

# INFLUENCE MODEL OF LEARNING AND ACHIEVEMENT MOTIVATION OF NATURAL SCIENCES LEARNING OUTCOMES IN CLASS IV SDN TELAJUNG 04 WEST DISTRICT CIKARANG BEKASI

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**Abstract :** This study aims to determine the effect of learning model CLIS (Children Learning in Science) and inquiry learning model is structured in terms of student achievement motivation on learning outcomes in science subjects. The research was conducted in the fourth-grade SDN 04 Telajung district. Cikarang Barat District. Bekasi using Factorial Experiment design Treatment by level 2X2. The sample in this study was 60 students are selected using a simple random sampling technique. The data obtained and tested first with test data analysis requirements that Liliefors test normality test and homogeneity of variance with Bartlett test at the 0.05 significance level. Furthermore, the data is processed by using analysis of variance (ANOVA) two paths through the F test followed by Tukey test. Results research obtained are: (1) There are differences in learning outcomes IPA student by using model CLIS and by using the inquiry model is structured, (2) There is the influence of interactions between the use of models of learning and achievement motivation on learning outcomes IPA, (3) There are differences in the results learn science with high achievement motivation CLIS model and using a structured inquiry model, (4) There are differences in learning outcomes IPA with low achievement motivation by using models CLIS and using structured inquiry model.

**Keyword** CLIS (*Children Learning in Science*), Structured inquiry, achievement motivation



## INTRODUCTION

Education is a human effort to cultivate and develop the potential of both physical and spiritual disposition in accordance with the values that exist in society and culture [1]. One of the stages of the educational process that affects the quality of the development of learners is a primary school.

At the elementary level began to be given the basic knowledge and skills play an important role in preparing students to follow further education. A very important part of education is learning in the classroom, where learning there are two processes, namely learning and teaching. Learning produces behavioral changes in individuals as a result of individual interactions with other people or to the environment. While

teaching is a process of providing guidance/assistance to students in the learning process [2].

At the primary school level, there are some subjects that must be taken of learners among the subjects of Natural Sciences (IPA). IPA is not only a mastery of knowledge in the form of a collection of facts, concepts, or principles but also a process of discovery [3].

Based on the results of the survey of the "state of education in Indonesia" that was published in the portal Kompasiana August 27, 2014 on the research results of PISA (Program for International Student Assessment) which cooperated in some countries belonging to the OECD (Organization for Economic Co-operation and Development) states that the average value of Indonesian students took second place at the bottom of a total of 65 countries were tested in mathematics, science, and reading [4].

Another fact that is found in science learning in school is a learning process that is still synonymous with learning teaching classical, essential, and prebendalism, as seen from the role of the teacher who still dominates (teacher centered) where teachers just do the transfer of knowledge.

Supposedly the learning process in the classroom should have led to the scientific approach (scientific), which is a learning process that comes with watching the activity, ask, processing, presenting, concluded and create actively engage students (student-centered). One of the learning model based on constructivism and can be applied to learning science is learning model CLIS (Children Learning In Science).

CLIS learning model seeks to develop students' idea or ideas about a certain problem in learning reconstruct or ideas by observation or experiment.

Model learning Children Learning in science (CLIS) form the initial knowledge of students and then entered into the memory of the students so that the application of the concept of matter can be more durable and increase the activity of students in science learning so the

impact on learning outcomes that will be achieved, students.

CLIS models have been tested by Andi Ulfa Tendi On which shows that the application of science learning strategy with CLIS models can enhance students' understanding of sixth grade on the concept of the earth and the universe [5].

The Other Learning model with the integration of scientific activity, in general, is an act of inquiry. Inquiry (inquiry) is to understand the process of thinking about something by asking questions. Galileo Educational Network provides a broader definition of inquiry, namely: [6] "Inquiry is the dynamic process of being open to wonder and puzzlement and coming to know and understand the word".

Galileo argued is a process of inquiry found through investigation to solve a problem. The investigation process includes such scientific activities undertaken by scientists to achieve an outcome in the form of scientific products.

Motivation has a correlation to enhancement learning achievements of learners, motivation has an important function to learn because of the motivation determines the intensity of the learning takes effort learners. Achievement motivation is a motivation that makes people strive for achievement of the activities he does and try to overcome all obstacles that impede efforts to achieve the feat [7].

The idea of this study was based on previous research by Sukarman in 2013 with the title of influence model of inquiry learning and achievement motivation on the results of studying physics at SMAN 94 Jakarta shows the results of no difference in outcomes studied physics cognitive learners using inquiry learning model freely modified and models guided inquiry learning [8].

Based on the results of problem identification and study of the relevant theory above, can be decided researchers conducted a study to determine the extent of the influence of model of learning and achievement motivation toward science student learning outcomes.

## Learning Outcomes

Results of the study consist of two words, "results" and "learning". The results are the acquisition gains of effort, though, and so on. While learning is a process of deliberate changes in behavior, in the form of not knowing to know, from which not understand being understood and of which cannot be able to do something to do something, of which one responds in the right direction.

According to Nana Sudjana, learning outcomes are the abilities of the students after receiving their learning experience [9]. IPA student learning outcomes are achieved knowledge of students in science subjects after undergoing a process of teaching in schools of the results of tests given after passing through the learning process at the end of the matter.

### **Learning Model CLIS (Children Learning in Science)**

CLIS Model was developed by a group of children's *learning in science* English led by Driver. Learning phase sequence on the model CLIS by Driver named general structure of a constructivist teaching sequence, while Tytler calls constructivism and conceptual change view of learning in science [10]. As one model of learning based on constructivism, social constructivist learning CLIS contains.

Collin describes it "constructivist perspective draws on the sociology of knowledge and philosophy of science in considering not only personal knowledge but public knowledge to be a human construction" [11].

The statement can be interpreted to describe constructivism perspective in the social sciences and philosophy that knowledge is not only weighed from any personal knowledge but knowledge in general.

The step learning model CLIS (Children Learning in Science) consists of five main phases namely, orientation or orientation (a), the appearance of an idea or elicitation of ideas (b), rearrangements idea or restructure of ideas (c), the application of the idea or application of

ideas (d), the consolidation of the idea or review change in ideas (e). [12]

### **Structured Inquiry Learning Model**

"Structured inquiry - The teacher provides students with a hands-on problem to Investigate, as well as the procedures, and material but does not inform them of the expected outcomes. Students are to discover relationships between variables or otherwise generalize from the data collected. [13]

The structured inquiry is where teachers provide students with problems to investigate, as well as procedures and material, but did not inform them about the expected results.

The measures contained in the inquiry learning model is structured, namely (1) Planning (planning), (2) Retrieving (information), (3) Processing (processing information), (4) Creating (creating information), (5 ) Sharing (communicating information) and (6) evaluating (evaluate).

### **Achievement Motivation**

"Motivators are understood as factors causing satisfaction (this assumed this is a human activity). He Identifies Six motivators responsibility, personal fulfillment, recognition, the scope of work, personal growth and Achieved performance "[14]. The opinions above explains that the motivation is understood as causal factors of satisfaction. Herzberg identified six motivation that responsibility, personal fulfillment, recognition, the scope of work, personal growth and performance achieved.

Need for Achievement term first popularized by Mc. Clelland as n-act as an abbreviation of a need for achievement. One of the most important motivations in education namely achievement motivation, motivation and achievement have a very important role in an individual's success in achieving its stated objectives [7].

Heckhausen suggests a standard of excellence is divided into three components, namely, the standard of excellence duty, self-excellence standards, and standards of

excellence other students [15]. The standard of excellence themselves associated with higher achievement compared with the achievements that have been achieved so far. As of where in Ronald D Simpson, Field and Horner suggests "Other investigators have reported changes in achievement motivation of adolescent students, Including gender differences" statement, in addition, to explain other studies have reported that changes in student achievement motivation of youth, including gender differences [16]. This concurs with the submitted Boalt "Although females in our society Appear to be better adapted to school, there is Considerable evidence that the males possess more positive attitudes toward science and are more highly motivated to Achieve in science. [16]-[21]

**METHOD**

The purpose of this study was to obtain empirical data on the effect of a model of learning and achievement motivation toward science learning outcomes. This study will be conducted in the second semester in one public elementary school in the village of Telajung, West Cikarang District. The research time from March to May the second semester of academic year 2017/2018. This research uses experimental design research design treatment by the level of 2x2.

In the study conducted at SDN 04 Telajung district. Cikarang Barat District. Bekasi affordable populations derived from class IV consisted of three classes. Of the population is taken two samples affordable. After the experimental class. learning model CLIS treated and a control group treated with a structured inquiry learning model during the same time on the same subject.

**RESULT AND DISCUSSION**

Data obtained from tests conducted formative in future studies the prerequisite test analysis is the use Liliefors normality test and homogeneity test using a test of homogeneity of variance. From the analysis prerequisite test that science learning outcomes and data are normally distributed homogeneously.

Furthermore, the descriptive statistical calculations as table 1.

Table 1. Descriptive statistics calculation results

No.	statistical	A1B1	A1B2	A2B1	A2B2
1	Amount of data	8	8	8	8
2	mean	14.88	9.50	8.50	11.00
3	median	14.83	10.0	8.50	13.00
4	modus	14.50	10,30	9.17	11.51
5	SD	2,031	1,851	2138	6285
6	variance	4,125	3,428	4571	2,507
7	Min	12	6	5	7
8	max	18	12	11	14
9	sum	119	76	68	88

The research hypothesis testing using two-way analysis of variance. The following is a summary of the analysis of variance of two paths:

Table 2 Summary of ANOVA Hypothesis Testing Results using SPSS

source Variance	db	JK	RJK	F <sub>count</sub>	F <sub>table</sub>	
					0.05	0.01
inter column	1	47.53	47.53	10.327 **	4.20	7.64
inter Line	1	16.53	16.53	3.592	4.20	7.64
Interaction	1	124.03	124.03	26.948 **	4.20	7.64
In	28	128.88	4.60			
total reduced	31	316.97				

Based on the table above can be described as follows:

**Hypotheses 1 (A1 & A2)**

Based on the test results of analysis of variance (ANOVA) on the first hypothesis with a significant level of  $\alpha = 0.05$ , obtained by F<sub>table</sub> Fhitung = 10.327 (0.05; 1/28) = 4.20, then 10.327 > 4:20 which means that H0 is rejected. that there is a difference between students who use learning models CLIS with students who are learning to use a structured inquiry learning model. The results showed that the

learning outcomes of students who use the IPA at CLIS models were higher than students who studied using a structured inquiry model.

Differences in learning results obtained IPA can be described as learning models Children Learning in Science (CLIS) directed to the active role of the student (Student-Centered), where students are given the opportunity to construct own knowledge and involved during the learning process. In addition to the orientation stage in learning to use the model more quickly capture the CLIS students teaching materials for teachers to show pictures of the material being studied as where it is said Sudjana learning media can enhance student learning in the learning process and can enhance academic achievement [17]

This is in line with previous research conducted by Yanuari Nur Laili (2015) show the results of that learning model based Multirepresentasi CLIS with LKS effect on student learning outcomes with a mean score of experiment class -rata higher than the average grade of control [18].

While structured inquiry learning model is an inquiry-based learning model that is presenting problems, questions and procedure attempt to solve the problem are determined by the teacher. In the early stages of planning in teaching using inquiry learning model, structured students are given a problem and steps, therefore, students' independence settlement, in this case, is limited.

So even though both learning model is derived from the theory of constructivism and the same as having an influence on the result of learning science, but based on the research results CLIS better learning model in the learning activities carried out compared with the model of inquiry learning model is structured.

**Hypotheses 2 (AXB)**

Based on the calculation results of analysis of variance (ANOVA) on the second hypothesis with significance level  $\alpha = 0.05$ , obtained by  $F_{table} F_{hitung} = 26.743 (0.05; 1/28) = 4, 20$ , then

$26.743 > 4.20$ , which means that  $H_0$  rejected. Thus it can be concluded that there is a significant interaction effect between models of learning and achievement motivation toward science learning outcomes. The results explain that the group of students who have high achievement motivation and use learning model to learn science CLIS obtained results higher than the groups of students who have high achievement motivation and the use of structured inquiry learning model.

In the group of students who have low achievement motivation and using inquiry learning model structured lower than the group of students who have low achievement motivation and using model CLIS. This shows that the selection of an appropriate model of learning with instructional materials and in accordance with the characteristics of students will affect the cognitive development of students primarily on the acquisition of learning outcomes IPA.

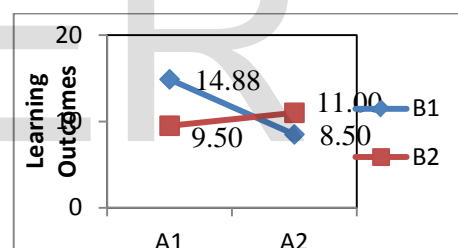


Figure 1 graphs Interaction Between AXB

As visible in Figure 1 model of learning and achievement motivation showed IPA interaction of the learning outcomes of students. This means that the model of learning and achievement motivation has nothing to do mutually influential. The existence of the learning model cannot stand alone independently, learning model selection accuracy, significantly influence student learning outcomes IPA.

Based on these results, it can be concluded that there is no learning model that is general or generally applicable to any situation and conditions for improving student learning outcomes IPA. With the characteristics of students and teaching materials are different, the selection of appropriate learning models



according to the characteristics of students and the characteristics of teaching materials is one important part of the success of learning.

### **Hypotheses 3 (A1B1 X A2B1)**

Based on the results of the third calculation, a further test using Tukey test, the obtained  $Q_{hitung} = 7.87 > Q_{tabel} = 4.04$  then  $H_0$  is rejected. Average -rata study group with CLIS models with high achievement motivation = 14.88 is greater than the average inquiry learning model structured = 8.50. IPA learning outcomes in the group of students who use the learning model CLIS and have high achievement motivation is higher than the group of students who use structured inquiry learning model and have high achievement motivation. CLIS learning models are consistent with students who have high achievement motivation because students are more motivated learning, especially in the process of investigation or experimental activities, have an attitude of responsibility, like the challenge of learning, and intends to be more advanced than the other students.

In learning CLIS students faced in the learning process through the investigation course for students who have high achievement motivation stages of the learning process is very exciting because through this stage the students who have high achievement motivation will also test his ability in finding a solution or answer to a problem faced to answer his curiosity taste. As the Drivers "The the resulting schemes (Children Learning in Science) include not only of suggested activities but provide a folder the main trends found by the working groups in the kinds of ideas used by students in their classes and the routers they took in their thinking. [11]

While the students are taught to inquiry learning model structure not much different from the model CLIS only on an inquiry learning model structured student guided and directed so that less provide opportunities for students to gallop achievement because the activities of science teaching should follow the stages that have been determined. It is less

supportive of students who have high achievement motivation.

### **Hypotheses 4 (A1B2 X A2B2)**

Based on calculations fourth, a further test using Tukey test, the obtained  $Q_{hitung} = 1,98 < Q_{tabel} = 4.04$  then  $H_0$  is accepted. Average value of a study group with CLIS models that have low achievement motivation = 9.50 is smaller than the average inquiry learning model structured = 11.00. Science learning outcomes in the group of students who learn using CLIS learning models that have low achievement motivation is lower than the group that studied using a structured inquiry learning model which has low achievement motivation.

Characteristics of students have low achievement motivation among others quickly discouraged, less active, less understand the learning goals that do not have a clear target, not innovative in solving problems, and tend to wait for the intervention of others in the learning process, it is appropriate circuitry learning model structured inquiry in which students are guided to solve a problem.

Besides that have low achievement motivation would prefer to follow the steps were clear and regular learning because they generally do not like to take risks. They tend to be less like a personal challenge because they follow what most people. While learning model CLIS less appropriate to the characteristics of students who have low achievement motivation. they are less suited to the stages of the various activities that exist in learning CLIS.

## **5. CONCLUSION**

Based on the data analysis stage processing and statistically committed against science student learning outcomes can be concluded that:

- (1) There are differences in learning outcomes IPA student by using model CLIS and using structured inquiry model
- (2) There interaction effect between the use of the learning model and achievement motivation on learning outcomes IPA

- (3) There are differences in learning outcomes IPA with high achievement motivation CLIS model and using a structured inquiry model
- (4) There are differences in learning outcomes IPA with low achievement motivation using CLIS models and by using the inquiry model is structured., The group of students who had a higher reading comprehension.

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