TURNITINUSEOFCONSTRUCTIONINQUIRILEARNINGMODEL

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Submission date: 05-Dec-2022 05:49PM (UTC+0700)
Submission ID: 1971922393
File name: USEOFCONSTRUCTIONINQUIRILEARNINGMODEL.pdf (633.74K)
Word count: 3564
Character count: 19282

PEOPLE: International Journal of Social Sciences
ISSN 2454-5899

Sormin et al., 2019

Volume 5 Issue 2, pp. 908-917

Date of Publication: 07th October 2019

DOI- https://dx.doi.org/10.20319/pijss.2019.52.908917

This paper can be cited as: Sormin, E., Julianti, K., Nadeak, B., & Naibaho, L., (2019). Use of Construction Inquiri Learning Model to Improve the Interest of Learning Students Grade XI SMA Angkasa 2 in Coloid Materials. PEOPLE: International Journal of Social Sciences, 5(2), 908-917.

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USE OF CONSTRUCTION INQUIRI LEARNING MODEL TO IMPROVE THE INTEREST OF LEARNING STUDENTS GRADE XI SMA ANGKASA 2 IN COLOID MATERIALS

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Abstract

This study aims to find out (1) whether the application of guided inquiry learning model can increase the learning interest of high school students of class XI IPA Angkasa 2. (2) How much increase in student learning interest obtained through the application of guided inquiry learning model. This study uses the post-nontest, pre-nontest method. The research subjects were 32 students as the experimental group using the guided inquiry model with 24 validated questionnaire

statements. Data derived from the pre-nontest and post-nontest values were analyzed using the t test with an independent sample test using the SPSS 22 for window program. The results of the normality test using the Shapiro-Wilk Pre-test test is to obtain a significance value of 0.346 which means that the data is normally distributed (significant 0.346 > α 0.05). Therefore it can be stated that the data in this study are normally distributed and fulfill the requirements of research hypothesis testing based on parametric statistics. Homogenity test obtained the value of sig = 0.281 > α with α = 0.05, the data is homogeneous. Hypothesis test results using one sample t test obtained t count = 54.069 after compared with the distribution table t at a significance level of 0.05 the price of t table = 1.998, concluded t count > t table (54.069 > 1.998) or sig 0.00.

Keywords

Inquiry Learning, Learning Interest, Increase

1. Introduction

In order to improve the quality of education development is needed in several ways, namely learning infrastructure facilities, the quality of the learning process, access to fast and accurate information and also teaching resources. In terms of improving the quality of the learning process, the application of SCL-based learning models (student center learning) is one of the right choices (Naibaho, 2019). This learning model is carried out through a scientific approach (inquiry apparatus), inquiry, project based learning (project based learning), discovery learning (discovery learning), and problem based learning (problem based learning) suitable to be applied in the 2013 curriculum (Tyas, Sunarto, and Naibaho, 2018).

The difficulty of chemistry subject results in a lack of interest in studying chemistry, for which one of the learning models used is the SCL-based learning model. This SCL-based learning can be expected to help students as students who are more active and have high interest in learning so that they produce good results. Some of the subjects of chemical science one of the subjects which is science learning contain concepts that are quite difficult to understand by students, because they involve chemical reactions and calculations as well as concepts that are abstract in nature so that students perceive chemistry learning to be relatively new (Wahyudin, et al., 2010).

Based on observations made at *SMA Angkasa* 2 East Jakarta through questionnaire distribution of interest in learning chemistry to students and interviews with chemistry teachers which showed that student learning interest was classified as low with a percentage of 55.16% and interviews with chemistry subject teachers obtained information that students in the school

experienced some difficulties in understanding chemistry lessons which caused low interest in learning, including students not paying attention to the explanations of the material delivered by the teacher, which in learning was still dominated by the active role of teachers and students still less active in learning, in other words learning was centered the teacher is not student-centered, so that this makes student interest in learning low. Based on information obtained from chemistry subject teachers, the level of intelligence of *SMA* 2 students in class *XI IPA* 2 is in the middle or moderate level. With this level of intelligence, some learning models are considered appropriate for one of which is a guided inquiry learning model.

Some researchers have tried to find solutions to problems that occur in learning, especially in terms of interest in learning chemistry. Tarmizi and friends have conducted a study with the title of using experimental methods to overcome misconceptions and increase learning interest. Students stated that the analysis above experienced misconceptions before being given treatment 42.14% (67,75) and after being given treatment 14.64% (84,67). It can be concluded that the experimental method can increase students' interest in learning (Tarmizi et al. 2017).

Other research with the title "The influence of guided inquiry learning model with experimental methods on the results of physics learning students of class *XI IPA SMAN* 2 Mataram Academic Year 2016/2017" shows that the average value obtained in the experimental class is 77.00 while in the control is 65 , 65. The highest N-gain value is on the materiality of sub-material elasticity, that is 51% in the control and 88% in the experiment. It can be concluded that the experiment-based guided inquiry learning model influences the physics learning outcomes of *XI IPA* students of *SMAN 2* Mataram (Wahyuni et al., 2017) In addition, Andiasari (2015) in the policy journal and education development examines "The use of inquiry models with experimental methods in science learning at Probolinggo 10 Public High School" results of student completeness in cycle 1 were 72% in cycle II at 80%. Then it can be concluded that the inquiry learning model with experimental methods is well used in science learning (Andiasari, 2015)

The similar study was also carried out by Wang in the title "Influence of implementing inquiry education on science learning motivation and interest" (The effect of the application of guided inquiry on motivation and interest in learning science) concluded that the results of the study showed that after participating in the implementation of motivated guided inquiry and interest in learning science achieves the best learning effects (Wang et al., 2015), and Sahaluddin (2018) with the title "The effect of guided inquiry learning on the interest and learning outcomes of class X audio video techniques of *SMK* 3 Mataram in basic electronics engineering" research

results for interest show results that the average interest of students in the experimental class is 79.8 with a very high category.

Based on the explanation of the problems above and the references of several previous researchers, the researcher intends to provide a solution to the problem of the interest in learning chemistry that occurs in *Angkasa* 2 high school by taking the research title "Implementation of a Guided Inquiry Learning Model Based on Experimental Methods to Increase Classroom Students' Interest in Learning XI *IPA 2* in Colloidal Material.

2. Literature Review

Guided inquiry is one of the inquiry learning models where the teacher provides extensive guidance or guidance to students. In this model the teacher guides students to activities by giving initial questions and directing a discussion. The teacher has an active role in determining the problem and the stages of solving it (Juliyanti in Mochtar,Z.M, 2016).

Guided inquiry is an effective way to vary a classroom learning pattern. Guided inquiry learning is a group learning where students are given the opportunity to think independently and help each other with friends. Guided inquiri learning guides students to have individual responsibilities and responsibilities in groups or partners. The guided inquiry learning model is a learning model that is organized more structured, where the teacher controls the entire interaction process and explains the research procedures that must be carried out by students (Yasniati, 2017). Guided inquiry is learning that provides opportunities for students to get involved more, and gives students more opportunities to gain insight and develop their own concepts better (Salahudin, 2015). The inquiry learning based on the use of multimedia can also improve the acchievement of student for chemistry topic and also improve the creativity of students. (Suyanti, RD, 2016)

The role of the teacher in guided inquri is to present the problems given to students in the form of questions in the process of discovery or experimentation through the discovery students can find concepts of questions given by the teacher and can explain the conclusions that have been obtained through experiments. The teacher also acts as a guide and facilitator, helping students to make ideas, concepts, skills, that have been learned to get innovative knowledge. The right questions posed by the teacher will stimulate students to be creative, and think more broadly.

Table 1: *Stage of Guided Inquiry Learning*

Number	Stage Inquiry	Application of Guided Inquiry Learning
1.	Presentation of Problems	Teachers pose problems to students. Then the educator gives the question.
2.	Collection and data verification	The teacher instructs students to collect data (information) related to the problem in groups and then make a hypothesis.
3.	Conducting Experiments	Students are asked to conduct experiments so that students can answer questions or problems raised by the teacher at the beginning. The procedure used to conduct experimental activities has been provided by the teacher, then students are asked to write the experimental data in the LKS prepared by the teacher
4.	Formulate an explanation	Students are asked to manage the experimental data and present it in front of the class
5.	Analyzing the Inquiry Process	Students are asked to draw conclusions while answering questions asked by the teacher at the beginning. Then the teacher and the students reflect on the entire inquiry process

Colloid is a system which has a larger particle size than a solution, but is smaller than a suspension. The dispersion system consists of dispersed phase and dispersing medium. The dispersed substances are called dispersed phases, while the medium used to disperse is called the dispersing medium.

The colloidal system is composed of components, namely dispersed phase and dispersion medium or dispersing phase. The dispersed phase is discontinuous while the dispersion medium is continuous. In the mixture with the water mentioned above, the dispersed phase is milk, while the medium dispersion is water.

Table 2: *Comparison of the Properties between Solutions, Colloids, and Suspensions*

Solution	Colloids	Suspensions
Homogeneous cannot be dissected even though it uses an ultra-microscope	Macroscopically is homogeneous, but heterogeneous if observed with microscope	Heterogeneous
All particles have dimensions	Dimensions between 1nm - 100 nm	One or the dimensions of particles larger than 100 nm
One Phase	Two Phase	Two Phase
Stable	Generally Stabel	Unstable
Can't Filtered	Can't Filetered	Can Filetered

It is known that the colloidal system consists of two phases, namely the dispersed phase and the dispersing phase. Colloidal systems can be grouped according to the type of dispersed phase and dispersant. Colloids containing solid dispersed phase are called soles. So there are three types of soles, namely solid soles, liquid soles, and gas soles. The term sol is used to say liquid sol, while gas soles are better known as aerosols.

3. Research Method

This research will be conducted at the East Jakarta *Angkasa* Halim High School which will be held on May 14-23, 2018. The sample is taken by 32 treatment students, where the determination of the research unit and this sample uses a purposive sampling technique because the researchers determine themselves the sample is taken not randomly, but determined by itself.

Data is collected using research instruments. The technique used in the study becomes one variable, namely the questionnaire (questionnaire). The normality test is used to determine whether the population of the data is normally distributed or not. If the data is normally distributed then the analysis uses parametric statistics. Conversely, if the data is not normally distributed then the analysis using the non-parameterized statistical formula used in the normality test is the Shapiro-Wilk formula. The criteria are if the Sig (2-tailed) value is greater than 0.05 then the data is normally distributed. If Sig (2-tailed) is smaller than 0.05 then the data is not normally distributed.

Hypothesis testing is related to the acceptance or rejection of a hypothesis. This test is carried out using the parametric one sample t-test with SPSS 22 for window if t count <t table then Ho is accepted so that it can be concluded that the independent variable does not affect the dependent variable, if t count> t table then Ha is accepted then the variable independent effect on the dependent variable with a significant 0.05, a significant 0.05.

4. Result and Discussion

The instrument validation used in this study was a learning interest questionnaire, which was first validated by an expert validator as many as 30 statements that were used only 24 statements that were declared valid and the other 6 statements were not in accordance with the questionnaire indicator questionnaire.

Table 3: *Statistic of Description*

Description	Pre Non-test	Post Non-test
N	32	32
Mean	54,19	69,78
Std. Deviations	3,839	5,540
Variance	14,738	30,693
Range	17	27
Minimum	45	59
Maximum	62	86
Sum	1734	2233

From the descriptive table above, it can be seen that the highest value for the pre-contest score is 62 while the lowest value is 45 with a mean or an average of 54.19. Whereas for the non-test posts it can be seen that the highest value is 86, the lowest value is 59 with a mean or an average of 69.78.

The results of the above calculation are obtained for the pretest sig data = 0.346 so that the value of sig> 0.05, thus the sample comes from samples that are normally distributed and can be tested further.

Table 4: *Test of Normality*

Tests of Normality		
Shapiro-Wilk		
Statistic	Df	Sig.
,964	32	,346
*. This is a lower bound of the true significance.		

Calculation of ideal score for the amount of research data seen in table 4.4 (data obtained through Likert scale score calculation formula: Ideal score = Number of questions x number of respondents x Weight of items)

Table 5: *Ideal Score*

Number	Category	Score	Number of Question	Number of Respondents	Total Score
1	Strong Agree	4	24	32	3,072
2	Agree	3	24	32	2,304
3	Disagree	2	24	32	1,536
4	Strong Disagree	1	24	32	768

Table 6: *Calculation of Pre Test Learning Interest Scores*

Number	Category	score	Number of Data (responden x Score)	Total Score
1	Strong Disagree	1	137	137
2	Disagree	2	309	618
3	Agree	3	309	927
4	Strong Agree	4	13	52
	Total		768	1734

Table 7: *Calculation of Post Test Learning Interest Scores*

Number	Category	Score	Number of Data (responden x Score)	Total Score
1	Strong Disagree	1	6	6
2	Disagree	2	148	296
3	Agree	3	525	1575
4	Strong Agree	4	89	356
	Total		768	2233

Table 8: *Percentage Increase in Student Interest in Learning*

Category	Pre test	Post test	Range
Strong Disagree	137	6	-131
Disagree	618	296	-322
Agree	927	1575	648
Strong Agree	52	356	304
Total	1734	2233	499

Hypothesis testing using SPSS with t-test obtained results that t count is 54,069 with df as much as 63 (the number of df is 63 because the data compared is pre-contest data with post-non-data data). The value of t count is 54, 069 > from t table value is 1.998. Thus Ha is accepted, namely there is a significant increase in interest in learning so that it can be said that students' interest in learning increases and Ho is rejected.

Table 9: *Results of the Hypothesis Statistics Analysis*

One-Sample Test						
	Test Value = 0					
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Students Learning Interest	54,069	63	,000	61,984	59,69	64,28

5. Conclusions

Based on the results of the analysis and discussion conclusions can be drawn as follows:

- The application of experiment-based guided inquiry learning model can increase the learning interest of SMA XI IPA class 2 students as evidenced by the results of the analysis using t test with tcount 54,069> t table 1,998 or sig 0,00 <0,05, then the hypothesis Ho is rejected and Ha is accepted.
- There is an increase in interest in chemistry learning in high school students of class XI Science Space 2 by using an experiment-based guided inquiry learning model seen from the results of the Likert scale of 29%

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