were 77.32 and the average value of learning activities obtained by students was 83.51. Wijayanti, Mosik and Hindarto (2010) found that the cognitive learning outcomes of students had an increase in the previous average score of 51.84 to 75.85 with student learning completeness also increasing from 28.57% increasing to 85.71%.

The results of the PISA assessment regarding the mean score of scientific literacy in 2000 were 371, in 2003 it was 382, in 2006 it was 393, in 2009 it was 383. These data show results that are far from the international average of 500. Results The latest measurement of scientific literacy conducted by PISA in 2012 showed that the scientific literacy of Indonesian students was ranked 64th out of 65 EOCD member countries with an average score of 382 so it was said that the literacy skills of Indonesian students were low. Based on these data, it can be seen that the average scientific literacy ability of Indonesian students since 2006 has always decreased and is low when compared to EOCD member countries (Pambudi,2016).

Measurement of scientific literacy including chemical literacy is carried out to determine students 'understanding of chemistry in explaining natural phenomena as well as phenomena of human action and students' skills and problem solving. The results of scientific literacy published by PISA reveal an overall picture of students' scientific literacy for the average Indonesian student, but the results of scientific literacy can be different if the test is carried out in a smaller scope (Hayat, 2010).

Students tend to memorize formulas, their definitions without any deep understanding of a chemical material. In the chemistry learning process, a correct understanding is needed to support the concepts developed by students (Purwaningtyas, 2012). In addition, linking the concepts it builds with conceptually relevant everyday life is a way of learning science appropriately through problem solving in people's lives (Tanree, 2008). How to learn science can be applied through a learning model that is in accordance with scientific learning, one of which is the guided inquiry learning model (Sani, 2014).

One of the materials in high school Chemistry lessons is Solubility and Solubility Times. This material includes material that contains the concept of knowledge, analysis and calculation. Many students find it difficult to master this material because the concepts given in this material are not appropriate. Based on the description above, researchers are interested in conducting research with the title: "Efforts to Improve Learning Outcomes in the Main Material of Buffer Solutions by Using Guided Inquiry Model Based on Science Literacy".

▪ METHOD

This research was conducted at SMA Eria Medan. When the research was carried out at T.P, the 2019/2020 semester for approximately five months, namely January to June 2020. The research time starts from the preparation of proposals to reporting the research results. The population in this study were all students of class XI with a specialization in MIA who used the 2013 curriculum. There were nine classes of students in class XI who were interested in MIA at SMA Eria Medan. Each class has an average number of 32 students.

The sample in this study consisted of two classes taken by purposive sampling. Class XI MIA 2 is used as an experimental class which is taught using the Guided Inquiry learning model based on Science Literacy and class XI MIA 6 is used as a control class that is taught using conventional models. Variable is the object of research or anything that becomes a point of attention in research. As for the variables in the study are:

Independent variables are variables that affect or cause. In this study, the application of guided inquiry models based on scientific and conventional literacy. The dependent variable is a variable that is the result of a cause. The dependent variable in this study is the result of learning chemistry and student activities related to the subject matter of the buffer solution.

Control variables are variables that must be controlled in a study. The control variable in this study is the teacher who teaches, the material taught, the student handbook, the time used and the same questions about the instruments (pre-test and post-test). This control variable is used to homogenize the sample so that the sample has the same effect on the symptoms studied. In this study the research instruments consisted of test instruments and non-test instruments. The test instrument is an objective test (multiple choice questions) and the non-test instrument is an observation sheet for student activeness assessments.

The test instrument used in this study was a test of student chemistry learning outcomes, namely the pretest and posttest. Pretest is given to the sample before treatment (treatment) with the aim of knowing the homogeneity and normality or similarity of the characteristics of the students' initial abilities. Posttest is given after completion of the treatment process with the aim of knowing student learning outcomes. In this study, the researchers analyzed the test instruments qualitatively and quantitatively. For qualitative analysis, namely the content validity of the learning outcomes test instrument, while the quantitative analysis was testing the questions to students.

According to Silitonga (2011) content validity is examining the test instrument from a technical, content, and editorial point of view. From a technical point of view, it is intended to be a study of instruments based on measurement principles and writing formats. Examining in terms of content is intended as an examination of the worthiness of the knowledge expressed. And the last one, which is examining from an editorial

perspective, is a study related to the proper and correct use of Indonesian according to Enhanced Spelling (EYD).

The technique used to determine the validity of each item is the product moment correlation technique with rough numbers proposed by Silitonga (2011), which can be seen in the following equation:

$$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$$

Where : X = Score of test items for which the validity will be calculated.
Y = total score of the items
N = Number of Students
r_{xy} = correlation coefficient

The obtained validity coefficient (rxy) is compared with the r values of the Product Moment Table with degrees of freedom (db = N-2) at α = 0.05 with the criteria:
if $r_{hit} > r_{table}$, then the test item is said to be valid.

The test reliability test is to see to what extent the measuring instrument is reliable (reliable) and can be trusted, so that the instrument can be accounted for in disclosing research data. Because the test used as a research instrument is multiple choice questions and essays with the formula used is the K - R 20 formula in Silitonga (2011), it can be seen in the following equation:

$$r_{11} = \left[\frac{K}{K-1}\right] \text{x} \left[\frac{S^2 - \Sigma p^2}{S^2}\right]$$

$$\text{With, } S^2 = \frac{\Sigma X^2 - \frac{(\Sigma X)^2}{N}}{N}$$

$$q = 1\text{-}p$$

Description: r_{11}: test reliability coefficient
K : number of test itemsS^2 : Varians skor
p: Proportion of subjects who answered correctly on one item (score 1)
q: The proportion of subjects who answered incorrectly on an item
N: The number of students

Each proportion is calculated using the formula:

$$p = \frac{the\ number\ of\ subjects\ whose\ score\ is\ 1}{N}$$

$$q = \frac{the\ number\ of\ subjects\ whose\ score\ is\ 0}{N}$$

To interpret the reliability value of the problem, the price is correlated to the product moment price table with α = 0,05 jika $r_{hitung} > r_{tabel}$ then it is a reliable question.
The reliability criteria of a test are as follows:

< 0.20 is very low
0.20 - 0.40 low
0.41 - 0.70 moderate
0.71 - 0.90 high
0.91 - 1.00 is very high

Numbers that show the characteristics (difficulty of difficulty) of a problem are called the Difficulty Index (Silitonga, 2011). This difficulty index shows the difficulty level of the question. To determine the difficulty level of the problem, the following equation can be seen:

$$P = \frac{B}{T}$$

Where: P = difficulty index
B = Many students answered the item correctly
T = The total number of students taking the test

With the classification of difficulty levels as follows:

P = 0.00 - 0.30 difficult
P = 0.31 - 0.70 moderate
P = 0.71 - 1.00 is easy

The distinguishing power of a question is the ability of a question to differentiate between high-ability students and low-ability students. For calculating the distinguishing power of the problem can be seen in the following equation:

$$D = \frac{B_A}{J_A} - \frac{B_B}{J_B} = P_A - P_B \text{ (Silitonga, 2011)}$$

Where: D = Distinguishing power
B_A = Many participants in the upper group who answered correctly
B_B = Many participants in the lower group who answered correctly
J_A = Many participants in the top group
J_B = Many participants in the lower group
P_A= The proportion of participants in the upper group who answered correctly
P_B = The proportion of participants in the lower group who answered correctly

With the classification of distinguishing power as follows:

D = 0.00 - 0.20 poor
D = 0.21 - 0.40 sufficient (satisfactory)
D = 0.41 - 0.70 good
D = 0.71 - 1.00 excellent

The non-test instrument used in this study was the student activity assessment observation sheet. The values related to student activity were measured and observed directly by the observer. Observation sheets for student activity assessments are arranged based on certain indicators. A test or non-test instrument whether used in research must be tested for validity and reliability before the instrument is used in research (Silitonga, 2011). For the validity of the non-test instrument in the study.

This is enough to do qualitatively with expert judgment or competition of experts in their fields (expert validators) who consider and analyze the criteria for the suitability of the observation sheet for student activity assessment as measured against the attitude indicators and descriptors made by the researcher. Meanwhile, the non-test instrument reliability test was not carried out by researchers due to time and cost limitations. Based on the problems studied and the research objectives, this type of research is experimental research. The research was conducted in two classes, one class used as the experimental class and one class as the control class. The research design used T1 and T2 designs, respectively, was the initial test and the final test, while X and Y were the treatment, namely the learning model used, the attitude assessment observation sheet grid is described in table 1.

Table 1. Observation Sheet Activity Assessment Grid

No	**Category**	**Aspects Observed**
1	Visual activities	Pay attention to the explanation of the educator
2	Oral acivities	Ask relevant questions with the material Express an opinion or brilliant idea
3	Listening activities	Listening to the educator's explanation well Listen carefully when another friend was speak / issue opinions
4	Writing activities	Do the assigned task educator
5	Emotional activities	Enthusiastic in following lessons

Based on the problems studied and the research objectives, this type of research is an experimental research. The research was conducted in two classes, one class used as the experimental class and one class as the control class. The research design used T1 and T2 designs, respectively, was the initial test and the final test, while X and Y were the treatment, namely the learning model used, as in table 2.

Table 2 Research Design

Group	Initial Test	Treatment	Final Test
Experiment	T_1	X	T_2
Control	T_1	Y	T_2

Information :

X = The treatment that will be given to the experimental class is learning using a guided inquiry model based on scientific literacy

Y = The treatment that will be given to the control class is learning using conventional learning models.

T1 = Initial test (Pretest)

T2 = final test (posttest)

Conducting observations at school to find out problems that occur in the learning process, especially in class XI regarding chemistry lessons and learning models. Preparation of research proposals. Approval of research proposals. Perform content validity on multiple choice test instruments with expert validators. Analyzing the validity and reliability of the non-test instruments, namely the observation sheet for the assessment of student attitudes with expert validators. Testing the test instrument on the questions that will be given to students as the research sample. Manage research permits. Consultation with the principal of the school where the research was carried out by bringing a research permit. Consultation with a chemistry teacher for class XI MIA SMA Eria Medan. Compiling learning materials by applying guided inquiry models based on Science Literacy and conventional learning models in the control class. Arrange student learning evaluations.

Research Implementation Stage

Determine two classes randomly from several parallel classes that exist as a sample class. The first class was used as the experimental class and the second class was used as the control class. Before learning begins, first collect data on students in each experimental class and control class. Carry out a pretest (T1) in the experimental class and control class to measure the initial ability, normality and homogeneity of the sample before being given treatment. Determining a sample of students, namely students whose status is relatively homogeneous. Providing X treatment (using the science literacy-based guided inquiry model in the experimental class and Y (using the conventional learning model) in the control class for a certain period of time. used, the length of teaching time, etc. During the research process, each experimental class and control class observed student activity through an observation sheet assessment of activities observed by the observer while the learning was in progress, namely from the beginning to the end of the learning. Providing treatment in the experimental class and in the control class is complete, the next stage is giving a posttest (T2) to measure learning outcomes and student activities in the experimental class and in the control class.

Final Stage of Research

The data on the pretest and posttest scores for each student were tabulated, then calculated the difference in the value of the learning outcomes obtained in the experimental class and the control class before and after treatment (posttest - pretest). Performing the statistical analysis requirements test, especially the normality test and the homogeneity test of the data. Calculating the average (mean) value of learning outcomes obtained in each class. Applying a suitable statistical test to test whether there is an effect of learning outcomes and assessment of student activity attitudes in the experimental class compared to learning outcomes and student assessments in the control class. Draw research conclusions.

Data Analysis Technique

In this study, the data processed were the learning outcomes of students from both classes. The data analysis technique used is the analysis using the t-test formula. Before carrying out the t-test, the following steps must first be carried out: to determine the average score of each sample group calculated by the formula:

$$X = \frac{\Sigma f_i X_i}{\Sigma f_i}$$ Sudjana (2005)

To determine standard deviation the formula is used:

$$S = \sqrt{\frac{\Sigma(X_i - \bar{X})^2}{n-1}}$$ (Silitonga, 2011)

Where :

$(X_i - \bar{X})^2$ = Quadratic Deviation
Xi = Student Value
n = Number of Samples

▪ RESULTS AND DISCUSSION

The data contained in this study were obtained from the pretest tested before the learning process was carried out in the two sample groups (the experimental class and the control class) and the postest tested after the learning process was carried out using the Science Literacy-based guided inquiry model in the experimental class and conventional learning models in the classroom. control. The use of the pretest is to see the homogeneity of the two sample groups and to determine the sample. The average pretest score for the experimental class was 40, while the pretest average score for the control class was 37.575. The use of the posttest is to see the learning outcomes of each sample after being treated. The posttest mean score for the experimental class was 87.2058, while the postest average score for the control class was 80.303.

After the test trials were held which were used as research instruments, namely validity, reliability, level of difficulty and distinguishing power, the results of the analysis of the items (questions) were obtained as follows:

The number of students as many as 34 people was determined with the level of confidence at $\alpha = 0.05$; then the r-product moment critical price is obtained ($r_{tabel} = 0{,}339$). The assessment criterion is if $r_{count} > r_{table}$, then it is said that the question is valid. Of the 40 questions tested on students, 29 were found to be valid, while 11 other questions were invalid. The number of valid questions used in this study were 20 questions where these questions represent each indicator of learning success in this study.

Reliability Test

The results of the test instrument reliability test using the Kuder Richardson-11 (KR-11) obtained rcount of 0.83686 where the r table price with $\alpha = 0.05$ was 0.3673. Because the price $r_{count} > r_{table}$, it can be stated that as a whole of the 20 questions that will be used as a data collection tool are declared Reliable.

Problem Difficulty Level

Of the 29 items, 5 were declared easy, namely items 2, 6, 8, 11, and 12. While 21 questions were stated to have moderate difficulty levels, namely 1, 4, 7, 9, 14, 16, 17 , 19, 20, 21, 26, 28, 29, 30, 31, 32, 33, 35, 36, 39 and 40. For difficult difficulty levels, 3 questions are 23, 24 and 34. The difficulty of the questions is shown in appendix 10.

Differences in Problem

Based on the results of the difference power test shown in appendix 12, it was obtained from the 29 questions tested on students, 12 questions were categorized as

sufficient, namely, there were 16 questions in good categories and 1 question for very good categories.

Descriptive Research Data

Before the two samples were given different treatment, they were given a pretest which aims to determine the initial ability of each student in the two classes, and to find out that the two classes were normally distributed and homogeneous. Furthermore, different learning is carried out, namely the experimental class using the guided inquiry model based on Science Literacy and the control class using the conventional learning model. At the end of the learning process, a final test (postest) will be given to determine student learning outcomes after being given treatment. Based on the research results, after the calculation, the pretest mean and standard deviation were obtained for the experimental class (40 ± 5.5048) and for the control class (37.575 ± 4.1685). While the scores for posttest and standard deviation in the experimental class (87.2058 ± 4.2978) and for the control class (80.303 ± 4.9905).

Analysis of Research Data

Based on the data on the value of student learning outcomes obtained in this study and after the data is tabulated, the mean, standard deviation and variance of the pretest and postest data from the experimental class and the control class are obtained.

Learning Outcomes Improvement Data (Gain)

The results of the calculation of the increase in learning outcomes can be directly searched from the average gain value of all students for each class, namely the increase in learning outcomes for the experimental class by 0.86 or 86% and for the control class by 0.8 or 80%. Based on the graph in Figure 4.2, it can be seen that there is a difference in the improvement of student learning outcomes who apply learning using the Science Literacy-based Guided Inquiry model and those who apply the conventional model. In the experimental class there was an increase in student learning outcomes by 86%, while the increase in student learning outcomes in the control class was 80%.

Discussion

This research has been conducted in class XI MIA 2 and XI MIA 6, SMA Eria Medan using different treatments, where the learning process in the experimental class (XI MIA 2) uses the Guided Inquiry model based on Science Literacy and the control class (XI MIA 6) uses conventional learning model. In its implementation, the use of the guided inquiry model has phases that must be taken, namely first providing orientation about the problem to students by means of the teacher (the researcher) discussing learning objectives, describing and motivating students to be involved in problem solving activities. Second, organize students to research in a way that teachers help students to define and organize learning tasks related to the problem. Third, helping to investigate independently or in groups by means of teachers encouraging students to get the right information, carry out experiments, and look for explanations and solutions. Fourth, develop and present work results in a way that teachers help students plan and prepare appropriate results, namely in the form of reports and models that help them to convey to others. Fifth, the teacher asks students to analyze the patterns of their findings in the form of conclusions. At this stage students can write down their strengths and weaknesses during the activity with the help of the teacher to be systematically corrected.

The use of this guided inquiry model is accompanied by the use of scientific literacy. In this case, the teacher (the researcher), before starting the lesson, already has a description of how the teacher teaches the buffer solution material by accessing what is known about the material, what is known about the students he teaches, about the curriculum related to the material and what is believed. as a good way of teaching on the buffer solution material.

While the control class using the conventional learning model was treated with lectures, discussions and questions and answers. Where this conventional learning model is a learning model that is often used by teachers in teaching. During the observations of researchers with chemistry subject teachers, it was found that chemistry subject teachers in these schools often used learning by forming study groups. Therefore, the researcher created a study group in the control class with a conventional learning model.

At the beginning of the study, each class was given a pretest to determine the homogeneity of the two sample groups in the experimental class and the control class. From the pretest results in the experimental class and control class, a homogeneous sample was taken by taking samples that had the same average value.

The next step was for the researcher to give different treatments to each class for 4 meetings. After the learning activities are completed, then a posttest is held to determine student learning outcomes. From the results of the posttest, it was found that the average score of the experimental class students was 84.11 and the students' mean score in the control class was 78.63. Based on these results, it shows that the average learning outcomes of students who are taught with the Science Literacy-based Guided Inquiry model are higher than the average learning outcomes of students who are taught using the conventional model.

Based on data normality testing carried out using the Chi-Square test, it was found that the post-test values of the two sample groups had normal data or $(X_2)_{count} < (X_2)_{table}$ at the significant level of 0.05 and N = 34 for the experimental class and the control class. After the data is tested for normality and homogeneity, then the hypothesis is tested.

From the t distribution data obtained t table = 1.668. Meanwhile, based on the calculation obtained tcount = 6.0593. Thus the criteria for testing the hypothesis t count is in the critical area are met. This means that Ho is rejected, Ha is accepted, which means that there is an influence on the learning outcomes of students who are taught using the Guided Inquiry model based on Science Literacy with students who are taught using conventional learning models.

Although this study succeeded in improving student learning outcomes, individual completeness could not be said to be 100% complete because there were some students (control class) whose post-test scores had not yet reached the KKM score (minimum completeness criteria) which was 75 for chemistry subjects at the school. This happens can be related to the factors that cause students to not fulfill the KKM according to Ariyo (2013), namely, aspects of complexity related to the difficulty level of the subject matter being tested, aspects of supporting resources related to the facilities and infrastructure available at school and aspects of which relates to the intellectual level of students. However, apart from post-test scores according to Herliany (2009), student completeness can also be assessed from daily scores, student activeness in learning activities and changes in student behavior after learning.

The second meeting, the teacher explained the material Estimating the formation of sediment based on the Ksp price and students began to actively ask questions in class. In this second meeting the students also gave their opinion about the material they knew.

In the third meeting, students were more active in the class in paying attention to explanations, questioning activities, expressing opinions, listening to writing friends' opinions and their enthusiasm for learning better than the first meeting and the second meeting. The fourth meeting, the students carried out the practicum.

The average assessment of student activities obtained by an average of three meetings for the experimental class of 78.0228 for the control class of 70.707. To find out whether the use of the Guided Inquiry model based on Science Literacy or not, hypothesis testing was carried out. Based on the hypothesis test obtained from the t distribution data obtained t table = 1.668. Whereas based on the calculation obtained tcount = 4.1479, the results obtained Ho rejected and Ha accepted, meaning that there is an influence of guided inquiry model based on Science Literacy on student activities on the material buffer solution.

For the correlation test of the guided inquiry learning model based on a correlation of 0.695, because $r_{count} > r_{tabel}$, then Ha is accepted, which means that there is a relationship between student activity and learning outcomes and the application of the Science Literacy-based Guided Inquiry learning model on Solubility and Solubility Times. As well as the meaning of the correlation coefficient r = 0.695, including a high correlation with the contribution of student activity to learning outcomes is 48.3%, while 52.7% is caused by other factors.

Based on the results above, there are several factors that support the success of the effect for the experimental class, including the first, the model used to make it easier for students to understand the material, the second by applying Science Literacy the teacher makes it easier to teach and understand what to do in the classroom so that teaching is more well structured, thirdly, with the presence of experiments (experiments) and questions and answers in the classroom can provide developments in student activities.

So based on the research that has been conducted at SMA Eria Medan, it can be concluded that there is an influence on learning outcomes and student activities who are taught using a guided inquiry model based on Science Literacy on the material of class XI buffer solutions, and the contribution of student activities to learning outcomes is 48.3%. , while 52.7% was caused by other factors.

▪ CONCLUSIONS

After conducting research, data calculation and hypothesis testing, the conclusions obtained are:

Student learning outcomes with the application of guided inquiry models based on Science Literacy in the experimental class were higher with an average score of 87.2, while in the control class, they were 80.3. The average value of learning outcomes in the experimental class has reached the minimum completeness criteria (KKM) at SMA Eria Medan, namely 75, but in the control class there are students who have not reached the minimum completeness criteria (KKM). There is a difference in the increase in student learning outcomes in the experimental class and the control class. In the experimental class there is an increase in student learning outcomes by 86%, while the increase in student learning outcomes in the control class is 80%. The science literacy-based guided inquiry model has an effect on student activity with an average value of activity in the experimental class is 78.022 and in the control class 70.707. The relationship between student activities and learning outcomes with the application of the Science Literacy-based Guided Inquiry learning model is 0.695 which has a high correlation meaning.

Suggestion

Based on the results and conclusions of the study, the researchers have several suggestions, namely for teachers and prospective teachers who want to apply the Science Literacy-based guided inquiry model to be able to master the class and manage the time well so that the syntax of the guided inquiry model as well as the application of Science Literacy can work well and efficient. More observers are needed in order to provide a more mature assessment of observing student activity. For the management of guided inquiry classes with experiments, it takes a longer duration of time so that the teacher can control student activities while conducting experiments in class. It is necessary to do more in-depth research on the factors that affect student learning outcomes and activities. To further researchers to further refine their research. This is important so that the results of this study are useful as a counterweight to theory and as an innovation in the world of education, especially in the use of learning models in the classroom.

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