Type Curiosity of Students Learned by Discovery-Based Contextual Models and Direct Learning Models on Acid Base Topic

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Sugiarti[1]* and Halimah Husain[1]

Universitas Negeri Makassar, Jalan Daeng Tata Makassar, Kampus UNM Parangtambung 90224

*e-mail: *atisugiarti34@yahoo.co.id*

Abstract. This research is a quasi-experimental that aimed to compare the curiosity of students with discovery-based contextual models and direct learning models. The independent variables in this study are discovery-based contextual models and direct learning models, while the dependent variable is the students' curiosity in acid-base topic. The population in this study is all students of class XI MIA SMAN 1 Gowa, while the sample was class XI MIA 1 as experimental group I and class XI MIA 7 as experimental group II with the number of students each 30 people. The research data was obtained through an observation sheet and student activity sheet. The results of the descriptive analysis showed that the average value obtained by the experimental group I was 79 while in the experimental group II it was 68,63.The results of hypothesis testing using t-test values obtained at t_{count} = 5,99 and significance level α = 0,05 with df = 3 obtained t_{table} = 1,64. It shows that the curiosity of student that are taught by discovery-based contextual models was higher that their taugh by direct learning models in class XI MIA SMAN 1 Gowa on acid-base topic.

Keywords: contextual-based discovery model, direct learning model, curiosity.

1. Preliminary

The 2013 curriculum transforms learning into a scientific one. The hope that attitudes will develop as part of the national character of students. The learning process is carried out by scientific study that includes skills consisting of 5 skills consisting of understanding, asking, trying, reasoning and communicating [4]. In the learning process, students are expected to have high curiosity so that the knowledge acquired can be developed. This is supported by [10] that students' curiosity about the material requested by the teacher or their own learning can cause more knowledge than students who are silent and only need to be discussed by the teacher. However, the learning process in schools is still greatly improved. Cognitive improvement, not enhancement, like knowledge, is curious. Determination of the character curiosity requires education, such as competent instructors, adequate learning resources, and also which are learning goals in the form.

The right approach, model, method, or learning strategy. So it is effective and efficient in growing and strengthening these characters in students themselves. Contextual-based

discovery learning model builds the ability of students to explore curiosity, identify, process, process and prove to draw their own conclusions about the things they learn. Likewise direct learning can take the form of demonstrations or practice and group work. Both of these models are considered to be able to direct students to create a better scientific attitude.

Discovery learning as a learning model does not convey the whole material. The material is delivered separately only in part which is delivered directly, while others is found by students. Students are encouraged to be active in finding parts of knowledge that have not been conveyed. In full students develop concepts and generalizations from fraction findings- the findings they got. Of course the process is fixed requires teacher guidance. The teacher guides students to discover and develop concepts and generalizations [7]. Chemistry is a subject that studies facts, theories, laws, and principles. Acid-base material that requires the ability of students to analyze concepts can be helped by contextual-based discovery learning models. This learning model can guide students to find a concept independently so as to improve their attitude of curiosity. Sugiarti's research result (2018) states that the learning of the PDBK model influences curiosity towards chemistry learning outcomes. Correlation test results of the three scientific attitudes with chemistry learning outcomes show that democracy is correlated but does not mean, curiosity and democracy do not correlate with learning outcomes.

The above background underlies researchers to conduct research on "the curiosity of MIA XI grade students at SMA Negeri 1 Gowa in the discovery based contextual learning model on acidic base matter".

2. Research Methods

This research is a quasi-experimental research. The independent variable of this research is the contextual discovery model and the direct learning model while the dependent variable is curiosity of students in acid-base material. The instrument used in this study was a scientific attitude observation sheet to determine students' curiosity. The results of the assessment by obtaining a percentage of the score observed at each meeting use the formula:

$$\text{Value} = \frac{\text{Scores obtained by strudents}}{\text{Maximum Score}} \text{ x } 10$$

Percentage categories can be seen in Table 1.

Table 1. Percentage Categories

Categories	Percentace
Very Good	76%-100%
Good	56%- 75%
Less Good	40%-55%
Not Good	< 40%

[1].

Data analysis techniques were performed using descriptive and inferential statistical analysis. Descriptive statistical analysis aims to provide a general description of the characteristics of the achievement of students' curiosity in the experimental class and experimental class II. Inferential statistical analysis is used to test hypotheses. Before testing the hypothesis, the prerequisite tests are normality and homogeneity tests. According to [9] normality testing uses the formula:

$$\chi^2 \text{account} = \sum \frac{(\text{Oi} - \text{Ei})^2}{\text{Ei}}$$

Homogenity testing using, $\alpha = 0{,}05$, the formula is:

$$\text{Faccount} = \frac{Large\ Variance}{Small\ variance},$$

$$S^2 = \frac{n \sum f_i x_i^2 - (\sum f_i x_i)^2}{n\,(n-1)}$$

3. Result and discussion

3.1. Result

3.1.1. Descriptive statistics analysis

Table 2. Statistic Value Of Student Curiosity

Descriptive Statistic	Statistic Value	
	Experimental of Class I	Experimental of Class II
Sample Size	30	30
The highes Value	90	90
The Lower Value	60	50
The Avarage Value	79	68,63
Deviation Standard	6,77	9,31

Table 2 shows that the average of value obtained by experiment class I was higher than the experimental class II. The assessment aspects based on the achievement criteria of curiosity for the experimental of class I and II are presented in Table 3.

Table 3. Curiosity of Students

No	Rated Aspect	Experimental of Class I		Experimental of Class II	
		Average	Categories	Average	Categories
1	Raise a hand to ask the learning process takes place	84,0	Very Good	75,3	Good
2	Answer friends / teacher questions well	87,3	Very Good	84,7	Very Good
3	Looking for sources which supports the learning process	68,0	Good	69,3	Good
4	Look for the basis of causal relationships that occur based on experiments and discussion results	78,0	Very Good	72	Good
Average Value		79,25	Good	75,25	Good

From the results above it be illustrated through the graph in Figure 1.

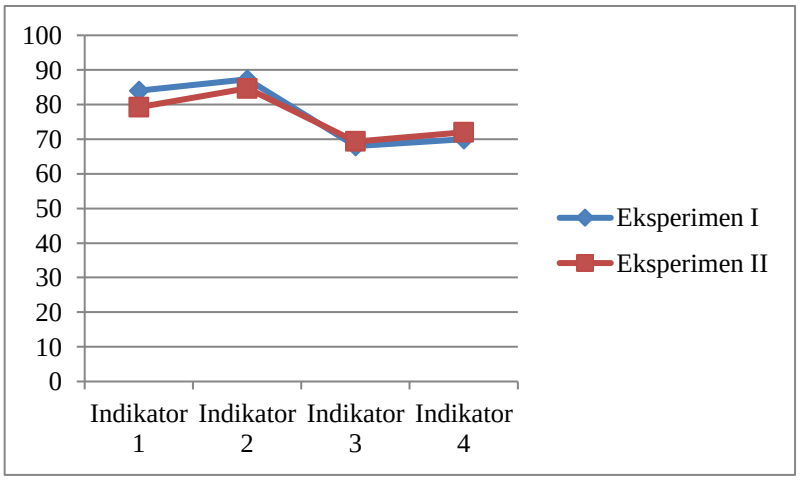

Figure 1. Graph of Achievement of Curiosity Indicators

Table 3 shows the average value obtained by the experimental class I and continued in the very good category while the experimental class II was in the good category.

3.1.2. Inferential Statistical Analysis

Inferential statistical have some prerequisite Analysis, namely; normality test and homogenity test. Normality test uses the chi-square test statistic (χ^2), the data answers normally when the calculated value < χ^2table. The calculation results in the experimental class I obtained the value of χ^2count= 2.456 and the value for χ^2table at the level of confidence (α) = 0.05 and the degree of freedom (dk) = 4 is 9.490 so that it can be concluded as a sample in the experimental class I normally distributed. In the experimental class II obtained χ^2count = 7.618 and the value for χ^2table at the level of confidence (α) = 0.05 and degrees of freedom (dk) = 4 is 9,490 and can be used in the sample class experiment II normally distributed.

Homogeneity testing criteria are Fcount < Ftable then the second class of samples comes from a homogeneous population. Homogeneity test results obtained data Fcount = 1.58 while at the level of confidence (α) = 0.05 obtained Ftable = 1.86 so that it can be obtained homogeneous class I and II research results.

Based on the prerequisite test results it is known that the data from experimental class I and II are normally distributed, and both classes result from homogeneous participation, then the hypothesis test used is the parametric statistical test that is the t-test. taccount = 5.03 and the value of the table at the 0.05 confidence level is 1.68. The results of this analysis show the value of tcount> ttable, then H_0 is rejected and H_1 is accepted the meaning that there is a difference in students' curiosity who are taught a discovery-based contextual model with a direct learning model in class XI MIA SMAN 1 Gowa acid-base material.

4. Discussion

The results of the descriptive statistical analysis showed the average value obtained in the experimental group I was higher than the experimental group II. Smaller standard deviations mean smaller variations of curiosity, which shows that learning with a contextual discovery based model is more appropriate to be used to increase students' curiosity compared to the direct learning model. There four aspects of curiosity attitude assessment are based on, namely raising one's hand to ask questions during the learning process, answering questions from friends/teachers well, looking for sources that support the learning

process, and looking for a basis for causal relationships that occur based on experiments and result of discuss.

This is in line with the results of research by [5]which states that the discovery learning model can improve students' scientific attitudes because in this model there are direct discovery activities, their activities are centered on the steps of scientific discovery so that students are more familiar with the concepts being studied. In addition, the results of research by [11] which states that the discovery learning model has systematic learning stages, which will help students develop the ability to think independently rather than learning that only listens or reads alone.

The results of the observation sheet analysis based on the indicators above show the average value in the experimental class in the very good category. Contextual-based discovery learning through the stages of stimulation to generalization that shows students not only learning but also invited to be skilled in finding. This supports the emergence of students' curiosity character. Stages of stimulation by providing phenomena that are relevant to daily life stimulate students to think and explore. Of course this will stimulate students to keep asking and asking questions. Behavior to keep asking questions is an indicator of the appearance of curiosity [3]. The above supports the achievement of indicators raising their hands to ask questions in the ongoing learning process that are in very good categories.

Indicators looking for sources that support the learning process are reviewed through the stages of problem identification and data collection. Stages of problem identification give students the responsibility to formulate hypotheses for the questions that have been identified. This gives rise to students' critical attitudes towards theories that are used as the basis for answering problems.

The above results are supported by research by [6] which states that discovery learning can facilitate students in developing the character of students' curiosity. In addition, the stage of data collection that provides an opportunity for students to conduct experiments development an attitude of curiosity because of the emergence of motivation to find answers.

Indicators answer friends/teacher questions well and search the basis of cause and effect relationships that occur based on experiments and the results of discussions are reviewed through the stages of data processing, verification, and drawing conclusions. Learners solve problems by discussing with classmates. The teacher's role is to guide each class so that the discussion results obtained are in line with the learning objectives so that students reach the same conclusions.

The verification stage leads students to justify the results obtained through class presentations and discussions [12]. This stage is able to provide an understanding of the concepts that have been learned. The ability to formulate problems to solve problems independently makes it easy for students to draw conclusions related to the material being studied. While the curiosity of the students in experimental class II develops from the stage of informing knowledge, providing training, and feedback. In the stage of informing knowledge, students pay attention to the explanations or experiments conducted by the teacher. In the training stage, participants were looked for information provided by teachers by reading books and students asked the purpose of the learning material. In the feedback stage the number of participants is watched by the percentage of friends or other groups during.

After testing hypothesis, the data is processed using the t- test and shows the value tcount>ttable. This can be seen from the category of developmental curiosity obtained by each different class. Other than that, in the experimental class I students able to apply the wanted indicator know based on activities the discoveries they made, good through experiments as well as the percentage and association and their communication in solving problems through discussion activities. While in the experimental class II the participants were able to solve the problem only through the percentage and feedback (question and answer) that was done. This result is supported by research by [8] which states that the learning stages of Discovery are able to make the curiosity of students develop better than the stages of direct learning. Research by [2] also which states that through self-discovery learning and collaboration among peers, students will have the satisfaction in what they are doing and hence will have positive attitudes. What is meant by positive attitudes is trust self, honest, and curiosity. Based on the results the research, then the application of discovery learning model can trigger character growth, mainly curiosity.

5. Conclusion and suggestion

5.1. Conclusions

Based on observations during the learning process on both models, discovery learning models can enable students to directly determine their own problems in accordance with the stimulus. Thus they know from the beginning the learning objectives. Starting from the problems found, they find out the appropriate data to find out more about the goals to be achieved each meeting. Whereas in the direct learning model, students are directly treated to the subject matter by the teacher which the problems from the teacher or raised by the teacher. Here students are passive or follow instructions from the teacher only. Based on the results of the analysis and discussion it can be concluded that the learning of contextual based discovery models can influence the attitude of curiosity of students XI MIA SMAN 1 at Gowa on acid-base subject matter.

5.2. Suggestion

Based on the results obtained from this study, it is suggested that teachers can apply contextual discovery based learning as an effort to increase students' curiosity.

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