



## The Effect of Applying Index Card Match (ICM) Active Learning Strategy on Student Learning Outcomes in Information and Communication Technology Subjects in Class IX of SMP Negeri 19 Padang

Ebit Bimas Saputra<sup>1</sup>, Rido Andika<sup>2</sup>

<sup>1</sup> Ekasakti University, Padang, Indonesia, [ebitbimas99@unespadang.ac.id](mailto:ebitbimas99@unespadang.ac.id)

<sup>2</sup> Padang State University, Padang, Indonesia, [ridoandika10@gmail.com](mailto:ridoandika10@gmail.com)

Corresponding Author: [ebitbimas99@unespadang.ac.id](mailto:ebitbimas99@unespadang.ac.id)

**Abstract:** This study aims to determine the effect of student learning outcomes by using an Active Learning strategy type index Card Match (ICM) on ICT learning outcomes for class IX Negeri 19 Padang students. This research is in quantitative form with a quasy experimental approach. The type of data in this study is in the form of student learning outcomes and the data source is student scores. Then the data is processed using the T-Test. Based on the research results, the average value of the experimental group with the ICM strategy was obtained 80 .70 , higher than the average value of the control group 63.83 . The calculation of the t-test states that t count is 5.57 while t table = 2.0 0 , t.count > t.table. This means that there is a significant difference in the learning outcomes of class students who use the Active learning strategy of the Index Card Match (ICM) type (experimental class) with the learning outcomes of class students who use conventional strategies (control class).

**Keywords:** Active Learning Strategy, Index Card Match, Learning Outcomes.

### INTRODUCTION

Education is a need that must be fulfilled in the life of society, nation and water. Because education is a vehicle to improve and develop the quality of human resources and the survival of a nation. As stated in the Law on the National Education System (UUSPN) Number 20 of 2003 Chapter II Article 3 which states that: The aim of National Education is to develop capabilities and form dignified national character and civilization in the context of educating the life of the nation, aiming at developing the potential of students to become human beings who believe and fear God Almighty, have noble character, are healthy, knowledgeable, capable, creative , independent, and become citizens of a democratic and responsible.

The expected educational goals will be achieved with a well-planned learning and learning process atmosphere. Learning is a process that is carried out by a person to obtain a

new change in behavior as a whole, as a result of his own experience which he does continuously in interaction with his environment (Slameto, 2010: 2). In line with that, Hamalik in Hamzah B. Uno and Nurdin Mohamad (2012: 140) states that "Learning is a modification or strengthening of behavior through experience". Learning is only possible when students are active and experience it for themselves. In learning students not only observe, but must live, be directly involved and responsible for the process and its results.

The achievement of success in education is determined by how the learning process takes place. In principle, a quality learning process means the interaction between students, materials, teachers, learning environment, and learning resources that support the learning process. Teachers are required to implement an active and effective teaching and learning atmosphere for students, while students are required to have enthusiasm and encouragement to be active in the teaching and learning process. Thus, learning success in the cognitive, affective, and psychomotor areas is expected to be achieved.

The teacher, as one of the key determinants of the success or failure of the teaching and learning process, does not only convey information, but more than that, students and teachers both carry out activities that support the teaching and learning process so that an effective and efficient teaching and learning process is created. The higher the involvement of students, the greater the desire of students to understand the learning provided. If students can carry out exciting learning activities, then students will not only wait for what is given by the teacher, but they will tend to participate actively in learning activities.

In particular, the objectives of studying Information and Communication Technology (ICT) are: (1) To make students aware of the potential for the development of information and communication technology which is constantly changing, so that students can be motivated to evaluate and study Information and Communication Technology (ICT) as a basis for lifelong learning. life; (2) Motivating students' ability to be able to adapt and anticipate developments in Information and Communication Technology (ICT), so that students can carry out and carry out activities of daily life independently and with more confidence; (3) Developing students' competencies in using Information and Communication Technology (ICT) to support learning, work, and various activities in daily life; (4) Developing Information and Communication Technology (ICT)-based learning abilities, so that the learning process can be more optimal, interesting, and encourage students to be skilled in communicating, skilled in organizing information, and accustomed to collaborating; and (5) Develop the ability to learn independently, take initiative, be innovative, creative, and be responsible in using Information and Communication Technology (ICT) for learning, working, and solving everyday problems.

Based on the observations of researchers from observations at SMP Negeri 19 Padang, researchers saw several phenomena, that Information & Communication Technology (ICT) learning activities still tended to be teacher-centered. Teachers dominate learning activities and less actively involve students in learning activities. In conveying the subject matter the teacher only uses the lecture method. The teacher reads and gives the material he has prepared, while the students listen and record what the teacher says, then the students complete the exercise as exemplified by the teacher. As a form of learning evaluation, at the end of the learning activity the teacher gives students several questions to make homework.

In the learning process it can be seen that the teacher is still oriented towards cognitive achievement only. The achievement of learning outcomes is not only oriented towards mastery of knowledge, but also the attitudes and skills of students. Such a learning process results in a less than optimal understanding of students' concepts. The lack of interaction between teachers and students which does not involve students actively in learning activities causes the mastery of students' attitudes and skills to be less than optimal. This can be seen when the teacher explains the material, many students do other activities such as talking to friends, or just disturbing friends. When the teacher asked questions about the material being

explained, only a few students were able to answer, and even then not all of the answers were correct. When asked to work on questions in front of the class students feel embarrassed to come to the front of the class, with the excuse that they are afraid of the wrong answer. Not only that, when the teacher gives a number of questions to work on, not all students want to try to do it. Most of them are just waiting for answers from their friends, making no effort to try to do it themselves. This happens because students do not understand the material that has been given by the teacher, as a result the learning outcomes obtained by students are low, they do not reach the Minimum Completeness Criteria (KKM) set for Information and Communication Technology (ICT) subjects, namely 65. Lack of student understanding of In terms of concept, of course it will also have an impact on the low level of student mastery of the application of learning in the form of practice.

Teachers must be able to apply a variety of strategies, methods or learning media that can change the way students learn from passive to active, so that students are interested in and understand what the teacher is teaching. In addition, one way that can make learning stick in the mind is to allocate time to review what has been learned. Material that has been discussed by students tends to be more embedded in the mind than material that is not reviewed. With a variety of learning strategies and methods used in delivering material and allocating time to review what has been learned, it is hoped that students will achieve better learning outcomes, especially in Information and Communication Technology (ICT) subjects.

Basically, any learning strategy can give good results if it is used on the right learning material and at the right time. Among the strategies that can be used to create an active, effective, fun, challenging and meaningful learning atmosphere for students is the Active Learning strategy. Active Learning Strategy (active learning) is a unified source of a comprehensive collection of learning strategies, including various ways to make students become active (Melvin. L Silberman, 2009).

Active Learning Strategy (active learning) is a teaching and learning strategy that demands the activeness and participation of students in learning activities as optimally as possible so that students are able to change their behavior effectively and efficiently. According to Melvin L. Silberman (2009) in his book "Active Learning", there are 101 techniques for active learning, which can be applied in learning activities. Among them is the Active Learning strategy of the Index Card Match (ICM) type.

Active Learning Strategy Type Index Card Match (ICM) or finding a match for question and answer cards done in pairs is one of the instructional techniques of active learning which is included in reviewing activities (repetition strategy) related to ways to recall what they have learned and test their current knowledge and skills with the technique of looking for pairs of cards that are answers or questions while learning about a concept or topic in a fun atmosphere.

The focus of this strategy is not on what the teacher has taught students, but what students have learned from the lessons given by the teacher. Usually teachers in teaching and learning activities provide a lot of information to students so that material or topics in learning programs can be completed on time, but teachers sometimes forget that the purpose of learning is not only material that is completed on time but to what extent the material has been delivered can be remembered by students. Therefore, in learning activities it is necessary to hold a review or review to find out whether the material presented can be understood by students.

As stated by Melvin L. Silberman (2007: 239) as follows: One surefire way to make learning stick in your mind is to allocate time to review what you've learned. Material that has been discussed by students tends to be five times more embedded in the mind than material that is not.

Based on the description above, researchers are interested in addressing this issue in a study entitled "The Influence of Implementing Index Card Match (ICM) Type Active

Learning Strategies on Learning Outcomes in Class IX Information and Communication Technology Subjects in Negeri 19 Padang ".

## **LITERATURE REVIEWS**

### **Active Learning**

Active Learning Strategy is a term in the world of education, namely as a teaching and learning strategy that aims to improve the quality of education. And to achieve student involvement so that it is effective and efficient in learning requires various supports in the teaching and learning process.

Melvin L. Silberman (2009: 1-2) modifies and expands on Confocius' statement about what he calls Active Learning: What I heard, I forgot. What I heard and saw, I remember little. What I heard, saw and asked or discussed with several other friends, I began to understand. What I hear, see, discuss and do, I acquire knowledge and skills. What I teach others, I master.

Active learning strategies according to Hamzah B. Uno and Nurdin Mohamad (2011: 77) state that: Active learning strategies in the learning process are that students are expected to be actively involved in learning activities to think, interact, do to try, find new concepts to produce a work. Conversely, children are not expected to passively receive like an empty glass waiting to be filled. Students are not passive empty glasses who only accept the teacher's lecture about knowledge or information as described above.

According to Melvin L. Silberman (2009) that " Active learning strategy (active learning) is a unified source of a comprehensive collection of learner strategies, including various ways to make students become active".

From several opinions, it can be concluded that the active learning strategy is one way or teaching and learning strategy that demands activeness and student participation in learning activities as optimally as possible so that students are able to change their behavior effectively and efficiently.

To be able to apply Active Learning strategies in the teaching and learning process, the essence of the Active Learning strategy needs to be translated into observable principles in the form of behavior. So it can be understood that what is meant by the principles of the Active Learning strategy are the fundamental behaviors that are always visible and describe the involvement of students in the teaching and learning process both mental, intellectual and emotional involvement which in many ways can be implied by direct involvement in various forms of physical activity.

### **Index Card Match**

Index Card Match is to look for pairs of question and answer cards that are done in pairs. According to Melvin L. Silberman (2009: 240) are: One of the instructional techniques of active learning is the reviewing strategies section which can help students remember what they have learned and test the skills and knowledge they have received.

One of the surest ways to make a lesson stick in your mind is to allocate time to review what has been learned. Material that has been discussed by students tends to be five times more embedded in the mind than material that is not discussed. That's because reviewing makes it easier for students to consider information and find ways to store it in the brain. (Melvin L. Silberman, 2009: 239). However, even new material can still be taught with this strategy with a note, students are given the task of studying the topics to be taught first, so that when they enter class they already have stock of knowledge.

The active learning strategy of the Index Card Match type is a method of searching for index cards where the index cards are divided into question cards and answer cards. In this strategy students will be actively involved and all students will participate in methods that contain elements of this game. With this strategy students will be able to work together with

other students. This is in line with what was revealed by Melvin L. Silberman (2009: 240) that this strategy allows students to pair up and give quiz questions to their friends. So active learning type index card match learning that is centered on student activity.

The Active Learning Strategy of the Index Card Match Type relates to ways to recall what has been learned and test current knowledge and abilities by finding pairs of cards which are answers or questions while learning about a concept or topic in a fun atmosphere. Usually teachers in teaching and learning activities provide a lot of information to students so that material or topics in learning programs can be completed on time, but teachers sometimes forget that the purpose of learning is not only material that is completed on time but to what extent the material has been delivered can be remembered by students. Therefore, in learning activities it is necessary to hold a review or review to find out whether the material presented can be understood by students.

### **Learning outcomes**

Learning outcomes are an achievement achieved by someone in following the learning process. Nana Sudjana (1995: 3) said that: "the result of learning is behavior. According to Witherington in Hamzah B. Uno and Nurdin Mohammad (2012: 139) states that learning "is a change in personality which is manifested as new response patterns in the form of skills, attitudes, habits, knowledge, and skills". In a broad sense it includes the cognitive, affective, and psychomotor fields. Then according to Dimiyati and Mudjiono (2009: 200) explained: "Learning outcomes are the level of success achieved by students after participating in a learning activity, where the level of success is marked by a value scale in the form of letters, words, and numbers".

Learning outcomes are basically an ability in the form of new skills and behaviors as a result of practice or experience. The results of this study are expressed in the forms of learning. In this case Arosan and Bringgis in Etin Solihatin (2012: 6) argue that "Learning outcomes are behaviors that can be observed and show one's abilities".

According to Hamzah B. Uno and Satria Koni (2012: 8) that "the learning outcomes of a process are said to be optimal if the results obtained (as a result of the process) are as expected".

As a result of learning according to Nana Sudjana (1995: 22) are the abilities that students have after they receive learning experiences.

Learning outcomes are the fruit of learning efforts, learning activities are a form of continuous and tireless effort from a student. Learning activities like this are not only measured in terms of the length of time used for learning, but even more so by the spirit, attitudes and habits that exist, as well as the methods used, as well as by the provision of adequate facilities. All of these benchmarks will ultimately determine the stability and continuity of student learning. According to Howard Kingsley quoted by Nana Sudjana (1995: 22) states there are three kinds of learning outcomes namely, skills and habits of knowledge and understanding of attitudes and ideals.

Another opinion expressed by Gegne quoted by Nana Sudjana (1995: 22) suggests five categories of learning outcomes, namely: verbal information, intellectual skills, cognitive strategies, attitudes, motor skills. In the national education system, the formulation of educational goals, both curricular and instructional, uses a classification of learning outcomes for three domains ( *taxonomy* ), namely the cognitive, effective, and psychomotor domains.

Based on the above understanding, it can be concluded that learning outcomes are obtained by students through the process of achieving students after participating in a series of learning activities in the form of knowledge, skills and attitudes where the achievement results are marked by a value scale in the form of letters, words and numbers.

## METHODS

In this study used a quantitative approach in the form of *Quasi Experiments*. *Quasi Experiment* is a type of experimental research design that is not yet close to perfection. This is because this design has a control group, but cannot fully function to control external variables that affect the implementation of Sugiyono's experiment (2011: 77)

Experimental research according to Suharmi Arikunto (2010: 9) is: a way to look for a causal relationship (causal relationship) between two factors that are deliberately generated by researchers by eliminating or reducing or setting aside other disturbing factors. Experiments are always carried out with the intention of seeing the results of a treatment.

Experimental research according to Wiersman in Zelhendri Zen (2012: 8) is defined as "a research situation in which at least one independent variable, which is referred to as an Experimental variable". Gay in Zelhendri Zen (2012: 8) states that "Experimental research is the only research method that properly examines hypotheses regarding causal (cause-effect) relationships."

Data collection in this study was carried out by research through tests. In order for the results studied to be more optimal, statistical calculations are used to reveal "The Effect of Using the Index Card Match (ICM) Active Learning Strategy on student learning outcomes in ICT subjects in class IX Negeri 19 Padang through the calculation of the T-Test which is first tested normality and homogeneity test.

## RESULTS AND DISCUSSION

### Research result

#### 1. Normality test

This normality test aims to see whether the data is normally distributed or not. Then a normality test is carried out on student learning outcomes using the Strategy Active Learning Index Card Match (ICM) type for Experimental class using liliefors technique. In these data it is known that the  $L_{\text{calculated}}$  value is 0.121 which is taken from the number with the largest difference  $F(Z_i) - S(Z_i)$  and compared with the table value according to the amount of data  $N = 29$ , the  $L_{\text{table value}}$  is 0.1645. Thus  $L_{\text{count}}$  is smaller than  $L_{\text{table}}$  ( $0.121 < 0.1645$ ). So it can be concluded that the data group of students who use the strategy The Index Match (ICM) Active Learning type comes from a population that is normally distributed.

Likewise with groups of students who study using conventional learning strategies. After calculating the normality test using the liliefors technique, the  $L_{\text{count}}$  value is 0.1963 when compared to the  $L_{\text{table}}$  with  $N = 29$ , the  $L_{\text{table value}}$  is 0.1645. Thus  $L_{\text{count}}$  is smaller than  $L_{\text{table}}$  ( $0.1963 < 0.1645$ ). This can be seen in attachments 6 and 7 pages 78-81.

So it can be concluded that the data group of students who use the strategy The Active Learning type of Index Card Match (ICM) comes from a normally distributed population. For a clearer comparison of the normality test for the two things, it can be seen in table 1 below:

**Table 1 . Comparison of the Calculation of the Experiment Class and Control Class Liliefors Test**

No	Group	N	L count	L table	Ket
1	Experiment	29	0.121	0.1645	Normal
2	Control	29	0.1963	0.1645	Normal

#### 2. Homogeneity Test

The second requirement test is the normality test using the homogeneity test. This test aims to determine whether the data comes from a homogeneous group, between the experimental class and the control class. If  $\chi^2_{\text{count}} < \chi^2_{\text{table}}$  means that the data comes from a homogeneous group. This is in accordance with what was stated by

Syafril (2010: 208) that: "If the calculation result of  $\chi^2_{\text{count}}$  is smaller than  $\chi^2_{\text{table}}$  it means that the data comes from a homogeneous group, otherwise if  $\chi^2_{\text{count}}$  is greater than  $\chi^2_{\text{table}}$  then the group is not homogeneous".

**Table 2. Results of Homogeneity Test of Experimental Class and Control Class**

Class	$\alpha$	$\chi^2_{\text{count}}$	$\chi^2_{\text{table}}$	Conclusion
Experiment	0.05	0.7221	3,841	Homogeneous
Control				

From the table above it can be seen that the calculation ( homogeneity test ) obtained a Chi squared (  $\chi^2$  ) of 0.0431 when compared with the Chi squared table for dk (2-1) then obtained (  $\chi^2$  ) table of 3.841 at a significant level of 0.05. Based on this, it can be seen that the calculated chi square is smaller than the table chi square (0.7221 < 3.841). Thus it can be concluded that the data is homogeneous. Complete calculation of homogeneity test can be seen in Appendix 9 page 83 - 84.

### 3. Hypothesis testing

After the homogeneity test and normality test then proceed with the t-test, to find out whether there is a significant difference in the scores of the two groups. If  $t_{\text{count}} > t_{\text{table}}$  means there is a significant difference between the two groups . This is in accordance with what was stated by Syafril (2010: 169), namely: "If  $t_{\text{count}}$  is greater than  $t_{\text{table}}$  then for  $\alpha$  0.05 it means that there is a significant difference in the value of the learning outcomes. If  $t_{\text{count}}$  is smaller or equal to  $t_{\text{table}}$  , it means that there is no significant difference in the value of the learning outcomes.

The following will describe data processing with the t-test:

**Table 3. Calculation results for experimental class and control class**

Aspect	Experiment class	control class
N	29	29
$\bar{X}$	80,70	63,83
SD2	149,33	108,37

Calculation:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{SD^2 X_1}{N_1 - 1} + \frac{SD^2 X_2}{N_2 - 1}}}$$

$$t = \frac{80,70 - 63,83}{\sqrt{\frac{149,33}{29 - 1} + \frac{108,37}{29 - 1}}}$$

$$t = \frac{16,87}{\sqrt{5,333 + 3,870}}$$

$$t = \frac{16,87}{3,03}$$

$$t = 5.57$$

To test the hypothesis used t-test. From the results of hypothesis testing using the t-test, the following results are obtained:

**Table 4 Test Results with t-test**

No	Group	Grade Point Average	t count	t table $\alpha$ 0.05
1	Experiment	80,70	5.57	2.00
2	Control	63,83		

Look at the t table with dk  $(29 - 1) + (29 - 1) = 56$  for  $\alpha$  0.05 = 2.00. When compared it turns out that  $t_{count} > t_{table}$ , so it can be seen that the value of  $t_{count}$  is greater than  $t_{table}$  namely  $(5.57 > 2.00)$ . Given that  $t_{count}$  is greater than  $t_{table}$ , it means that the research hypothesis  $H_1$  is accepted, that is, there is a significant difference between the ICT learning outcomes of students who use the Strategy Active Learning Index Card Match (ICM) type (Experimental class) compared to the learning outcomes of the control group students who use the Strategy conventional. Thus the use of the Index Card Match Active Learning Strategy (ICM) has a significant influence on ICT learning outcomes

### Discussion

This research was conducted to see how much influence strategy implementation Active Learning Index Card Match (ICM) type on learning outcomes in class IX ICT subjects at SMP Negeri 19 Padang, which is done by comparing the learning outcomes of students in the experimental group using the Strategy Active Learning Index Card Match (ICM) type, and a control group that does not use the Index Card Match (ICM) Active Learning model in learning. Learning outcomes are important in every implementation of learning. Learning is very closely related to learning achievement. Since achievement is itself a learning outcome, it is usually expressed in terms of grades. Dimiyati and Mudjiono (2009 : 200) explain: "Learning outcomes are the level of success achieved by students after participating in a learning activity, where the level of success is marked by a value scale in the form of letters, words, and numbers".

Based on the results of the data analysis that has been obtained, it was found that the results of class IX ICT learning (Experimental) who applied the Index Card Match (ICM) Active Learning Strategy had a significant difference with the IX.2 class IX.2 students' learning outcomes (control) whose learning outcomes applied conventional strategies. This can be seen from the description of the data description and data analysis above, it can be seen that the average numbers obtained indicate that the class that learns using the strategy Active Learning Index Crad Match (ICM) type has higher learning outcomes than classes that study using conventional strategies.

Based on the results of the final student test in the form of test questions given to the experimental class (ICM), and the conventional class (control), the learning outcomes obtained were that in the experimental class (ICM) the average student learning was 80.70 with the highest score being 95 and the lowest score 60. While the learning outcomes of the control class obtained an average of 63.83 student learning outcomes with the highest score of 80 and the lowest score of 48. The t-test calculation states that t count is 5.57 while t table = 2.00,  $t_{count} > t_{table}$ . Means that there is a significant difference in the learning outcomes of class students who use the strategy Active learning Index Crad Match (ICM) type (experimental class) with class student learning outcomes using conventional strategies (control class). Thus it can be concluded that there is a significant difference in the learning outcomes of students who apply the Index Card Match (ICM) Active Learning model with students who apply conventional learning models in Biology class IX at SMP Negeri 4 Pariaman.



In implementing the Index Card Match ( ICM ) Type Active Learning strategy, the teacher explains the subject matter in outline using power point presentation media , previously the teacher has prepared index cards which will later be used in the learning process. After the teacher conveys the subject matter, then a review is carried out on the material that has been studied using the index cards that have been prepared by the teacher. On separate index cards, the teacher writes as many questions and answer keys as there are students. After mixing the two sets of cards, each student is given one card, meaning that there are students who get questions and get answers. Furthermore, students who get question cards write their answers on the back of the card. After that, five students holding the question cards stood in front of the class and each student read the question, and the student holding the answer card listened to the question carefully. For students who feel comfortable with the question, come forward and stand with their partner, then in turn each pair presents the question on their card to the other pair, where the solution is directly worked on the blackboard. Students who get matching pairs of questions and answers get perfect marks from the teacher. At the end of the lesson the teacher gives affirmation and concludes the teaching material that has been studied while giving tests to students .

Active Learning Strategy \_ The Index Card Match type relates to ways to recall what has been learned and test current knowledge and skills by finding pairs of cards which are answers or questions while learning about a concept or topic in a fun atmosphere. By implementing this strategy the material students have learned will stick longer in students' memories and students' activeness in learning activities can also be increased. As stated by Melvin L. Silberman (2009 : 239 ) as follows: One surefire way to make learning stick in your mind is to allocate time to review what you've learned. Material that has been discussed by students tends to be five times more embedded in the mind than material that is not.

The active learning strategy of the Index Card Match type is an index card search method in which the Index cards are divided into question cards and answer cards. In this strategy students will be actively involved and all students will participate in methods that contain elements of this game. With this strategy students will be able to work together with other students. This is in line with what Melvin L. Silberman (2009: 240) said that this strategy allows students to pair up and look for quiz questions with their friends. According to Melvin L. Silberman (2009:239) suggests: "That's because reviewing makes it easier for students to consider information and find ways to store it in the brain. What is designed is a set of review promoting strategies. Besides being active, they all make for a fun review."

In the description of the discussion above it can be concluded that "There is a significant influence from the implementation of the Strategy Active Learning Index Crad Match ( ICM ) type on learning outcomes in class IX ICT subjects at SMP Negeri 19 Padang ". By comparing the learning outcomes obtained by students from each class, it can be seen that there are differences in student learning outcomes taught by applying the Strategy Active Learning Index Crad Match ( ICM ) type with student learning outcomes taught by conventional learning strategies in class IX ICT subjects Country 19 Padang .

## CONCLUSION

Based on the results of the analysis of the data obtained during the research and discussion that has been raised, the following conclusions can be drawn:

1. The results showed that the average value of the experimental class student learning outcomes using Strategy Active Learning Index Crad Match ( ICM ) type 80.70 higher than the average value of control class students who learn to use conventional strategies 63.83.
2. After testing the hypothesis with the t test (t-test) it is obtained that  $t_{count}$  is greater than  $t_{table}$  ( $5.57 > 2.00$ ). Thus there is a significant difference in the learning outcomes between the experimental groups that study using the strategy Index Crad Match ( ICM ) Active

Learning with a control group that studied using conventional strategies in class IX at SMP Negeri 19 Padang .

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