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The Influence of Collaborative Inquiry Learning Model and Scientific Attitudes on 4th Grade Students' Learning Outcomes in Style Material

Dinda Widyastika[1], Ajat Sudrajat[2], Abdul Murad[3]
[1]*Primary School Teacher Education Study Program at State University of Medan, Indonesia*
[2]*Postgraduate Lecturer at State University of Medan, Indonesia*
dindawidyastika23@gmail.com

Abstract

This study aims to determine: student learning outcomes using collaborative and scientific inquiry learning model are higher than direct learning models (Direct Instruction) on style material, student learning outcomes that have high scientific attitudes are better than students who have low scientific attitudes on material style; and the interaction of collaborative inquiry learning model and scientific attitudes towards student learning outcomes in style material. This research is a quasi-experimental study. The population in this study are 28 class IV-A students and 28 class IV-B students. The sample in this study is selected by total sampling of two classes. The instrument consisted of a style of learning outcomes test in the form of multiple choice tests and a scientific attitude questionnaire. Data analysis using two-way ANAVA at the level of α = 0.05 with the help of IBM SPSS Statistics 25 and Excel 2013. The results shows that: the learning outcomes of student style material taught using the Collaborative Based Inquiry learning model 82.96 higher than the average the learning outcomes of style material using the Direct Instruction learning model of 74.67, the learning outcomes of students who have high scientific attitudes have an average of 83.67 and the learning outcomes of students who have low scientific attitudes on average 72.76, and there are the interaction between learning models and scientific attitudes in influencing student learning outcomes material style.

Keywords
Learning Models, Collaborative Based Inquiry, Scientific Attitudes, Learning Outcomes.

I. Introduction

Education is a human effort to broaden the horizons of knowledge in order to shape values, attitudes, and behaviors. To improve the quality of education is not an easy thing to do because there are factors that influence, for example: (1) students' understanding in mastering the subject matter provided, (2) teachers must have the knowledge and skills to teach such as the approach or learning model provided. Thus students are expected to increase their involvement in teaching and learning activities and certainly can improve their own understanding of the subject. Therefore education plays a very important role to ensure the survival of the nation and state, namely to create an intelligent and smart society.

Based on taxonomic theory, learning outcomes are grouped into three domains, namely cognitive, affective and psychomotor domains (M. Hosman, 2014: 34). The application of taxonomic theory to educational goals in various countries is carried out adaptively according to the needs of each country. In Indonesia, Law number 20 of 2003 concerning the National Education System has adopted a taxonomy in the form of attitudes, knowledge and skills. The realm of attitude includes the transformation of substance or teaching material so that

students "know why". The realm of skills includes the substance or teaching material so that students "know how", and the realm of knowledge includes the transformation of the substance or teaching material of students "know what". As a realization, the education system in Indonesia uses a scientific approach to the 2013 curriculum.

The Inquiry Learning Model is very supportive for learning in the 2013 curriculum, because the inquiry learning model is a strategy that emphasizes the process of searching and finding. The role of students in this model is to find and find their own lessons while the teacher is only as a facilitator and guide students to learn. Inquiry comes from the word Inquiry which can be interpreted as a process of asking and finding out answers to scientific questions asked. Scientific questions are questions that can lead to the investigation of the question object. Inquiry is a process to obtain and obtain information by conducting observation to find answers or solve problems with the formulation of problems with the ability to think critically and logically (Amri, 2010). The advantage of the inquiry model is to emphasize the development of cognitive, affective and psychomotor aspects in a balanced manner so that learning through this inquiry learning model is considered to be more meaningful. The inquiry learning model is able to provide space for students to learn according to their style, besides that another advantage is being able to serve the needs of students who have above average abilities.

The main objective in collaborative-based inquiry learning models is to develop students 'desires and motivations to learn the principles and concepts of science, develop students' scientific skills so they are able to work like scientists, accustom students to work hard to gain knowledge. The inquiry process gives students the opportunity to have a scientific attitude and teaches students to have real and active learning experiences, students are trained on how to solve problems while making decisions. The results of research by Haji Hamidun Sitorus (2017) on learning outcomes that show there is a significant influence on learning models and scientific attitudes of students taught by the inquiry model.

The importance of this research, then from the background that has been submitted, that will discuss the process and learning outcomes of students in science learning through scientific attitudes. Then the researcher will examine The Influence of Collaborative Inquiry Learning Model and Scientific Attitudes on 4th Grade Students' Learning Outcomes in Style Material.

II. Review of Literature

2.1 Understanding Learning Outcomes

A teaching and learning process about a teaching material is declared successful if specific instructional objectives can be achieved. Every teaching and learning process always produces learning outcomes. The problem faced is to what extent learning outcomes have been achieved. In this connection the success of the teaching process is divided into several levels or levels. The success rate is special / maximum, very good / optimal. Good / minimal, lacking. Sudjana (1992: 22) "suggests learning outcomes are abilities students have after they have received their learning experience". According to Dimyati & Mudjiono (2006: 245) "said that learning outcomes are a peak of the learning process". According to Djamarah (2006: 105) "a process of teaching and learning about a teaching material is declared successful if the instructional objectives in particular (ICT) can be achieved". From some of the opinions above can be concluded that the learning outcomes are mastery achieved by students after learning activities. While learning outcomes in mastering subject matter are

learned in the form of scores obtained through tests of learning outcomes after the learning process using the Collaborative-based Inquiry Learning Model is implemented.

2.2 Understanding Collaborative Inquiry Learning Model

Inquiry is a core part of contextual-based learning activities. Knowledge and skills acquired by students are expected not to be the result of remembering a set of facts, but the results of finding themselves (Trianto, 2009: 114). The teacher must always design activities that refer to the activity of finding, whatever the material being taught.

Inquiry learning model is one model that can encourage students to be active in learning. Munandar (2010: 371) states that inquiry learning is a learning activity in which students are encouraged to learn through their own active involvement with concepts and principles, and the teacher encourages students to have experience and conduct experiments that allow students to find principles for themselves. Myers in Mustaji (2010: 34) views collaborative learning as transaction-oriented dialogue as a means of cooperation between students. The idea of collaborative learning starts from a philosophical perspective on the concept of learning, to be able to learn someone must have a partner and work together to solve a problem. Alwasih (2013: 38) fosters collaborative learning as follows:

Collaborative learning emphasizes the construction of meaning by students from social processes that are based on the learning context. The basis of the collaborative method is interactional theory which views learning as a process of building social interaction. Collaborative learning can be an opportunity to lead to successful learning practices, collaborative learning involves the active participation of students and minimizes differences between individuals.

2.3 Definition of Scientific Attitudes

The term attitude comes from Latin language, "aptitude" which means ability, so that attitude is used as a reference whether someone is able or not capable of a particular job (Anwar, 2009). Scientific attitudes arise from the desire to collect and use evidence, change ideas in the light of evidence, and criticize review procedures (Rao, 2004: 9). Some expert opinions set five characteristics that characterize a person's attitude: (1) attitude is a tendency to act, perceive, think and feel in the face of objects, ideas, situations or values. Attitude is not behavior but is a tendency to behave in a certain way towards the object of attitude. Attitude objects can be objects, people, places, ideas, situations or groups; (2) attitude has a driving force. Attitudes are not only a record of the past but also a person's choice to determine what they like and avoid what they don't want: (3) attitude is relatively more settled. When an attitude has been formed in a person then it will stay for a relatively long time because it is based on choices that benefit him; (4) attitude contains evaluative aspects. The attitude will last as long as the object attitude is still pleasing to someone, but when the attitude of the object is considered negative then the attitude will change and (5) the attitude arises through experience, not brought from birth, so that the attitude can be strengthened or changed through the learning process.

III. Research Method

This research is a quasi-experimental study. The population in this study are 28 class IV-A students and 28 class IV-B students. The sample in this study are selected by total sampling of two classes. The instrument consisted of a style of learning outcomes test in the

form of multiple choice tests and a scientific attitude questionnaire. Data analysis using two-way ANAVA at α = 0.05 with the help of IBM SPSS Statistics 25 and Excel 2013. This study uses data analysis techniques in the form of descriptive analysis and inferential analysis. Descriptive analysis techniques are intended to describe the research data including the mean (mean), mode, variance and standard deviation. The data that have been obtained are then presented in the form of a frequency distribution table and a data trend histogram.

IV. Discussion

4.1 Pretest Learning Outcomes

At this stage of the study, the two sample classes namely the experimental class will be taught with a collaborative inquiry-based learning model and the control class will be taught with the direct instruction model. In the initial stage, the science learning outcomes pretest will be given to see whether the two classes are normally distributed, homogeneous and have the same initial ability. The similarity of initial ability of the two samples needs to be seen in advance so that when the two classes are given treatment, significant differences in learning outcomes can be obtained from the initial ability. Learning outcomes data in the experimental class and the control class include a leveled assessment of knowledge, attitudes, and skills, in accordance with the curriculum applied at SD 050666 Lubuk Dalam namely the 2013 Curriculum (K13). The control class obtained an average of 50, 75 pretest values and the experimental class obtained an average pretest value of 53.00. From the average of the two classes it can be said that the two classes have the same average initial Natural Sciences learning ability. So that later research data can be analyzed using parametric tests, it is necessary to do some assumption tests or prerequisite tests. The first requirement that data can be tested parametrically is a normality test. The normality test aims to see the distribution of student science learning outcomes data in both sample classes with normal distribution or not. Table 1 shows the results of the normality test using the Kolmogrov-Smirnov test.

Table 1. Test Normality Test Data for Experiment and Control Classes

Normality Test							
		Kolmogorov-Smirnov[a]			Shapiro- Wilk		
	Class	Statistics	df	Sig.	Statistics	df	Sig.
Learning Outcome	Pre Test Experiment (IBK)	0,161	28	0,060	0,965	28	0,454
	Pre Test Control (DI)	0,141	28	0,163	0,931	28	0,064

a. Lilliefors Significance Correction

From table 1 above it can be seen that the normality value of the experimental class using collaborative inquiry learning models is 0.161 with a significance of 0.060. Because the significance is greater than 0.050, the experimental class data is normally distributed. Furthermore, the normality value of the control class using the direct instruction model of 0.141 with a significance of 0.163 because the significance is greater than 0.050, then the control class pretest data is normally distributed. Having known that the data is normally distributed, it is then determined whether the two ampel classes have the same variance. Tests for variance similarity and mean pretest values performed using the Test Of Homogeneity Of Variance are presented in Table 2.

Table 2. Test Homogeneity of Pretest Data

Pretest Value

		Levene Statistic	df1	df2	Sig.
Learning outcomes of natural Sciences	Based on Mean	0.937	1	54	0.337
	Based on Median	0.456	1	54	0.503
	Based on Median and with adjusted df	0.456	1	45.522	0.503
	Based on trimmed mean	0.889	1	54	0.350

The test results show the F value for the science learning outcomes pretest is 0.937 with a significance of 0.337. This value indicates that the pretest data of science learning outcomes has the same variance because the sig value. 0.937> 0.050. In other words the results of the second class homogeneous pretest. Based on the results of the calculation of normality and homogeneity above, it can be concluded that there is no difference in the initial ability of science learning outcomes in the experimental class with the control class or in other words both classes have the same awa. Because all of the test requirements for the analysis test have been met, the research data can be analyzed parametrically.

4.2 . Results of Scientific Attitude Instruments

The scientific attitude in this study is a moderator variable that is considered to have no effect on the learning process, meaning that it is a basic ability possessed by students, therefore the instrument is given before the learning activities take place after the pretest is carried out.

Experiment Class				**Control Class**			
No	**Internal Class**	**F**	**F (relative) (%)**	**No**	**Internal Class**	**F**	**F (relative) (%)**
1	50 – 53	4	14,29	1	48 – 52	6	21,43
2	54 – 57	8	28,57	2	53 – 57	7	25
3	58 – 61	4	14,29	3	58 – 62	3	10,71
4	62 – 65	2	7,14	4	63 – 67	5	17,86
5	66 – 69	5	17,86	5	68 – 72	3	10,71
6	70 – 73	2	7,14	6	73 – 77	3	10,71
7	74 – 77	3	10,71	7	78 – 82	1	3,57
Total		**28**	**Total**	**Total**		**28**	**100**
Average		**61,61**		**Average**		**60,96**	

From the grouping by class in table 4.4 it is known that the average scientific attitude of students in the experimental class was 61.61 while the average scientific attitude in the control class was 60.96.

4.3 Learning Outcomes

After the learning is finished, the learning outcomes posttest is given to the two sample classes, namely the experimental class and the control class. Posttest questions are in the form of knowledge with multiple choice questions totaling 25 items. The posttest question is exactly the same as the pretest problem. This aims to see whether there is an improvement after students are taught with the Collaborative Based Inquiry learning model for the experimental class and the Direct Instructional model for the control class.

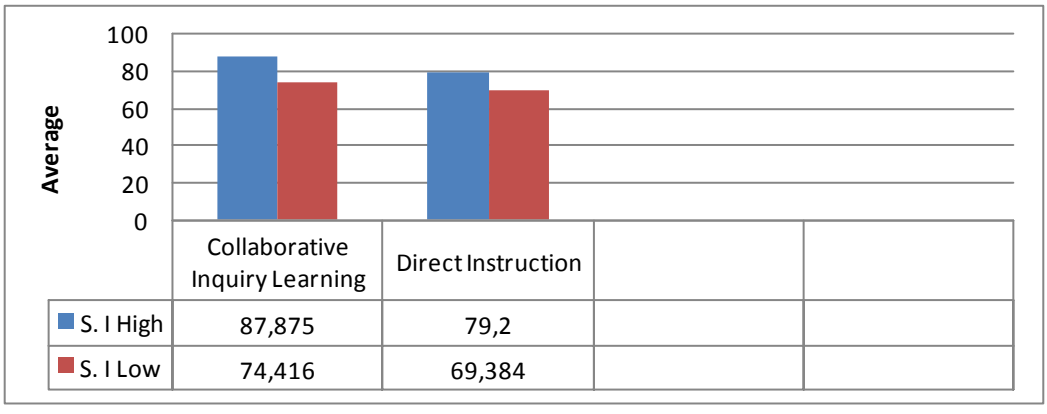
4.4 Analysis of Research Results Learning Outcomes

Data that has been collected, then analyzed to see the difference. The data analyzed are: 1) the pretest and posttest data of students' science learning outcomes, and, 2) the data of students' science learning outcomes based on students' scientific attitudes.

4.4 Data Analysis of Pretest and Posttest Student Learning Outcomes

After the raw data of the research results are obtained, an analysis is then performed. The initial analysis conducted is to see the comparison of pretest and posttest data from the two experimental and control classes. In Figure 1 shows the comparison of the average science learning outcomes of students pretest-posttest experimental class and control class.

It can be seen an increase in average learning outcomes of science learning outcomes of students before and after being given treatment. Can be seen in the experimental class pretest 53.00 while in the posttest obtained 82.96, so that an increase of 29.96. In the pretest control class, it was obtained an average of 50.75 while in the posttest it is obtained 74.67, so it increased by 23.92. Then it can be concluded that the improvement of science learning outcomes of students in the classroom taught by the Collaborative Inquiry learning model is higher than the control class taught by the Direct Instruction learning model. As for the comparison of student learning outcomes based on the level of scientific attitude in collaborative-based inquiry classes and direct instruction classes.



Based on Figure 2 above, it can be explained that the average student learning outcomes in the Collaborative-based inquiry class which has a high scientific attitude of 87.875, while the average student learning outcomes in the direct instruction class that has a high scientific attitude of 79.2. The mean student learning outcomes in the Collaborative

Inquiry Learning class which has a low scientific attitude of 74.416, while the average student learning outcomes in the direct instruction class that has a low scientific attitude is 69.384. Thus it can be concluded that the average student learning outcomes in the Collaborative Inquiry Learning Model class are higher than those of the direct instruction class in both the high scientific attitude and the low scientific attitude categories. Whereas if the calculated increase in student learning outcomes between high scientific attitudes to low scientific attitudes, the value of students in the Collaborative Inquiry Learning Model class increased by 13.459 points, while in the direct instruction class increased 9.816 points. Thus it can be concluded that there was an increase in student learning outcomes taught by the Collaborative Based Inquiry model and Direct Instruction. In more detail, the translation of scientific attitudes is based on students' learning outcomes in both classes. Differences in student learning outcomes in Collaborative Based Inquiry classes in both the high and low scientific attitude categories are caused because in Collaborative Inquiry Learning Model classes, students are facilitated to learn more actively, innovatively, and creatively in finding their own knowledge so that their thinking skills are better trained than in the Direct class Instruction. This shows that the learning model used in class directly or indirectly influences students' thinking abilities.

V. Conclusions

a. Student learning outcomes taught by collaborative inquiry learning model have higher learning outcomes compared to Direct Instruction learning models in the Natural Sciences theme 7 theme Keragaman di Negeriku in 4th Grade Student SD Negeri 050666 Lubuk Dalam. This is evidenced through calculations that show a significant difference between students taught with collaborative-based inquiry learning models obtained an average of 82.96 while the direct instruction learning model is averaged 74.67.

b. Student learning outcomes that have high scientific attitudes get higher learning outcomes than groups of students who have low scientific attitudes in 4th Grade Student SD Negeri 050666 Lubuk Dalam. This is evidenced through calculations that show differences in science learning outcomes of students who have a high scientific attitude obtained an average of 61.61, while students who have a low scientific attitude obtained an average of 60.96.

c. There is an interaction between learning models and scientific attitudes towards 4th grade students learning outcomes 4th Grade Student SD Negeri 050666. The role of scientific attitudes in improving learning outcomes in collaborative-based inquiry classes is higher than students taught with the direct instruction model.

References

Alwasih, 2013.*Pokoknya Menulis Cara Baru Menulis Dengan Metode Kolaborasi*. Bandung: PT Kiblat Buku Utama

Astuti, R. dkk.Pembelajaran IPA Dengan Pendekatan Keterampilan Proses Sains Menggunakan Metode Eksperimen Bebas Termodifikasi Dan Eksperimen Terbimbing

Ditinjau Dari Sikap Ilmiah Dan Motivasi Belajar Siswa.*Jurnal Inkuiri*. Vol.1 No.1 (2012)

Anwar, H. 2009. Penelitian Sikap Ilmiah Dalam Pembelajaran Sains. *Jurnal Pelangi Ilmu*, 2(5). (http://ejurnal.Ung.Ac. Id./index.Php/JPI/article/view/593

Arikunto, S. 2009. *Prosedur Penelitian Suatu Pendekatan Praktek*. Jakarta: Rineka Cipta

Basyiruddin,U. 2005. *Metodologi Pembelajaran Agama Islam*. Jakarta: Ciputat Press

BSNP,2006. *Panduan Penyusunan Kurikulum Tingkat Satuan Pendidikan Dasar dan Menengah*. Jakarta: Badan Standart Pendidikan, Hal:45

Slamento, 2010.*Belajar Dan Faktor-Faktor Yang Mempengaruhinya*. Jakarta: Rineka Cipta

Fatima Eisa Abedl. The Effectiveness Of Marzano's Dimensions Of Learning Model In The Tenth Grade Students Acquisition Of Scientific Concepts In Science And The Development Of Critical Thinking Skills And Their Attitude Towards Science**.** *British Journal of Education*. Vol.5 No.1 (January 2017)

Haji Hamidun Sitorus, dkk. The Influence of *Inquiry* Learning Model on Student's Scientific Attitudes in Ecosystem Topic at MTs. Daarul Hikmah Sei Alim (Islamic Junior High School) Asahan. *International Journal of Humanities Social Sciences and Education (IJHSSE)*. Vol. *4 No. 11 (November 2017)*

Istarani. 2015. *Model Pembelajaran Inovatif*. Medan: Media Persada

Jenny Lilawati. The Effect of Collaborative-Based Inquiry Learning Model and Science Process Skills towards Cognitive Ability of Elementary School Students.*Journal Advances in Social Science, Education and Humanities Research*. Vol.200 (AISTEEL 2018)