# MODEL APPLICATION OF LEARNING IN SCIENCE TEACHING CHILDREN TO LEARN MATH AT THE STUDENTS OF SMP STATE 53 PALEMBANG

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## Abstract

This research is descriptive quantitative research aimed to see how the implementation of the process of learning models Children's Learning in Science in mathematics learning and getting to know students' learning outcomes after the implementation of the learning model of children learning in science in the study of mathematics. Subjects in this study were all VIII.5 grade students of SMP State 53 Palembang 2013-2014 school year, amounting to 39 students. Learning is done in 3 sessions and final test at the fourth meeting. Data collection techniques in this study use observation and tests. The observation to see the implementation process of children learning models in science learning in the form of learning steps and tests to determine student learning outcomes in the form of a test description. The tests are on a problem-solving exercise in $1^{st}$-$3^{rd}$ meeting and final test is at the fourth meeting. CLIS learning model consists of 5 steps, they are the orientation, the appearance of the idea, the idea of rearrangements, the application of the idea, and the idea of consolidation. Learning to use this model to demonstrate the materials teachers uses props and students' prior knowledge plays an important role in the application of this model. The result of the observations in category learning implementation process is very good with an average percentage score of 83.86 % since the beginning, the students were able to use the knowledge that they already possess well. Student learning outcomes after the implementation of the process of learning use these models in either category with an average percentage score of 79.44.

**Key words:** Children's Learning in Science, the learning process, learning outcomes.

## INTRODUCTION

Education has an important role in determining the times because through education can create quality human resources to be able to follow the development of science and technology. Therefore, to create quality resources every human being advised to study and finish their education journey by completing all requirements established competencies of graduates. In accordance with Indonesian Government Regulation 19 of 2005 article 26 that includes competencies competency standards for all subjects or groups of subjects in general education unit aims to improve intelligence, knowledge, personality, noble character and skills to be independent and to follow further education.

According Anggraini ( 2010:6 ) Mathematics can be seen as a pattern language that describes both patterns in nature and patterns found through the mind. In accordance with Government Regulation No. 19 of 2005 a set of mathematical competencies to be achieved should be adjusted to Pelaksanann Syllabus and Learning Plan ( RPP ). A set of mathematical competence can be seen from these aspects of mathematics that is Geometry , Algebra , Statistics , and opportunities . In order to achieve a set of mathematical competencies set by the government are still many obstacles encountered in the field. Based on an interview with one of the teachers at the Junior High School 53 Palembang that mastery of mathematics in junior high school students are still likely to be low this is caused by some teachers still use traditional conventional learning process. As stated by Yamin in his

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D7-720

book ( 2013 : 15 ) that according to the constructivist membelajar not constitute a transfer of knowledge from learner to learner but rather an activity that allows learners construct their own knowledge .

According Hamalik ( 2011: 57 ) Learning is a structured combination includes human elements , materials , facilities , equipment , and procedures that affect each other in order to achieve a learning goal . It can be concluded that learning is a process that is deliberately designed for student teachers in order to perform a learning activity to achieve the competencies or learning objectives and produce a change in the form of new skills and understanding. Besides learning process that relies on the role of a teacher as an information center as a lecture makes learners can not develop or explore the ability of the students have so that students tend to be passive . This is not in line with Government Regulation 19 of 2005, article 19 ( paragraph 1 ) The process of learning to implement an interactive, inspiring, fun, challenging , motivating the students to actively participate and provide enough space for innovation, creativity, and independence according to their talents, interests, and physical and psychological development of students. So it is still conventional learning makes students could not directly involved in the teaching and learning process. Based on the results of interviews with one of the teachers metematika eighth grade students of SMP Negeri 53 Palembang often have difficulty mastered the material, receive, and develop materials provided by the teacher during the learning process it is seen from the data that is received that the average math scores of students of class VIII SMP is 74.56 and the value of students during the past 3 years nearly 30 % of the total students in class VIII is under the KKM. This is due to the learning that do still make the teacher as an information center so that the lack of involvement and activities of students during the learning process so that students tend to memorize formulas without mastering the concept of the material presented.

One of the learning model that can support the achievement of learning goals is a model of learning mathematics in Children Learning Sciences . In Children Learning Model Learning Sciences is a teaching model that is based constructivism understand that knowledge is the result of a person who is actively constructed by and in the subject of learning not passively received from the learning environment. In Children Learning Model Learning Sciences is a learning model that engages students during the learning process for example in experiments where students are given the opportunity to explore new knowledge through prior knowledge. It can be concluded that the Learning Model Inclusive Learning Sciences Children are learning model that promotes the creativity of children and provide opportunities for students to develop the full potential of students. This is in line with the characteristics of school mathematics where mathematics as creativity requires imagination, intuition and invention (BSNP 2007 : 1).

Learning Model CLIS is learning model developed by the group Children Learning in Sciences in the UK , led by the Driver . According to Driver (1988 : 2 ) models CLIS means children learn in science. Drivers also reveal 5 stages in the learning model is CLIS (quoted SANOTO 2012: 2) are as follows:

1. Stage Orientation ( Orientation ) is a stage that teachers with the aim to focus students' attention by asking students to observe and pay attention to an object or objects.
2. Stage Appearances Ideas (Elicitation Of Ideas) this activity is an effort made by teachers to bring students' ideas about the topics that will be discussed in the study. How that can be done by asking students to write about what they know about a topic to be discussed or can be a way to answer the question open commentary on the way by the teacher. The question

posed can be made Based on the observations of an object that has been off is the student in the previous stage. For teachers this stage is the beginning of knowledge exploration efforts of students. Therefore, this step can also be done through internal interviews.

3. Stage Preparation Birthday Ideas (Restrukturing Of Ideas) This stage is divided into three parts: disclosure and exchange of ideas (clarification and exchange), opening in conflict situations (eksporsure to conflict situation), as well as the construction and evaluation of new ideas (construction of new ideas and evaluation).

4. Stage Application of Ideas (Application Of Ideas) at this stage students are guided to apply the new ideas developed through experimentation or observation into a new situation. New ideas that have been reconstructed in the application can be used to analyze issues and solve the problems that exist in the environment.

5. Stage Stabilization idea (Review Change In Ideas) concept which has gained students need feedback given by teachers to reinforce scientific concepts. Thus, students who initially conception is inconsistent with the scientific concept of consciously turning it into a scientific concept.

Children learning model Learning Sciences In previously been used by several researchers. One of them is Educate Cahyono which revealed that high school students' learning outcomes in physics can be increased after the implementation of the Children Learning Model Learning in Sciences (2012: 8). Children Learning Through learning model in Sciences students can perform meaningful learning because through this model the learning process can be carried out in delight .

Ausabel (in Yamin 2013: 132) states that meaningful learning is the process of linking new information on relavan concepts contained in the person's cognitive structure. In the implementation of the CLIS learning model has shortcomings and advantages. According Silaban advantages and disadvantages of this model are as following (2012 : 12-13 ):

1. Idea raised children easier.
2. Allowing students to learn independently in solving a problem.
3. Conception Four requirement changes proposed by Posner Etnal met.
4. Creating creativity of students to learn in order to create a more comfortable classroom atmosphere and creative, there is cooperation among students and did it for the students involved in the activity.
5. Creating learning more meaningful because of the emergence of his own pride themselves for finding a scientific concept learned.
6. Teachers teach more effective because it creates a fun learning environment.

The weakness of the learning model CLIS:

1. Unfamiliar Students study independently
2. Foreign students feel when studying in groups
3. Students difficult to recall the knowledge they already possess .
4. Student difficulties in understanding the concept.

In Children Learning Model Learning Sciences is expected to address the various problems faced by the students in understanding mathematics materials for Children Learning through Learning Model in Sciences students directly involved in the learning process through an observation and experiment. Based on the description above, the writer intends to make a research entitled "Application of Learning Model in Children Learning Mathematics Learning Sciences at SMP Negeri 53 Palembang Students " .

**RESEARCH METHODS**

This research is descriptive quantitative research that aims to describe how the process of implementing the learning model Children Learning In Science in mathematics instruction and student learning results obtained after the application of the model CLIS Junior High School 53 in Palembang . The variable in this study is the process of learning model penerepan Children Learning In Science in mathematics learning using 5 stages: orientation, appearance of ideas, formulation of ideas, application ideas, and consolidation of ideas and know the results of student learning after the learning process through a model of Children's Learning in Science in Learning mathematics students. While the subject of this study is the eighth grade students of SMP N 53 Palembang.

Data collection techniques in this study is the observation and tests . According to Hadi (in Sugiyono, 2009: 145) observation is a complex process, a process that is composed of a variety of processes. Two of the most important are the processes of observation and vision. Observations carried out to obtain a picture of an activity based learning process learning model that has been applied in order to see the role of the teacher in the learning process, interaction between students during the learning process, as well as ` constraint faced during the learning process.

The tests used are in the form of a written test descriptions. The results of the study were obtained from the results of the students' answers or the ability of the students solve the problems on worksheets, exercises, and a final test. This test is performed to measure student achievement in the realm koginitif related to goal -oriented learning thinking skills in solving a problem or in other words, after learning achievement test applied learning models Children Learning In Science in mathematics teaching students of SMP Negeri 53 Palembang.

Data analysis technique is done by analyzing the data on the observation and analysis of test data to learn. Analysis of data from observations done by giving a score on each descriptor that appears , and then calculate the percentage by the following formula.

$$\text{Persentase} = \frac{SDM}{JD} \times 100\%$$

Then interpret the results of calculations based on the table below:

**Tabel 3.** KriteriaInterpretasi Keterlaksanaan  Model CLIS

| Skor | Katagori |
|---|---|
| 80% - 100% | Sangat Baik |
| 60% - 80% | Baik |
| 40% - 60% | Cukup |
| 20% - 40 % | Kurang |
| 0% - 20% | Sangat Kurang |

Modifikasi Arikunto (2012: 292)

Analysis of the test data is done by scoring the students' answers according pediman that have been made. Convert scores by the interval 0-100 with the following rules:

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D7-723

$$S = \frac{R}{N} x\ 100$$

Keterangan:

      S = The final value obtained

      R = Raw scores obtained

      N = Maximum score.

(Purwanto, 2009: 164)

After that, Analyzing student learning outcomes of value worksheets, exercises, and final Test.

$$NA = \frac{(2\ x\ Nilai\ Latihan) + (3\ x\ Nilai\ Tes\ Akhir)}{5}$$

Modifikasi Arikunto(2012: 312)

Determine the average value of students using the following formula:

$$\bar{X} = \frac{\Sigma x_i}{N}$$

Sudjana (2005: 67)

      Keterangan :

          $\bar{X}$        = Rata-rata nilai seluruh siswa

          $x_i$        = Nilai Akhir Siswa

          n         = Banyak siswa

The average value is converted into the category of the student's final assessment of student learning outcomes as in the following table:

**Tabel 3.5.** Katagori Penilaian Hasil Belajar Siswa

| Skor | Katagori |
|---|---|
| 80 – 100 | Baik Sekali |
| 66 – 79 | Baik |
| 56 – 65 | Cukup |
| 40 – 55 | Kurang |
| 30 – 39 | Gagal |

Arikunto (2012 : 281)

**RESULTS AND DISCUSSION**

**Description of Data Observations**

      Observation data obtained from observations made by three observers during three meetings. Before the study, the researchers first dahalu provide guidance and explanation to observer the

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D7-724

observation sheet used as feasibility assessment model is applied. Observations are used to see the learning process of children learning using learning models in science in three meetings. Score 1 if no descriptors are emerging, a score of 2 to 1 descriptors that appear, a score of 3 to 2 descriptors that appear, a score of 4 to 3 or 4 descriptors that appear.

Total score observation data from 3 observers at each meeting, can be seen in this table:

**Tabel 4.2** Rata-rata persentase hasil observasi pada setiap pertemuan

| Pertemuan | Jumlah skor | Persentase(%) | Rata-rata Persentase (%) |
|-----------|-------------|---------------|--------------------------|
| 1 | 43 | 71.6 | |
| 2 | 51 | 85 | 83.86 |
| 3 | 57 | 95 | |

**Description of Test Result Data**

In this study the test data obtained from the response / completion questions collected from the first meeting until the fourth meeting in the form of training and final test. At the end of the meeting of 1, 2 and 3 provide practice learning researchers. Exercise consists of 5 questions related to learning materials at each meeting. While the final test conducted at the fourth meeting. Student test data obtained from the test answer sheets of students performed an analysis to see which student learning outcomes acquired. The frequency distribution of the list of student learning outcomes in the following table:

**Tabel 4.3** Distribusi Hasil Belajar Siswa

| Skor | Frekuensi | Persentase (%) | Katagori |
|------|-----------|----------------|----------|
| 80 – 100 | 20 | 51.3 | Baik Sekali |
| 66 – 79 | 12 | 30.8 | Baik |
| 56 – 65 | 4 | 10.2 | Cukup |
| 40 – 55 | 3 | 7.7 | Kurang` |
| 30 – 39 | 0 | 0 | Gagal |
| Jumlah | 39 | 100 | |
| Skor rata-rata | 76.13 | | Baik |

**DISCUSSION**

This study will help company to find out the process of implementing the model pembelajarn CLIS and student learning results obtained after the application of the model CLIS. The results showed that the application of learning in children learning model sciece said to be very good because after the implementation of the model CLIS learning outcomes that students earn better than ever. This study was conducted over 4 meetings. Based on the results of observations per step CLIS models that

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D7-725

scored lowest percentage found in step application of the idea (Application Of Ideas), this is due to a lack of discipline on students to complete all activities through to completion. Most students assume that the discussion is limited to the appearance of an idea. Therefore, to develop a sense of discipline in students to perform as well as completing all of the activities contained in the LKS researcher as teacher always control all the activities of each group and give a prize to the fastest group completed the worksheets are given to make students more motivated in the learning process. As stated by Novan that discipline should be controlled from outside the learners in the form of reward and punishment (2013: 163).

At the first meeting the students were given a worksheet in accordance with the student and the learning steps researchers explain what activities the student should do and what students can achieve after the learning process. After that the students who are not yet familiar with these activities pose to researchers to overcome some of the obstacles they face. In the orientation stage props that demonstrate the teacher has prepared. With the demonstration of learning was more varied so as to make the students feel happy and more active in the following study. The method to observe the significance of prioritizing learning (learning meaningfull). This method has certain advantages, such as the media presents a real object , learners happy and challenged , and easy implementation (Common, 2013: 4 ).

At this stage of the appearance of the notion there are some groups who have difficulty in answering the questions posed. This is due to the lack of mastery of the material presented at the previous meeting . Some of the material is the student does not understand some of the elements include what the circle circumference, diameter and radius. This is in line with the proposed Retnawati that materials in math arranged hierarchically and mathematical concepts with each other are correlated to form a new, more complex concepts so knowledge mathematics that students know beforehand the basis of understanding to study the matter further (2009: 1).

Based on the results and discussion that has been obtained, it can be concluded that: The process of application of learning models of children learning in science at Junior High School students' mathematics learning 53 Palembang categorized very well with the percentage of the average score of all meetings is 83.84 %, and student learning results obtained after the application of the model CLIS well categorized by the percentage of the average score of all students learning outcomes is 76.13 % .

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D7-727