
The Effect of Active Learning Index Card Match Strategy to Ward Communication Ability of Mathematic of For Students of MTs AL-Fajar Pekanbaru

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ABSTRACT

The objective of study was to find whether there is or not the effect of mathematic communication ability for students learned using active learning index card match strategy and the study learned using conventional strategy. The formulation of study was whether there is or not the effect of active learning index card match strategy toward communication ability of mathematic of for students of MTs AL-Fajar Pekanbaru?. Where research is a Quasi Experiment. The population in this study were students of class VIII MTs Al-Fajar Pekanbaru a total of 98 students were divided into 3 class. The sampel of this research is to the experimental group with active learning index card match strategy VIII B class by 33 students and the control group with convensional learning VIII A class by 32 students. Thus the number of the whole sample was 65 students. The data was collected using observation, test and documentation. In this study, meeting were held six times in the four meeting by using the Active Learning Index Card Match Strategy and the two meeting held pretest and posttest. Data analysis techniques used in this research is a test-t for a large sample ($N \geq 30$). From the data analysis performed by the Active Learning Index Card Match Strategy obtained tithing value = 3,06 which means greater than t_{α} both at significance level 5% and 1% namely $2,65 < 3,06 > 2,00$ so that the zero hypothesis is rejected and the alternative hypothesis is accepted. Because of the presence of these difference, it can be said there are significant active learning index card match strategy toward communication ability of mathematic of for students of MTs Al Fajar Pekanbaru.

Keywords: *Active learning, Index card match strategy, Mathematic communication ability*

Introduction

One of the capital to face various challenges in this era of globalization is the ability to communicate. By communicating we can further develop and solve a problem. Through this communication new ideas are obtained, as well as creative and critical thinking that can generate strategies in solving a problem. This can be done if in mathematics lessons, mathematics has an important role in the development of student communication skills. In accordance with the objectives of mathematics learning In the regulation of the Minister of National Education of the Republic of Indonesia Number 22 of 2006, explained that the objectives of learning mathematics in school are (1) understanding the concept of mathematics,

explaining the link between concepts and applying concepts or algorithms flexibly, accurately, efficiently and appropriately in problem solving . (2) using reasoning on patterns and traits, performing mathematical manipulations and making generalizations, composing evidence, or explaining mathematical ideas or statements. (3) solve problems that include the ability to understand problems, design mathematical models, solve models and interpret the solutions obtained. (4) communicate ideas with symbols, tables, diagrams or other media to explain the situation or problem. (5) has the nature of appreciating the usefulness of mathematics in life, that is to have feelings of curiosity, have the interest and interest in learning mathematics, as well as resilience and confidence in problem

solving (Risnawati, 2008). In accordance with the purpose of learning mathematics number 4 to develop the ability of the students in conveying information or communicating ideas, among others through the process of oral learning, graphs, diagram map, in explaining the idea, then during the process of learning in the classroom students are facilitated and guided to use various ways and forms of communication (FadjarSadiq, 2009). Teaching and learning process is essentially a process of communication, namely the process of delivering messages from the source message through a channel / certain media receipt message. Messages, message sources, channels / media and message recipients are components of the communication process (SadirmanArief, 2007). Communication means conveying something to others, until something belongs to it. A teacher teaches each time trying to communicate or communicate with the appropriate method so that the subject chosen can be mastered to be his. One of the factors causing low student communication in a learning due to the application of unsuitable methods. Teachers are required to create a conducive learning situation, namely Active Learning, Innovative, Creative, Effective, and Fun (Hartono, 2012). The symptoms found in MTs Al Fajar are Students still can not argue well and clearly about the questions they answer, Students have not been able to express mathematical ideas in the form of oral, written or images with good math language. Teaching methods used by teachers will also affect the way students learn, because each student has a different way of learning. New learning materials are provided actively with existing knowledge. In order for students to actively learn teachers need to create appropriate strategies in such a way that students have high motivation to learn. One of the methods that can be used to activate the student is by using active learning method

(active learning). In the learning process needs to be provided activities to empower the knowledge that has been owned so that students understand and master the new knowledge, as well as strengthen the knowledge that already existed before the students, because students will undergo a process that enabled him to build knowledge with the help of facilities from teachers, then his involvement in the learning process must be apparent. Each concept or principle in mathematics presented in a concrete form will be well understood, meaning that objects or objects in the form of games will play a role when manipulated well in the teaching of mathematics. Therefore, the researcher give solution with one of new learning strategy for student, that is learning strategy by implementing Active Learning Index Card Match strategy as one of the effort to empower and strengthen the knowledge already possessed by students and improve students' mathematics communication ability. Can make learning more meaningful and make students more active in expressing their opinions logically and mathematically, making math a fun lesson and encouraging students to construct their knowledge to solve problems.

Methodology

This type of research is quasi experiment, and the design used is pretest-posttest with Nonequivalent Control Group Design because in reality this research can not fully control the external variables that influence the implementation of the experiment (Sugiyono, 2011). The experimental research design used was the design of a randomized pretest-postes control group, described as follows (Nana Syaodih Sukmadinata, 2006):

Pretest	Treatment	Posttest
O ₁	X	O ₂
O ₃		O ₄

Information:

O₁: Pret experiment class

O₂: Postes experiment class

O₃: Pretes control class

O₄: Postes control class

X: The treatment of mathematics learning using *active learning index card match strategy*.

This research will be conducted in the odd semester of 2013/2014 in class VIII MTs. Al Fajar Pekanbaru. The population in this study is all students of MTs / junior high school In Pekanbaru, this is the general population. While the target population in this study are students of class VIII MTs Al Fajar Pekanbaru, which consists of 3 classes. The sample in this research is class VIII B and VIII A. Where class VIII B as experiment class and class VIII A as control class.

Result and Discussion

1. Result

This research was conducted for 6 meetings. Meeting to 1-5 is the time of treatment while the 6th meeting conducted a written test to determine the level of success of the treatment conducted by researchers.

Data analysis

The students' mathematical communication skills were analyzed through pretest and posttest data at the beginning and end of treatment. But before that data tested homogeneity and normal data which then continued with data analysis to know the difference of mean score on student's mathematics communication ability between learning using active learning

index card match strategy and conventional learning.

Table IV.4
Pretest Homogeneity Test

Jenisvarians	B	A
S	102,41	93,70
N	33	32

Calculate the largest and smallest variance: $F = \frac{\text{largest variance}}{\text{smallest variance}} = \frac{102,41}{93,70} = 1,53$. Compare the value of F count with Ftable With the formula: db numerator = n - 1 = 33-1 = 32 (largest variance) db denominator = n - 1 = 33-1 = 32 (the smallest variance) With a significant level (α) = 0.05, then obtained Ftable = 1.85. Thus, based on the above description Fcount < Ftable, or 1.53 < 1.85 then the variance - the initial data variance is homogeneous.

The student's early ability was seen based on the pretest score of the two study classes.

Table IV.5
Initial Normality Test

Kelas	X ² _{Hitung}	X ² _{Tabel}	Kriteria
Eksperimen	5,77	14,07	Normal
Kontrol	5,56	12,59	Normal

Based on the results of research, it can be seen that $X^2_{count} < X^2_{Table}$ it can be concluded that the data comes from a population that is normally distributed.

The student's final ability is seen based on the posttest of the two research classes

Table IV.6
Final Normality Test

Class	X ² _{count}	X ² _{Table}	Criteria
			a

Exsperime nt	14,3	19,68	Norm al
Control	7,12	14,06 7	Norm al

Based on the research results, it can be seen that $X_{Hitung}^2 < X_{Tabel}^2$ the decision can be taken that the data comes from a population that is normally distributed. The final homogeneity test results using posttest.

Table IV.7
Final Test Homogeneity

Variant Type	Class	
	Exsperiment	Control
S	195,24	115,51
N	33	32

Calculate the largest and smallest variance:

$$F = \frac{\text{largest variance}}{\text{smallest variance}} = \frac{195,24}{115,51} = 1,69$$

Compare the value of Fcount with the Ftable With the formula: db numerator = n - 1 = 33-1 = 32 (largest variance) db denominator = n - 1 = 32-1 = 31 (smallest variance) With a significant level (α) = 0.05, then obtained Ftable = 1.85. Thus, based on the above description Fcount < Ftable, or 1.69 < 1.85 then the variance - the initial data variance is homogeneous.

To test the final hypothesis proposed in this study used Test -tt₀ =

$$t_{t_0} = \frac{M_x - M_y}{\sqrt{(\frac{SD_x}{N-1})^2 + (\frac{SD_y}{N-1})^2}}$$

The value $t_{count} = 3,06$ means that t_{count} it is greater t_{table} at either a significant level of 5% or a 1% level with degrees of freedom (df) = In the table there is no df = 63, therefore it is used df which is close to 63 iedf = 60. With df 60 obtained from a significant level of 5% and 1% of 2.65 and 2.00. This means it is $t_{count} > t_{table}$, $3,06 > 2,65$ and $3,06 > 2,00$ decide d that H_0 rejected and H_a accepted which means the ability of mathematical communication on variable X is higher than variable Y. Thus it can be concluded that there is a difference in the average value of

the experimental class compared with the mean value of the control class which means there is influence of learning with the strategy active learning index card match against students' mathematical communication ability.

2. Discussion

Based on the analysis of students 'mathematical communication that the average ability of class communication ability using active learning index card match strategy (58,49) is higher than the average of students' conventional class mathematics communication ability (50,47).

By looking at the difference, it can be said that the implementation of active learning index card match strategy in mathematics learning has a positive influence on the students' mathematical communication ability because if the experimental group is better than the control, then the treatment given to the experimental group has a positive effect. Thus the results of this analysis support the proposed problem formulation that there is an influence of mathematical communication skills that obtain learning with the strategy of active learning index card match.

Conclusion

Based on the research result, the tcount is 3.06 and the ttable value at the significant level of 5% and 1% is 2.00 and 2.65. (2.00 < 3.06 > 2.65) then H₀ is rejected and H_a accepted. Based on the results of postes in the experimental class (VIII B) and control class (VIII A), the experimental class mean (58,49) and the control class mean (50,47) were obtained. Thus it can be concluded that there is difference of experiment class and control class which mean there is influence of mathematics learning by using

active learning index card match strategy to mathematics communication ability of student of MTs Al fajar pekanbaru.

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