International Journal of Education Learning and Development

Vol.5, No.11, pp.80-99, December 2017

Published by European Centre for Research Training and Development UK (www.eajournals.org)

CREATIVE THINKING SKILLS OF NATURAL SCIENCE WITH COLLABORATIVE-BASED ON DISCOVERY LEARNING MODEL COMPARED BY DIRECT INSTRUCTION LEARNING MODEL AT SD NEGERI 066045, CLASS V, MEDAN HELVETIA, INDONESIA

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ABSTRACT: *Natural science education (IPA) is implemented in the learning process at school considering the importance of the lesson. Based on the results of interviews in science learning, the learning is still a teacher centered (centered on the teacher). The results of IPA study are also still low at SD Negeri 066045 Helvetia Medan of Class V. At SD Negeri 066045 Helvetia Medan of Class V students using creative thinking skills learned with collaborative discovery learning model of learning are different from the creative thinking skill of students who taught by direct instruction model in SD Negeri 066045 Medan. This is based on the results of the first hypothesis test that the significance Anava (= 0,000) is smaller than the significance level (= 0.05), and F_{count} (= 81.347) is greater than F_{table} (= 4.08).*

KEYWORDS: Creative Thingking Skill; Natural Science; Dicovery Learning Model; Direct Instruction Learning Model

INTRODUCTION

Natural science education (IPA) should be well implemented in the learning process at school considering the importance of the lesson. Science learning is said to be successful when all the learning objectives that have been identified can be achieved, revealed in learning activities, science learning outcomes, and high-level thinking skills, but in reality, activity, learning outcomes and high-level thinking skills are still low because it has not reached the predefined standard of completeness. The facts are based on the results of preliminary observations conducted on January 16, 2017 at SD Negeri (Government Primary School) 066045 Helvetia Medan of Class V students. Based on observations in the students' learning, the students seem passive and unable to ask the various questions and ideas, the activities and the creative thinking skills of students still relatively low. Based on the results of interviews in science learning, the learning is still a teacher centered (centered on the teacher). The results of IPA study are also still low as shown in the following table:

Print ISSN: ISSN 2054-6297, Online ISSN: ISSN 2054-6300

Table 1: Frequency Distribution of Natural Science Value

No	Value	Frequency	%	Description
1	0	6	13.63%	Not completed
2	10	3	6.81%	Not completed
3	20	1	2.27%	Not completed
4	30	7	15.90%	Not completed
5	40	4	9.09%	Not completed
6	50	8	18.18%	Not completed
7	60	6	13.63%	Not completed
8	70	9	20.45%	Completed
Total		44	100%	

(Source: State Administration of SD 066045 Medan Helvetia)

Based on the above table, it is known that only 9 people from 44 students who have the value that can be categorized as *completed* or 20.45% of the total number of students. With the value of 0, six (6) students or 13.63%, the value of 10 as many as 3 students or 6.81%, the value of 20 as 1 student or 2.27%, the value of 30 as 7 students or 15.90%, the value of 40 as many as 4 students or 9.09% the value of 50 as many as 8 students or 18.18%, the value of 60 as 6 students or 13.63%, the value of 70 as many as 9 students or 20.45%. This means that the students' learning outcomes overall are still very low. . This can be seen from the indifferent attitude towards the learning process. The students are less enthusiastic about the material given. It is seen from the frequent students make a fuss in the class, they rarely summarize the results of material records in notebooks that are ignored when are asked the lesson that has passed, then they do not know because they rarely repeat lessons at home. Student as one component of learning has a unique personality, between one student and the other has differences either in the level of intelligence, memory, physical condition, or the ability to control emotions. In general, the students in schools receive the same educational services, but their material mastery levels are different so that there are some students whose learning achievement is far below the Minimum Exhaustiveness Criteria (KKM) that have been set in each elementary school.

Therefore, it is necessary to apply an effective learning model in learning activity and develop the ability of creative thinking that is with discovery learning model. Discovery learning model emphasizes a student-centered learning. This makes the students more active in learning and looking for the concept of material so that learning will be more meaningful. The stages of discovery learning model provide an opportunity for students to train each indicator of creative thinking skills. The supported research results conducted by Iriany, et al. (2009: 11) in the journal there is an increase in pretest and posttest of each indicator of creative thinking skills, both in the control class and experimental class, for creative thinking skills on the indicator of arousing curiosity and curiosity experienced an increase in N-gain of 54.72% building existing knowledge on students has increased N-gain by 50.31%, viewing information from different point of view increased by 68.90%, and predicted indicators of limited information increased by 68.92%.

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REVIEW OF LITERATURE

Definition of Creative Thinking Skill in Natural Science Learning

With the rapid advances and changes today in technology and science, educators cannot accurately predict what knowledge a student will need over ten years or more to be able to cope with life problems when he/she grows up. What educators can do is developing the students' attitudes and abilities that can help to deal with future issues creatively and inventively. Educators and the environment should help the students to develop their habits of mind, that is each student masters the creative thinking skills and knowledge concepts well.

Thinking is generally assumed as a cognitive process of mental activity that emphasizes the reasoning of concepts to gain knowledge. Natural Science (IPA) learning begins with the emergence of human curiosity about the natural state, from the curiosity that makes people always observe the symptoms of nature that exist and try to understand it. According to Wahyana (in Trianto, 2010: 136), "Science is a collection of knowledge arranged systematically, and in its use is generally limited to natural phenomena. Its development is not only characterized by the existence of a collection of facts, but by the existence of scientific method and scientific attitude".

From the explanation, it can be said that natural science is a systematic collection of theories. Its application is generally limited to natural phenomena, born and developed through scientific methods such as observation and experimentation and demanding scientific attitudes such as curiosity, openness and honesty. The attitude changes can affect the students' learning outcomes from observations and experiments that they did with the natural conditions that exist around him.

Discovery Learning Model

Discovery learning according to Jerome Bruner is a developed teaching model based on the cognitive view of learning and the principles of constructivism. In discovery learning, the students are encouraged to learn independently on their own. They learn through active engagement, with concepts and principles, and the teachers encourage them to gain experience by engaging in activities that enable them to discover the concepts and the principles. Carin in Ratna Tanjung (2017: 92) states that discovery is a mental process whereby a child or individual assimilates concepts and principles. In order for the students to gain experience, allowing them to find some of these concepts or principles. These mental processes, for example: formulate problems, formulate hypotheses, design experiments, execute experiments, collect and analyze data, and draw conclusions. In addition, it requires an objective, honest, passionate, open-minded attitude.

Discovery Learning model as revealed by Moedjiono (2011: 86) which states that:

> *The discovery learning model is a procedure that emphasizes the individual's learning, object manipulation or the setting or conditioning of objects and other experiments by students before generalizations or conclusions are made.*

Discovery learning model is a developed learning model based on a constructivist view. Kurniasih, et al (2014: 64) disclose the Discovery Learning model is a learning process that occurs when the learning material is not presented in its final form, but it is expected that the students who organize themselves, find the concept through a series of data or information

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obtained through observation or experiment. Wilcox in Hosnan (2014: 281) states that in learning with discovery, students are encouraged to learn largely through their own active engagement with concepts and principles and teachers encourage students to have experience and experiment to enable them to discover principles - principles for themselves.

According to Muh Tawil, et al (2013: 59) skills are relatively specific skills in thinking something in need someone to understand something information in the form of ideas, concepts, theories, and so forth. Knowledge and thinking skills are a mutually supportive unit. According to J.C Coleman and C.L Hammen (1974: 425) in Dea Sekar Komala (2013: 3) creative thinking is a way of thinking that produces something new in concept, understanding, invention, and artwork. Meanwhile, according to Halpern in Vicky Fidyawati (2009: 19) explains that creative thinking is often called divergent thinking, It means to provide a variety of possible answers from the same question. The ability to find many possible answers to a problem, where the suppression of quantity, usability, and diversity of answers is an explanation of the creative thinking put forward by Munandar, 2014: 33).

Collaborative based Discovery Learning

The steps of collaborative based discovery learning in Rusman (2014: 199) can be implemented as follows:

(1) Developing the students' thinking to do more meaningful learning activities by self-employment, finding their own and constructing new knowledge and skill which they must possess in this activity the teacher convey the purpose of learning and provide stimulation in the form of facing students with problems.

(2) Performing an activity of mercury for all the topics being taught. In this activity the teacher can design inquiry activities through experiment, during student work, teacher guide and facilitate.

(3) Developing the nature of the curiosity by asking.

(4) Learning in groups to discuss and collaborate.

(5) Presenting the model as an example of learning.

(6) Conducting reflection

Based on the above ideas, the steps of the discovery learning model can be concluded that collaborative groups work together in synergy to identify, demonstrate, discuss, research, analyze and formulate the answers of tasks or problems in the LKS (Student's Worksheet} or problems found alone, after the collaborative group agreed on the results of the solution problem, each student write the report individually and do reflection, while for someone (teacher) colleagues in the field of science can give direction and motivation to see the advantages and weaknesses that have been done by teacher in facilitating student maximize the achievement of its learning objectives properly and correctly.

Direct Instruction Model

The direct learning model is one of a variety of learning models. Direct Instruction model is one of the teaching models which is specially designed to develop students' learning about procedural knowledge and declarative knowledge which is well structured and can be learned

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step by step (Sofyan Amri, et.al.2015: 39). This is similar to Arends in Sugiarto (2010: 49) reveals a direct learning model developed specifically to improve the learning process of students, especially in terms of understanding knowledge and explain it in full accordance with procedural knowledge and declarative knowledge that is taught gradually.

METHODOLOGY

Population and Sample of Research

The population in this study is all students of grade V SD Negeri. 066045 Helvetia Medan Academic Year 2017/2018 as many as 44 students, which is distributed in two classes, namely V-A class of 22 students and V-B class of 22 students. The sampling technique in this research by using total sampling that is all the population used as sample. In the classroom V-A was made a control class taught by direct instruction model and V-B class was made experimental class taught by discovery learning model.

Table 2: Population and Sample Research

Population	Sample	Learning Model
Grade V student of SD Negeri 066045 is 44 students. Class V-A (22 Students)	Class V-A (22 Students)	*Direct Instruction*
	Class V-B (22 Students)	*Discovery Learning*

Research Design

In conducting this research, the samples were grouped into two groups: group one as the control class which was given direct instruction learning and the second group as experimental class which was given discovery learning teaching. In this research, a test was given twice that is before the treatment and after the treatment. The test given before treatment (T1) is called a pretest and the test given after treatment (T2) is called posttest. The difference between T1 and T2 that is T2 - T1 is assumed as treatment effect. The design of the research was conducted by Two Group Pretest-Posttest Design. The research design for students' creative thinking skills in the experimental class and control class will be designed as follows:

Table 3: Research Design

Sample	Pre-test	Treatment	Post-test
Control	T_1	X	T_2
Experiment	T_1	Y	T_2

Note:

T_1 = Initial Ability Test (Pre-test)

T_2 = Final Ability Test (Post-test)

X = Treatment in control class by applying direct instruction model

Y = Treatment in the experimental class by applying discovery learning model

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The research design used is 2 x 2 factorial design. The design is able to control the various factors influencing internal validity. This design will be compared the influence of discovery learning model and Direct Instructional to science learning activities in terms of students' creative thinking skills. Discovery learning and Direct Instructional models are as independent variable, high or low student learning activity are as moderator variables, and creative thinking skill of natural science discussion is as dependent variable. These variables are incorporated into the research design. The research design for two path ANAVA (factorial design 2 X 2) is in Table 4 below:

Table 4: Two-way ANAVA Research Design (2 x 2 factorial design)

Learning Activity (B)	Creative Thinking Skill by Using Learning Model (A)		Average
	Direct Instruction (A_1)	*Discovery Learning* (A_2)	
High (B_1)	μA_1B_1	μA_2B_1	μ_R
Low (B_2)	μA_1B_2	μA_2B_2	μ_T
Average	μ_e	μk	

Note:

μA_1B_1 : The students' average high learning activity using direct instruction learning model.

μA_2B_1 : The students' average high learning activity using discovery learning model.

μA_1B_2 : The students' average low learning activity using direct instruction model

μA_2B_2 : The students' average low learning activity using discovery learning learning model

μ_e : Average creative thinking skills using direct instruction model.

μ_K : Average creative thinking skills using discovery learning model.

μ_R : The average creative thinking skill based on high learning activity using direct instruction model and discovery learning model.

μ_T : The average creative thinking skill based on low learning activity using direct instruction model and discovery learning model.

Test of Students' Creative Thinking Skill

Based on the definition of students' creative thinking skill explained before, the criteria used are based on the indicator of creative thinking of natural science in using instrument and materials, work on both essays and LKS. The following indicator shows the creative thinking stage of Lawson II stages in the table 5 as follows:

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Table 5: Test of Students' Creative Thinking Skill at SD Negeri 066045 Helvetia Medan

Indicator of Creative Thinking Skill	Number Item	Total
Building on knowledge that students already have	1,8	2
Arising the curiosity	2,6,7	3
Looking at information from a different point of view	3,4	2
Predicting from limited information	5,9,10	3
Number of Item	**10**	**10**

Source: Lawson in Iriany, et al (2009) tailored to the characteristics of the study

Test item of creative thinking skills in this research is in the form of description, because with the descriptive test, it can be known patterns and variations of student answers in solving the problem of science. Aspects of creative thinking skills of students to be studied is the overall score of the students who take the test summed and determined the percentage of the score.

$$\text{Test of Students' Creative Thinking} = \frac{Number\ of\ scores\ per\ aspect}{Total\ of\ Maximal\ Score} \text{ x } 100$$

Questionnaire of Students' Learning Activity

The instrument of students' learning activity is anstrument used to capture the research data. The instrument of learning activity was adopted from Paul B. Diedric in Sadirman (2011: 101) and developed by the researcher who adapted to the research characteristics with reference to the aspects and the indicators to be achieved on learning activities. The form of instrument used is a questionnaire that has been validated by an expert.

The instrument of the students' learning activities to be studied is the score per student who answered the questionnaire summed and determined the percentage of the score, then obtained the value of the student learning activities with the following formula:

$$\text{Questionnaire Instrument of Students' Learning} = \frac{Number\ of\ scores\ per\ aspect}{Total\ of\ Maximal\ Score} \text{ x } 100$$

The students' learning activity is the driving force or desire that cause the students' learning activities to achieve the goals that have been formulated in the learning activities. Learning activities can be measured with several indicators, can be described in Table 6 below:

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Table 6: Questionnaire Student Activity at SD Negeri 066045 Helvetia Medan

Variable	Aspect	Indicator	Statement		Number of Item
			Number of positive item	Number of negative item	
LEARNING ACTIVITY	*Visual Activities*	Accuracy of Concentration	2,5	1,3,4,6,7,8	8
	Oral Activities	Enthusiastic Feedback Excellence Responsive	9,10,11,13,14	12,15,16,17,18 ,19,20	12
	Listening Activities	Understanding Concern	21,22,23	24,25	5
	Writing Activities	Keeping a good record of the material	26,27,29	28,30	5
	Drawing Activities	Creating practical reports well	33	31,32	3
	Motor Activities	Willpower Hard work	34,37,38	35,36	5
	Mental Activities	Passion Initiative	39,40,41,44	42,43	6
	Emotional Activies	Like work situations with personal responsibility	45,47	46	3
Number of Item			23	24	47

Collaborative-Based Discovery Learning Model

The observation of learning in collaborative lesson study is more focused on student learning activities, observer (teacher) should be able to pour all findings related to learning activities into the narrative description contained in the rubric. In conducting observation of learning, observer (teacher) is expected to make a careful observation of all students. In addition, observers (observer teachers) should not intervene against teachers who are teaching or students who are learning. Observation rubric of collaborative activities lesson study can be seen in table 7 below:

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Table 7: Observation Rubric of Collaborative Activities

No	Description of collaborative activities	Number of student			
		Many	Medium	Few	Very few
1	The number of students who understand the purpose of the learning (when listening to the teacher's or friend's explanation, the sitting plan becomes the formation of the "U" form, and the time to solve the problem, the sitting plan becomes a small group, and able to carry it out.)				
2	The number of students who are able to cooperate with friends to solve the problem/high level task.				
3	The number of students who say "do not understand" or "please be taught" if you feel confused.				
4	Number of students who teach to the extent or always care about friends who ask for help.				
5	Number of students who deliver or deepen their own thoughts in group activities.				
6	Number of students who is more emphasis on "listening" than "speaking" in the learning process.				
7	The number of students who can maintain the spirit of learning through learning together with friends rather than solve the problem/task alone.				
8	The number of students who utilize various "media" and learn actively				

The content validation was obtained by using product moment correlation equation proposed by Pearson (Arikunto, 2013: 87), namely:

$$r_{XY} = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{\left[N\sum X^2 - (\sum X)^2\right]\left[N\sum Y^2 - (\sum Y)^2\right]}}$$

Note:

r_{XY} : correlation coefficient test arranged with criteria

X : score of each item

Y : total score

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N : number of subject (respondent)

The value of product moment correlation (rXY) obtained is interpreted by consultation to the criticized price table r product moment a = 0.05 ie when $r_{count} = r_{table}$ then the matter is declared valid, otherwise if $r_{count} < r_{table}$ then the problem is not valid. Based on the results of validity testing on tests performed by using software SPSS 22, then the results obtained by the output as follows:

Table 8: Result of Analysis Test of Validitas Test Instrument

Number of item	R_{count}	r_{table} (df = N-2) (22)-2 = (df = 20)	Category
1	0.506	0,444	**Valid**
2	0.595	0,444	**Valid**
3	0.486	0,444	**Valid**
4	0.644	0,444	**Valid**
5	0.496	0,444	**Valid**
6	0.623	0,444	**Valid**
7	0.674	0,444	**Valid**
8	0.455	0,444	**Valid**
9	0.463	0,444	**Valid**
10	0.512	0,444	**Valid**

Based on Table 8 above, the test results of the validity items test can be seen from the 10 items of questions all said valid that has been tested in the school Elementary School 066045 in grade VI students. From 10 valid questions will be used to measure the creative thinking skill of class V students in SD 066045 which is taught by Discovery Learning Model and Direct Instruction Learning Model.

Table 9: Description of Validity Item Problem Category

Limitation	Category
$0,80 < r_{XY} \leq 1,00$	Very high (Very good)
$0,60 < r_{XY} \leq 0,80$	high (good)
$0,40 < r_{XY} \leq 0,60$	Enough (medium)
$0,20 < r_{XY} \leq 0,40$	low (less)
$0,00 \leq r_{XY} \leq 0,20$	Very low very less)

Reliability test is an index showing the extent to which measurement tools can be trusted or relied upon. Reliability is obtained using Kuder Richardson 20 or KR-20 as follows:

$$r_{ii} = \left(\frac{n}{n-1}\right)\left(\frac{SD_t{}^2 - \sum pq}{s^2}\right)$$ (Sudijono,2011:254)

Note:

r_{ii} : Test of Reliability

n : Number of Test itrem

$SD_t{}^2$: total variance

p : Propostoion of student who get score 1

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q : Propostoion of student who get score 0

After the r_{ii} is obtained, to interpret the rii and the instrument is used by Arikunto (2009: 75): to interpret the reliability coefficient by using the following criteria:

Table 10: Description of Reliability Item Problem Category

Limitation	Category
$0,81 \leq r_{ii} \leq 1,00$	Very high
$0,61 \leq r_{ii} \leq 0,80$	High
$0,41 \leq r_{ii} \leq 0,60$	Medium
$0,20 \leq r_{ii} \leq 0,40$	Low
$0,00 \leq r_{ii} \leq 0,20$	Very Low

In this research, the reliability analysis is calculated by using SPSS 22 software using Scale and Reliability Analysis. Results of analysis of the reliability of the item by using SPSS 22 can be seen in the table below.

Table 11:Reliability Test Results

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.496	.589	10

Based on the above table it can be concluded that the students' creative thinking skill test is in moderate category (enough) with r value of 0.589 or is in the range value of 0.41 <r 11 = 0.60. This category of reliability indicates that the question instrument can be used to measure students' creative thinking skills.

The assumption used to obtain a good quality question, in addition to meeting the validity and reliability is a balance of difficulty levels. The balance in question is the existence of problems that include easy, medium, and difficult. Level is a difficult matter viewed from the ability or ability of students in answering it. To determine the level of difficulty of the test items prepared by the level of difficulty test, with the following formula:

$$P = \frac{Xi}{SM}$$ Arikunto (2003)

Note:

P = Index difficulty index

Xi = Average item matter

SM = Maximum score (max item item)

Based on the difficulty index obtained, it is consulted to the difficulty classification as follows:

P : 0,00 – 0,30 = difficult

P : 0,31 – 0,70 = medium

P : 0,71 – 1,00 = easy

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The difference power test is the ability of the test to differentiate capable students and disadvantaged students in completing tests that are analyzed by the formula:

$$D = \frac{B_A}{J_A} - \frac{B_B}{J_B} \quad \text{(Sudijono,2011:389)}$$

Note:

D : Power difference

BA : The number of upper group students answered the test correctly

BB : The number of students in the lower group answers the test correctly

JA : Number of upper group students

JB : Number of lower group students

After the data collected then the data is processed with the help of SPSS Statistics 22.0 for windows. In this research data analysis that will be used is descriptive and interferential analysis. Statistical descriptive data is needed to find the mean, median, standard deviation, variance, range, data frequency, data graph and other required information. This analysis is done by using the program SPSS 22.0 for windows by distributing data both pretest and posttest both classes into the program SPSS 22.0 for windows on the descriptive column. From that process it will produce mean, median, standard deviation, variance, range, data frequency, data graph and other required information.

The test aims to see whether the sample is normally distributed or not. Normality test is used to find out whether the data of the two samples are normally distributed or not. In this research, normality test is done by distributing data of each class both pret and posttest of experiment class and control class into SPSS 22.0 windows program in column explore. From this process will produce the output of One Sample Kolmogorov-Smirnov test. To know the data is normal or not compared with the criteria of Sig value. of both groups both pretest and posttest as follows:

If Sig. or probability > 0.05 then the sample is normally distributed

If Sig. or probability < 0.05 then the sample does not contribute normally

Homogeneity test aims to find the data has a homogeneous variance or not. Homogeneity test in this research use SPPS 22.0 for windows software into one way Anova column. From this process will result in Test of homogeneity of variances. To find out whether the sample is homogeneous, it is done by comparing the Sig value. in the table with the test criteria are;

If Sig. or probability > 0.05 then Homogeneous sample

If Sig. or probability <0.05 then the sample is not Homogeneous

The increased students' learning outcomes can be calculated using the formula g factor (gain score normalized), as follows:

$$g = \frac{posttest\ score - pretest\ score}{idea\ maximunm\ scorel - pretest\ score}$$

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Based on the factor g formula, the gain value can be categorized as low, medium, and high. The category of gain values can be shown in the following Table 12.

Table 12: Gain Value Category

Value	Gain Category
g < 0,3	Low
0,3 ≤ g ≤ 0,7	Medium
g > 0,7	High

At the beginning of the meeting before learning, students are given preliminary tests to obtain pretest results data. After learning the students go back to doing the test and obtained posttest results. Questions tested on pretest and posttest are the same. From data of pretest and posttest result, calculation is done using g factor formula (gain score normalized), so that the gain score of student learning result was obtained.

If the scores of the respondents are below the median value, then the learning activity obtained is low, on the other hand if the respondent score is equal to the median, then the learning activity level is high. By formula, can be described in the following formula:

$$\text{Median} = tb + \left(\frac{\frac{n}{2} - F}{fm}\right) p$$

Note:

Tb = Lower edge of class n / 2

F = Cumulative Frequency before Median class

Fm = Frequency of median class

p = interval

If the median value is known, then the value is compared with the questionnaire score of each student with the calculation:

Scores <median value = median = low learning activity

Score = median value = median = high learning activity

(Pardede, 2015: 72).

To answer which model statement is different, then statistics have advanced test techniques to know which variables have significant differences, Tukey calculation uses the SPSS 22.0 for windows software. Hypothesis test aims to test the truth of the research hypothesis. If both data are normal and homogeneous, then test. The hypothesis of this research was conducted by using Independent Samples test (t-test) one-way assisted software SPSS 22.0 for windows. the test criteria used is if F_{count} is less than F_{table} (dk = n-2, a = 0,05) then H0 is accepted. The null hypothesis (H0) is rejected if the value of significance F_{count} is greater than F_{table} (dk = n-2, a = 0,05). The Statistical Hypothesis are as follows:

1. First Hypothesis

$H_0 : \mu A_1 = \mu A_2$

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$H_0 : \mu A_1 \neq \mu A_2$

2. Second Hypothesis

$H_0 : \mu B_1 = \mu B_2$

$H_0 : \mu B_1 \neq \mu B_2$

2. Third Hypothesis

$H_0 : \mu A >< \mu B = 0$

$H_0 : \mu A >< \mu B \neq 0$

Description of hypothesis formulation:

1. $\mu A_1 = \mu A_2$: There is no difference in creative thinking skills with direct instruction and discovery learning models.

$\mu A_1 \neq \mu A_2$: There is difference creative thinking skills with the use of direct instruction model and discovery learning model.

2. $\mu B_1 = \mu B_2$: There is difference in creative thinking skills that have high learning activity with low learning activity

$\mu B_1 \neq \mu B_2$: There is no difference in creative thinking skills that have high learning activity with low learning activity

3. $\mu A >< \mu B = 0$: There is interaction between the two learning models and the level of learning activity on creative thinking skills

$\mu A >< \mu B \neq 0$ There is no interaction between the two learning models and the level of learning activity on creative thinking skills

Based on the above description, then the relationship between the formulation of the problem, hypothesis, data and the use of statistical tests are presented in table 13 below:

Table 13: Relationship Problem Formulation, Hypothesis and Use of Statistics

No	Problem formulation	Hypothesis	Data	Statistical test
1	Is there any different creative thinking skills with discovery learning models and direct instruction models?	$H_0 : \mu A_1 = \mu A_2$ $H_0 : \mu A_1 \neq \mu A_2$	μA_1 dan μA_2	Two way Anava

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DISCUSSION

In the previous discussion, researchers have calculated the pos-test value of creative thinking skills as well as high student learning activities and low learning activities in the experimental class and control class. Then the next step is to classify the postest value of the results of creative thinking skills of science based on student learning activities. It aims to see the value of creative thinking result of students who have high learning activity level and low learning activity. In summary the grouping is presented in the table below.

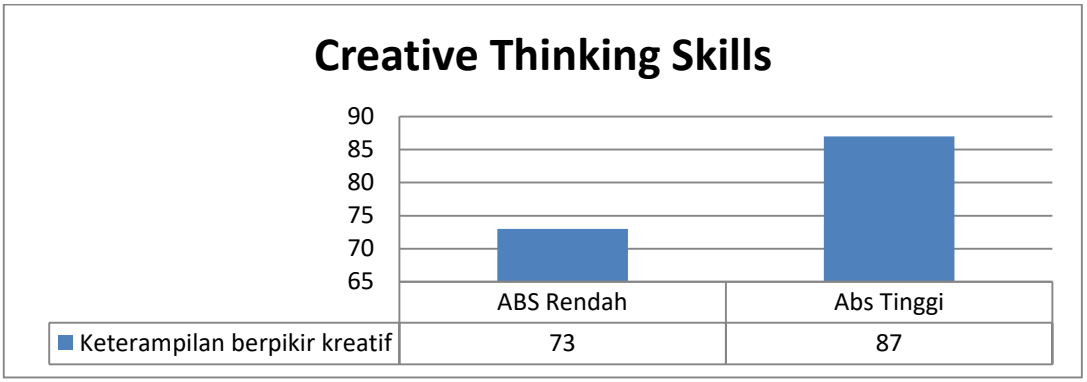
Table 14: Grouping the Science Students' of Creative Thinking Value Based on The Students' Learning Activity

	Number of students	Lowest score	Hughehst score	Number of score	Average score	Standard deviation	Variance
High	22	80.32	98.4	1913.8	87	4.55	20.7
Low	22	50.53	79.79	1607.5	73	7.15	51.1

It is known that the average creative thinking skills of students with high learning activities amounted to 87 and average students 'creative thinking skills with low learning activities of 73. In summary, the analysis of students' creative thinking skills based on the level of student learning activity seen in the picture 1.

Picture 1

Level of Learning Activity on Creative Thinking Skills with Learning Model



The differences in the value of students' creative thinking ability between high learning activities and low learning activities caused by the experimental class, the students who basically have learning activities in itself happened encouragement to learn to be more active and creative in solving a problem scientifically and put forward the cooperation in finding the hypothesis which is made in learning so that the ability to think creatively more felt than the class is taught directly. This is an early indication that the learning model used in the classroom, either directly or indirectly has an important role to the development of thinking ability and student learning activities.

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Table 15: Factors Data of Inter Subject of Descriptive Statistics

Dependent Variable: Creative thinking ability

Learning model	Learning activity	Mean	Std. Deviation	N
Control	High	78.07	4.299	6
	Low	53.95	9.317	16
	Total	60.53	13.687	22
Experiment en	High	88.49	5.074	16
	Low	68.86	8.224	6
	Total	83.13	10.702	22
Total	High	85.65	6.734	22
	Low	58.01	11.150	22
	Total	71.83	16.679	44

Based on table above, it is obtained the total number of students who have high learning activities and low learning activities in the experimental class with the model discovery learning and control classes with direct instruction model. The overall students who have above average learning activities as much as 22 students and students who have learning activities under the average of 22 people.

Levene's Test of Equality of Error Variances[a]

Dependent Variable: Creative thinkingb ability

F	df1	df2	Sig.
1.748	3	40	.173

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Model + Learning activity + Model * Learning activity

Table 16: Results of Two Path Anova Test

Tests of Between-Subjects Effects

Dependent Variable: Creative thinking ability

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	9961.123[a]	3	3320.374	81.347	.000
Intercept	232077.545	1	232077.545	5685.769	.000
Model	6686.066	1	6686.066	163.805	.000
Aktivitas	2993.265	1	2993.265	73.333	.000
Model * Aktivitas	281.791	1	281.791	6.904	.012
Error	1632.691	40	40.817		
Total	243671.359	44			
Corrected Total	11593.813	43			

a. R Squared = .859 (Adjusted R Squared = .849)

Based on the analysis of the result variant of Tests of Between-Subjects Effects from the model source can be seen the significance value (sig) is 0.000oleh because sig 0,000 <0,05 then reject

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H0, accept Ha, which means there is a significant effect difference between discovery learning learning model collaborative and direct instructional model of creative thinking skills. The result of the research for the average value of pretest creative thinking skill with direct learning model is 20.33 and the mean score of posttest of creative thinking skill is 60.53. The average value of pretest creative thinking skills is 19.26 and the mean value of posttest of creative thinking skills is 82.78.

The Discovery Learning model can be one of the alternative learning models to help the student to creative thinking skills apply his ideas and will be trained to discover the concept of learning with the stage of information gained new experiences, understand, digest and analyze new knowledge. with the use of discovery model learning students learn by meeting the structure of the concepts studied. Students form the concept by looking at the characteristics of similarities and differences in the learning of green plants that stimulate students to discover concepts in the creative thinking skill stage, the students perform activities in their efforts to understand the surrounding environment by using motor knowledge with direct contact, and then generalize the relationship between concepts, make the knowledge meaningful through the scientific activities that change the concept that has been so abstract to be real, so that the concept persisted in the mind of the students.

According to Dahar (2011: 53) said that discovery learning will increase understanding of science, productivity in creative thinking and skills in obtaining and analyzing information. According to Trianto (2011: 29) direct learning model is a planned learning by teachers and students, this model is primarily teacher-centered. So the arrangement system this learning should establish the involvement of students primarily through attention, listening, planned questions. As a result there is less optimal learning process to improve students' creative thinking skills because it makes students become passive in learning. In direct learning models students tend to only memorize facts without knowing how facts and concepts are formed. The implementation of learning discovery learning model makes students more active in learning, learning in terms of carrying out scientific research, fostering the attitude to dare to express opinions and interact with friends. This learning pattern is more varied than direct learning model, because in this study the students in the discovery learning class do a lot of discussion together and share in solving problems through experiments conducted in groups. This can be seen from the observation of collaboration conducted by observer of mother Nurbaity, S.Pd in every process of learning at every meeting, the observation obtained with discovery learning model of each meeting progressively reaching the indicator with average of collaboration with 8 indicators and 4 meeting at 82.25. These creative thinking skills will emerge through the second phase of Lawson and through the syntax of discovery learning models ranging from giving stimuli, problem identification, data collection, data processing, verification, communicating and drawing conclusions.

The above statement supported the research results that show the students who learned with discovery learning learning model get the average value of creative thinking skills better than the class that is taught by direct instruction model. In addition, the result of variance analysis shows that the significance value of learning model is 0,000 smaller than $\alpha = 0,05$. It means that there is significant difference in creative thinking skill between classes taught by discovery learning model compared with direct instruction model. In the experimental class there is a gain value for the experimental class of 0.80 with the use of learning discovery learning model and for the controller there is a gain value of 0.51 with the use of direct instruction model. In this research, there is a reinforcing evidence that the creative thinking skill that gets the

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treatment of discovery learning model turns out to have significant difference with the students who get the direct instruction model instruction. It was unlike the case with direct learning model that emphasizes the practice to the students, teacher-centered learning, where teachers start learning with explanations and students are prepared to receive teacher explanations, such passive activities impact on weak absorption of creative thinking skills.

CONCLUSION

The conclusion can be drawn that at SD Negeri 066045 Helvetia Medan of Class V students using creative thinking skills learned with collaborative discovery learning model of learning are different from the creative thinking skill of students who taught by direct instruction model in SD Negeri 066045 Medan. This is based on the results of the first hypothesis test that the significance Anava (= 0,000) is smaller than the significance level (= 0.05), and F_{count} (= 81.347) is greater than F_{table} (= 4.08) so H0 is rejected, the scores of creative thinking skills taught by the collaborative Discovery Learning model (= 82.78) are higher than the Direct Instruction model (= 61.24).

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