# The Effect of *I-CARE* Learning Model on the Students' Metacognition

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## Abstract

The general objective of this study was to find and analyze empirically the effect of the *I Care* learning model on the students' metacognition. The method used in this research was the experimental method. The affordable population in this study was grade X students of SMK Assyafiah which is located at Jalan Bukit Duri No.29, South Jakarta 2016/2017 academic year. The sample of the study was 60 students obtained through random sampling method that the researcher mixed in the population so that all subjects were considered the same. Data collection was done by documentation techniques (learning model variables) and test techniques (student metacognition variables). The collected data was then analyzed using the t-test. Before the data was analyzed, first descriptive statistical analysis and data requirements test (normality test, homogeneity test) were carried out. The results of the study showed that there was an influence of the *I Care* learning model on the students' metacognition. In other words, students' metacognition who used the *I Care* learning model was higher than the students' metacognition who used constructivism learning model.

**Keywords:** learning model, I-CARE model, constructivism, students' metacognition

## A. Introduction

Education which basically aims to educate the nation's life is continuously pursued by the State of the Republic of Indonesia. The purpose of education is a set of goals for which education is directed. The form of education goals can be in the form of knowledge, skills, values, and attitudes. According to Law No. 20 of 2003 concerning National Education System, it is stated that "National education seeks to develop capabilities and establish dignified national character and civilization in order to educate the nation's life, and aims to develop potential students to

become believers and devoted to supreme God, noble, healthy, knowledgeable, capable, creative, independent, democratic, and responsible citizen "(Amaliah, 2012: 1). According to Anang, (2010: 18) education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves , society, nation, and country.

In teaching and learning activities many subjects are taught and one of them is mathematics. Suhendri (2011: 32) suggests that "mathematics is the science of numbers, awakening, conceptual relationships, and logic by using the language of symbols or symbols in solving problems in everyday life," according to Nasution quoted by Muslims ( 2011) says that the term Mathematics comes from Greek, mathein and mathenem which means studying. The word mathematics is thought to be closely related to the Sanskrit word, medha or widya which means intelligence, knowledge or intelligence.

Mathematical learning that takes place today uses a conventional delivery system, which is a system that relies on teacher activities. In general, teachers tend to use the lecture method in teaching because it is easy to do and fast. Meeting the teaching and learning process in the teacher creates a lack of development of learning attitudes in children, because children will tend to consider themselves dependent on teachers and schools for the sake of learning. Without teachers and schools, students cannot study regularly. This attitude can even grow in his parents, so that schools and teachers are considered as the only parties responsible for the success of children in learning. The attitude of students' learning dependence on teachers causes low mathematics learning outcomes, especially on the results of national examinations.

From the description above, the researcher attaches the average National Examination results at As-syafi'iyah Vocational School in South Jakarta 2016/2017 Academic Year for 3 periods as detailed in the following table:

**Table 1.** The score of the National Exam 2014/2015 period until 2016/2017

| Period | Subjects | | | |
|--------|------------|-------------|---------|------------|
|        | Indonesian | Mathematics | English | Productive |
| 2014-2015 | 8,168 | 7,990 | 8,010 | 8,038 |
| 2015-2016 | 8,055 | 7,244 | 8,037 | 8,439 |
| 2016-2017 | 7,021 | 5,821 | 7,371 | 7,913 |

Based on the table above, the average UN results of mathematics subjects are always low compared to the average UN results of other subjects. The low results of the National Examination on mathematics subjects is the reason for researchers to find out what learning methods can provide an increase in national exam results in mathematics subjects. The researcher took trigonometry material in the study because in the UN, trigonometry questions occupy 6.5% of all questions or 40 questions. (TU SMK As-syafi'iyah South Jakarta).

One effort by researchers to be able to solve the problem of classroom learning models especially on mathematics subjects is through the *I-care* learning model that is collaborated with the constructivism model to improve students' metacognition in facing learning difficulties. According to Abdussakir quoted by Maskur et al. (2012) *I-care* learning model refers to constructivism to improve the ability to think creatively, obtain mathematical learning tools with Icare models with reference to constructivism practical mathematical material, achievement of mathematics learning with Icare models with reference to effective material constructivism. Whereas according to Janssens and de Klein (2005: 73), metacognition is a reflection of the mind, thinking of his own mind.

Many of the instructors know the various learning methods which of course by mastering various learning methods the final goal of a learning process will be successful. The *I-care* learning model was first developed by Bob Hoffman and Donn Richie in 1997 at San Diego State University, United State Agency International Development (USAID). Indonesia through the Decentralized Basic Education (DBE) program in 2006 introduced and used the *I-care* framework for training teachers and students. They use the *I-care* framework in the learning session to provide opportunities for training and students to get direct experience from learning by applying what they can at each learning session.

## B. Literature Review
### Students' metacognition

According to Flavell, quoted by Rahman and Phillips (2006), saying that metacognition is 'cognition about cognition' or 'thinking about thinking'. An important component in

metacognition is related to knowledge of cognition and ability to monitor, regulate, and guard any cognitive matter. We can say that metacognition is a thought related to cognitive knowledge.

Metacognitive knowledge refers to obtaining knowledge about cognitive processes, knowledge that can be used to control cognitive processes. While metacognitive experience is processes that can be applied to control cognitive activities and achieve cognitive goals.

According to Woolfolk, quoted by Hamzah (2007: 134), said that: "Metacognition is a student's skill in managing and controlling the thinking process. In the theory of metacognition includes 4 types of skills, namely: 1) problem solving skills 2) decision-making skills 3) critical thinking skills 4) creative thinking skills ".

A person's ability to learn, which includes how should learning be done, what is and is not yet known, which consists of three stages, namely planning about what must be learned, how and when to learn, monitoring of the learning process that is being carried out, and evaluation of what planned, carried out, and the results of the process.

According to Nur, quoted by Mahromah and Manoy (2012), that metacognition is a way of thinking students about their own thinking and their ability to choose the right strategy to solve problems. So, it can be said that metacognition is a way of thinking of students themselves about what they think and can determine the right strategy in solving a problem.

A person's success in learning is influenced by his metachogical abilities. If each learning activity is carried out by referring to the indicators of learning how to learn, optimal results will undoubtedly be easily achieved.

According to Mahromah and Manoy (2012) said that student metacognition is an awareness of students in using their thoughts to plan, consider, control, and assess the cognitive processes and strategies of themselves.

Therefore, metacognition can be said as thinking someone about his own thinking or someone's cognition about his own thinking or someone's cognition about his own cognition. From the theory above, it can be concluded that student metacognition is a skill that students have in controlling the thinking process and can determine the right strategy in solving a problem.

## Learning model

Suyadi (2012: 14) says that the model is a small or miniature picture of a large concept. So, it can be said that the model is a picture of a concept, where the model is an attempt to explain a concept.

The teaching model can be interpreted as a plan or pattern used in compiling the curriculum, arranging the material of the students, and giving instructions to the instructor in the classroom in teaching settings or other settings.

According to Mills, quoted by Jafar (2012) states that the model is a form of accurate representation as an actual process that allows a person or group of people to try to act on that model. So, it can be said that the model is a pattern used by someone or a group of people to present a process.

The model is also a simple description that can explain objects, systems or concepts. The model is also a conceptual statement that is used as a suggestion or reference to continue empirical research.

Rusman (2012: 144) says that learning is essentially a process of interaction between teachers and students, both direct interactions such as face-to-face and indirect activities, namely by using various media. So, it can be said that learning is a two-way relationship between teachers and students using media or without learning media.

In other words, it can be concluded that learning has occurred when an individual behaves, reacts, and responds as a result of experience in a way different from the way he behaved before.

According Sudjana cited by Riyadi (2012) that learning as any systematic and deliberate effort to create conditions for educational activities to occur between the two parties, namely students (learning citizens) and educators (learning resources) who conduct learning activities. It can be said that learning is a deliberate effort to create interactions between teachers and students in teaching and learning activities.

The definition of learning is assistance provided by educators so that the process of acquiring knowledge and knowledge can occur, mastery of proficiency and character, and the formation of attitudes and beliefs in students.

According to Duffy and Roehler cited by Amri (2013: 229) that learning is an effort that deliberately involves and uses the professional knowledge that teachers have to achieve curriculum goals. It can be said that teachers are the main factor in achieving curriculum objectives.

Learning is the process of interaction of students with educators and learning resources in a learning environment. Learning as a learning process built by teachers to develop creative thinking that can improve students' thinking skills, and can improve the ability to construct new knowledge as an effort to improve good mastery of subject matter.

Udin quoted Mulyatiningsih (2011: 227) as saying that learning models are conceptual frameworks that describe systematic procedures in organizing learning experiences that will be given to achieve certain goals. So it can be said that the learning model is a systematic procedure to achieve a goal.

According to Joyce and Weil quoted by Rusman (2012: 133) that the learning model is a plan or pattern that can be used to form a curriculum (long-term learning plan), design learning materials, and guide learning in the classroom or others. It can be said that the learning model is a guideline used to compile a learning plan.

So, based on the theories above, the learning model is a plan or pattern that has been conceptualized and systematic that can be used to shape the curriculum (long-term learning plan), design learning materials, and guide learning in the classroom or others.

### *I-Care* Learning Model

*I-Care* as a learning model, of course requires stages from planning, implementation, to evaluation. This is reinforced by the I-Care system concept introduced by Decentralized Basic Education (DBE) developed by the United States Agency International Development (USAID) cited by Enita (2012), arguing that I-Care is a learning system that aims to improve learning outcomes of participants (students) with several stages of learning. The planning stage is to prepare subject matter based on the existing curriculum, analysis of classroom needs, and the development of the business world and the industrial world. While the implementation of I-Care is presented as follows:

1) *Introduction*, at this stage, the teacher or facilitator instills an understanding of the content of the lesson or session with the participants. This section should contain an explanation of the purpose of the lesson or session and what results will be achieved during the lesson or session. The introduction must be brief and simple.

2) *Connection*, most learning is a series with one competency developed based on previous competencies. Therefore, all good learning experiences need to be started from what is already known, can be done by participants and develop it. In the stage connection of the lesson / session, you try to connect the new teaching material with something that the participants already know from previous learning or experience.

3) *Application*, this stage is the most important of the lesson / session. After participants get new information or conversations through the connection phase, they need to be given the opportunity to practice and apply these knowledge and skills. The application section must take the longest from the lesson / session where participants work alone, not with the instructor, in pairs or in groups to complete real activities or solve real problems using the new information and skills they have acquired.

4) *Reflection*, this section is a summary of the lesson / session, while participants have the opportunity to reflect on what they have learned. The instructor's task is to assess the extent of learning success. Reflection or summary activities can involve group discussions where the instructor asks participants to make presentations or explain what they have learned. An important point to remember in reflection is that the instructor needs to provide opportunities for participants to express what they have learned.

5) *Extend*, because the lesson time or session has finished, it does not mean that all participants who have learned can automatically use what they have learned. Extention section activities are activities where the facilitator provides activities that participants can do after the lesson / session ends to strengthen and expand learning. At school, extension activities are usually called homework. Extention activities can include the provision of additional reading material, research assignments or training.

Based on the theory above, it can be concluded that I-CARE is a learning model consisting of introduction, connection, application, reflection, extend where the stages are mutually integrated with each other.

**Constructivism Learning Model**

According to Suparno, quoted by Wilantara (2005), the most important thing in constructivism theory is in the learning process, students must get emphasis. So, it can be said that students' constructivism theory must actively develop their knowledge, not teachers or others. Those who must be responsible for their learning outcomes. Active emphasis on student learning needs to be developed. Creativity and activeness of students will help them to stand alone in the cognitive life of students. Furthermore, according to Piaget, quoted by Wilantara (2005), "The formation of knowledge according to the constructivism model views active subjects to create cognitive structures in their interactions with the environment. With the help of this cognitive structure, the subject composes an understanding of reality. Cognitive interaction will occur as far as reality is arranged through cognitive structures created by the subject itself. Cognitive structure must always be changed and adjusted based on the demands of the environment and changing organisms. The process of self-adjustment occurs continuously through the reconstruction process ".

Then the theory is also supported by Slavin's opinion, according to Slavin quoted by Trianto (2012), constructivism is a cognitive development theory that emphasizes the active role of students in building their understanding of reality. So constructivism theory is a learning theory that develops the active role of students.

According to Soejadi in Sobari cited by Rusman (2012: 15) that basically the constructivism theory approach in learning is an approach where students must individually discover and transform complex information, examine information with existing rules and revise it if necessary. So constructivism is an approach where students must be able to transform complex information independently.

Based on the above theory it can be concluded that constructivism is a learning model that emphasizes the active role of students in processing complex information and can build their understanding of reality.

## C. Methodology

The study was conducted on class X students of SMK Assyafiah which is located at Jalan Bukit Duri No.29, South Jakarta. Where this research was carried out from the beginning of the even semester of the 2016/2017 school year for four months in March - June. This research is a quantitative study using an experimental method using factorial 2x2 research design stated as follows:

| Learning method | Students' Metacognition of Experimental Group | Students' Metacognition of Control Group |
|---|---|---|
| X-1 | $Y_{11}$ | $Y_{12}$ |
| X-2 | $Y_{21}$ | $Y_{22}$ |
| $\sum K$ | $Y_{01}$ | $Y_{02}$ |

Figure 1. Reserach design

Explanation:

$X_1$ = Experimental group

$X_2$ = Control group

$Y_1$ = Students' Metacognition of Experimental Group

$Y_2$ = Students' Metacognition of Control Group

The sample used in this study was 60 students consisting of 2 classes, taken by simple random sampling technique, namely by taking two classes randomly where 1 class as an experimental class as many as 30 students and 1 class as a control class as many as 30 students. The instrument used was a test for students' metacognition variables, and for the learning model was taken using documentation. Analysis of hypothesis testing used the t-test. Before the data is analyzed, descriptive statistical analysis and data requirements test are first performed (normality test and homogeneity test).

## D. Findings and Discussion

*1. Findings*

Data from the analysis using the metacognition learning method was obtained from the respondent's test scores which were 60 students. The value obtained in the experimental class

is an average score of 66.23, a median of 65.00, a mode of 55.0 and a standard deviation of 8.858. While the value obtained in the control class is an average score of 62.33, a median of 61, a mode of 53.0 and a standard deviation of 10,300.

Table 2. Descriptive statistics

| Descriptive measure | Metacognition of Experimental Group | Metacognition of Control Group |
|---|---|---|
| Mean | 66,23 | 62,33 |
| Median | 65,00 | 61,50 |
| Mode | 55,00 | 53,00 |
| SD | 8,858 | 10,300 |
| Variance | 78,461 | 106,092 |

Furthermore, in analyzing the data, normality and linearity tests were conducted to find out whether the data came from a population that was normally distributed or not, then the normality test was carried out using chi-square ($X^2$) with a significance level of $\alpha = 0.05$. For more details, the results of the normality test between the I-CARE learning model and the constructivism learning model can be seen in table 2.To perform normality testing, Liliefors and linearity test were applied using a simple linearity test. The Y over X1 regression error estimation test is intended to determine whether the Y regression estimate for X1 is normally distributed or not as a condition for using regression analysis.

Test cafeteria is when | F (Zi) - S (Zi) | the largest symbolized by Lhitung is smaller than Ltabel with a significance level of 0.05 then H0 which states that the score derived from a sample that is normally distributed is accepted.

The calculation process is carried out with the help of the SPSS Version 22 application program. The testing criteria are the stable values in the Kolmogarov-Smirnov column in the Sig column (2 tailed) having a value of> 0.05, the scores are from normally distributed samples. Based on the calculation of the SPSS application it can be seen in the sig cologist for the metacognition variable i care learning model = 0.729, the metacognitive variable of the constructivism learning model = 0.591. When compared with the testing criteria, the two variables meet the criteria or are normally distributed because they have a sig value> 0.05.

*2. Discussion*

Guided by the data from the analysis, it is known that there is an influence between the I-CARE learning model on student metacognition. In other words, metacognition of students who use the I-CARE learning model is higher than metacognition students who use constructivism learning models.

Because in the I-CARE learning model there are several stages in which the stages are integrated with each other. The I-CARE learning model provides an opportunity for students to have the opportunity to apply what they have learned in training. In this model there is also an extension stage which is an activity where the facilitator provides activities that can be done. After the lesson / session ends, participants strengthen and expand learning. Usually called homework, where this stage students will continue to practice, the lesson time / session has finished. In the opinion of Trianto (2007: 1) that the learning process to date is largely still dominated by teachers and has not provided access for students to develop independently through their discovery and thought processes, so students become passive in the learning process.

While in the constructivism model which is a learning model that focuses on the active role of students in processing complex information and can build their understanding of reality, but in this model there is no reinforcement after learning is complete.

Given that mathematics is a lesson that must be trained continuously, because without practicing, mathematics will not be able to be biased at any time with other words only when working on one or several questions. With the expert house, it will make students practice, so that their skills will continue to be honed, and students can determine certain strategies in solving diverse questions.

**E. Conclusion**

There is the influence of the I-CARE learning model on student metacognition. In other words, metacognition of students who use the I-CARE learning model is higher than the students' metacognition who use constructivism learning model. From the description of the conclusion, the writer tries to give some suggestions, as follows:

1. Preparation made by the teacher to teach is absolutely necessary. This is so that the material taught can be delivered perfectly.
2. The use of several learning models in the teaching process should be done by the teacher. This is also intended to be able to find the most suitable method to teach a certain material.
3. The results of this study show that there is difference in the students' mathematics learning outcomes between the students taught using the I-CARE learning model with students taught using constructivism learning model. So that in the future, I-CARE Learning Model really needs to be applied as an alternative learning method, especially on trigonometry material because it gives significant results on Mathematics learning outcomes.

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