An Analysis of Creative Thinking Ability Between The Students Who Are Given Open-Ended Learning with Conventional Learning in VIII Grade Junior High School

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Abstract

This research is a research with quantitative approach to analyse the difference of students' creative thinking ability through open-ended learning with conventional learning. The population in this research was all students of Prayatna Medan Junior High School 2015/2016 Academic Years. The sample of this research was VIII Grade students of Prayatna Medan Junior High School which's chosen randomly and there's chosen VIII-I class for experiment class and VIII-II for control class where each classes consist of 31 students as the subject of the research. The instrument used in this research was test of creative thinking ability in SPLDV material. The data analysis used similarity test between two averages, done by 't-test'. based on the research result, the conclusions of this research were (1) the improvement of students' creative thinking ability who had open-ended learning is better than the students' who had conventional learning, (2) there was the difference of students' creative thinking ability who had open-ended learning with the students' who had conventional learning.

Key Words: *Creative Thinking Ability, Open-ended Learning.*

1. INTRODUCTION

Era development is getting refers to better direction, the function of mathematic is getting hard to prepare Quality students also, a teacher must be more professional in improving students' variety ability and quality learning. To get the efficient and effective learning thus the teacher must be able to manage the class well and mature so it can be appropriate to the learning goal.

Mathematic is a learning that's organized by the teacher for giving to the students to get skill and knowledge of mathematic. Mathematic or well-known with school mathematic included to the unlike subject of students, because it has been grown in students' selves and it's hard to finish the problems related to the calculation. whereas, the fact is mathematic is not a difficult subject, because mathematic is really close to every aspect of human life.

1.1. Creative Learning

Creative behaviour produces creative thinking, especially in learning system. That's why, learning system should stimulate mind, behaviour, and creative-productive behaviour, besides logic and reasonable thinking. Diligence, precision, seriousness, and students' creativity thinking is really needed in studying mathematic. Evans (1991) defined that thinking creative is a mental activity to make continue connections, so found the true combination or till someone gives up, creative association happens through the similarity of something or analogical thinking. Perkins (1985) stated that mathematic creativity is identic with the process of solving mathematic problem. The creativity in solving mathematic problem is characterized with the feature as the

formula of problem, finding, freedom, and origin. The idea is in step with the feature like flexibility, fluency, new form, and divergent answer that related with the creativity generally. According to many mathematic teachers the ideas is viewed as a relevant activity with the students' activity doing the mathematic at school.

Based on the observation result gotten as researcher and information from teacher of VIII in Prayatna Junior High School said that the students' are less –able in thinking creative and solving the problem in main finishing type questions given by the teacher in square and rectangle material. It's happened because students' thinking ability level is not maximal and the method used is less-relevant or the method before can't make the students motivated so the students are less in thinking and finishing the problem that's given by teacher which related with the material.

From the survey of researcher as diagnostic test (the measurement to students target to know the background in a certain time so the suitable strategy to the characters can be designed). This test was given to VIII-II students of Prayatna Medan Junior High School and showed 75% of the students having difficulty to do the question related with the real world or in the daily life. In this case the students feel different to the mathematic recital question. The students' ability is related with the research result by TIMSS on 2011 which showed that on 2011 Indonesia was in the 38 level of 45 countries with average score 386 which means in the low level.

1.2. Open-Ended Approach

According to Heddens and Speer (in Lia, 2007: 4) *open-ended* approach is a learning approach which gives the students' freedom of thinking actively and creatively in finishing the problem. in this case the relevant approach in giving freedom of students in thinking actively and creatively is by using *open-ended* material. The goal of Open-Ended according to Nohda (Suherman, 2003; 124) is helping to develop creative activity and mathematical mind set as simultantly. In the other words, students' creative activity and mathematical mind set must be developed as maximal as possible based on the ability of each students.

Open-Ended approach promising a chance to the students to investigate every strategy and way that' believed based on the ability to collaborate the problem. The goal is so that the mathematic thinking ability of the students can develop maximally and in the same time the students' creative activities can be communicated through the learning process. This is the main idea of learning with Open-Ended, namely a learning that builds up interactive activity between the students with mathematic so persuading the students to answer the question through many strategies.

Open-Ended approach is an approach which helps the students to do problem solving creatively and appreciate the variety of thinking that shows a problem that has more than one finishing and it's possible with many true answers. This approach gives a chance to the students to get knowledge, experience, finding, searching, knowing, and solving the problem with some techniques and this approach is hoped to be the facilitator in developing and stimulating students' creative thinking ability. By the hope, the mathematic learning with open-ended approach is chosen in this research to be seen the difference of students' creative thinking ability.

Based on the problem background that has been explained above, so the researcher can identify some problems as: (1) The result of students' learning is still low. (2) The students' thinking ability is still low. (3) Students active activity in learning ability is still low. (4) students' responds in learning mathematic is still low. (5) Teacher less-related the material with the daily life. (6) the mathematic learning which is done by the teacher is less-relevant with the characteristic and mathematic learning goal.

Based on the problem identification above, the problem discussed in this research needs to limit so this research is more directed, effective, and efficient and making easy in doing the research. So the researcher limits the problem as "The difference of students' who were given *open-ended* learning with conventional learning". Based on the background of problem, identification of problem, and limitation of problem in this research, so the problem observed can be discussed as " is there any difference of creative thinking ability between the students who were given open-ended learning with the students given conventional learning?".

Based on the explanation above, the main goal of this research is to know the difference of creative thinking ability between the students given open-ended learning with the students given conventional learning.

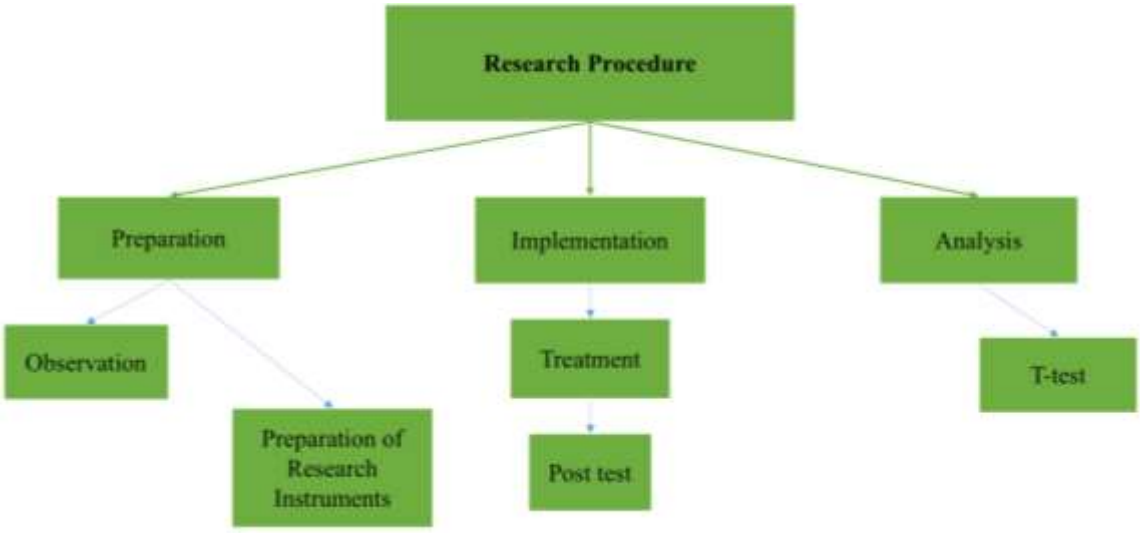
2. RESEARCH METHOD

The kind of this research is experimental research. Located of this research was done in Prayatna Medan Junior High School in the first semester 2015/2016 Academic Years. The population of this research was all students of Prayatna Medan Junior High School 2015/2016 Academic Years. The sample of this research was VIII Grade students of Prayatna Medan Junior High School which was choose randomly and VIII-I class was chosen to be experiment class and VIII-II to be control class which every classes consist of 31 students. This research aimed to see the difference of the result of creative thinking ability VIII Grade students Prayatna Medan Junior High School by using *open-ended* learning approach and conventional approach.

The data taking in the field included the observation implementation, pre-test, the giving of exercise for experiment class, the giving of material for control class, and post-test to the students to get the data as the material in analysed *open-ended* learning and students' creative thinking ability process in finishing mathematic problem. the time of implementation started on Friday, October 9, 2015 till Friday, October 22, 2015.

In the implementation, the requirement of material that's used in this test was the material about the linear similarity of one variable, algebra, relation and function and the equations of straight lines. This activity went on really good and fluent. After finishing, the researcher observed and corrected the students' answer. And than the researcher took a conclusion based on the pre-test that that class was homogeny. In this case the researcher made some consideration, a consideration to choose homogeny class as object of the research where all students' abilities were regarded same to see clearly the students' learning result that's given *open-ended* learning and conventional class and the influent to students' creative thinking ability.

Related with the kind of this research, namely experimental research thus this research having steps as:



3. RESULT

In learning, the students in experiment class were more active in the learning, it's seemed from the frequency of the students in discussing with other students and asked to the teacher about what they don't understand. Even thought the teacher did not intervene much in the learning namely only as the facilitator, but the students were able to do better learning compared with the conventional class, it's seen in the students' score in doing creative thinking ability test individually or classically.

The data gotten and analysed in the research through mathematical creative thinking ability test. the data was gotten from 62 students, included of 31 students experiment class that having learning by using open-ended method and 31 students control class that having conventional learning

Normality test was done by using SPSS software. So the output that's produced is as below:

Table-1: Test of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Class	Statistic	Df	Sig.	Statistic	Df	Sig.
Score	Experiment	.130	31	.199	.954	31	.203
	Convectional	.146	31	.092	.953	31	.187

So, with significance level 5%, we could get conclusion that both of model learning treatment that's done in experiment and control class having normal distribution data.

Homogeneity test also done by using SPSS software. The output result that's produced is as below:

Table-2: Test of Homogeneity of Variances

Experiment

LeveneStatistic	df1	df2	Sig.
.921	6	24	.497

So, with significance level 1% we could get the conclusion that the sample came from the population which had variances and homogeneity.

Similarity test between two average was done with 't-test' by using SPSS.

Table-3: Group Statistics

	Class	N	Mean	Std. Deviation	Std. ErrorMean
Score	Experiment	31	75.32	8.260	1.484
	Convectional	31	65.65	8.139	1.462

Table-4: Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Score	Equal variances assumed	.039	.844	4.647	60	.000	9.677	2.083	5.511	13.843
	Equal variances not assumed			4.647	59.987	.000	9.677	2.083	5.511	13.843

So, with the significancy level 5% we could get the conclusion that both of treatment of creative thinking ability by using *open-ended* learning model with conventional class is not same.

4. CONCLUSION

Based on the research result, we can conclude that: (1) Students' mathematical creative thinking ability who got learning by using open-ended learning model is better that the students who got conventional learning; (2) There's difference of improvement of students' mathematical creative thinking ability who got open-ended learning model with the students who got conventional learning.

5. SUGGESTION

Based on the conclusion above, so the researcher state some suggestions as: (1) for mathematic teacher, the learning by using *open-ended* learning model can be an alternative among of many choices for mathematic learning that can improve students' creative thinking ability; (2) to applicate a learning by using ope-ended, it's better if the teacher makes a scenario and mature preparation, so the learning going well and systematically and based plan, and the effective time exploitation and there's no much wasting time; (3) the school is need to consider a meeting/discussion among of mathematic teachers, the questions to improve 5 students' mathematical ability, especially the questions of creative thinking, so that the students are habituated to do the questions so it can students' mathematical ability; and (4) it's important to do continued research, but in high or low level of school or to another level like Elementary School, Junior High School, and College.

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