

# THE APPLICATION OF ALQURUN TEACHING MODEL TO IMPROVE STUDENTS MATHEMATICAL CONCEPTS UNDERSTANDING IN MATHEMATICS LESSON AT SCHOOL

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## THE APPLICATION OF ALQURUN TEACHING MODEL TO IMPROVE STUDENTS MATHEMATICAL CONCEPTS UNDERSTANDING IN MATHEMATICS LESSON AT SCHOOL

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**ABSTRACT:** This study aims to determine the difference of the results in students mathematical concepts understanding in mathematics lesson at school by applying Alqurun Teaching Model. The type of the research used in this research was a meta-analysis of previous research. Data collection in this research was carried by searching journals through google scholar. From the results of the Alqurun Teaching model search, 4 research results were chosen for further analysis in the form of %. The result of the research showed that the application of Alqurun Teaching Model can improve mathematical concepts understanding in mathematics lesson at school. The data showed improved the improvement of students mathematical concepts understanding from the lowest 42% to the highest 318% with an average of 146.75%. The average pretest score of students mathematical concepts understanding was 31.9 and the average posttest score with the application of Alqurun Teaching Model increased to 64.78.

*Keywords: Alqurun Teaching Model, Mathematical Concepts Understanding, Mathematics*

### 1. INTRODUCTION

Afrilianto and Rosyana (2014: 45) states that mathematics as one of the disciplines in education that has a big role and benefits in various scientific developments. Next, according to Sutjipto (2005: 25) mathematics is one of the important lessons in school because there are many benefits can be applied for the daily activities. Thus, mathematics is one of the subjects that has an important role in school. The purpose of mathematics learning in school is does not only develops one's mindset, but also the students have mathematical thinking abilities. Sumarmo (2014: 5) states that the purpose of mathematics learning is based on the Education Unit Level Curriculum (KTSP), there are (1) develop mathematical concepts understanding and the application, (2) understand by using patterns and properties of mathematics, (3) generalize, prove, and explain the mathematical ideas, (4) communicate using mathematical symbols, and (5) think critically and creatively. Furthermore, according to the Depdiknas (2003: 2) mathematical concepts understanding is one of the mathematical skills that are expected to be achieved in learning mathematics by showing mathematical concepts understanding, explaining the interrelationship between concepts and applying concepts or algorithms flexibly, accurately, efficiently, and appropriate in problem solving. Based on the explanations above, it can be concluded that mathematical concepts understanding is one of the abilities that become the purpose of mathematics learning.

Mathematical concepts understanding is the ability think which is the base to form students mathematical mindset in solving mathematical problem. According to Herawati (2010: 2) understanding the concept needs to be applied for the students from an early age so that they

understand the definition, understanding, ways of solving problem, and the operation of mathematics correctly, because it will be a provision for them in learning mathematics in higher level. Furthermore, Depdiknas (2003: 2) states that understanding the concepts is one of the mathematical skills that are expected to be achieved in mathematics learning, namely by showing an understanding of the mathematical concepts learned, explaining the interrelationship between concepts and applying concepts or algorithms flexibly, accurately, efficiently, and appropriate in problem solving. Based on this description, the students are able to explain the relationship between concepts and apply concepts or algorithms flexibly, accurately, efficiently in solving mathematical problem by the mathematical concepts understanding.

However, the reality shows that there are still many students who have difficulty in understanding the concepts of mathematics. It is because the teacher still uses conventional learning so that students only listen to the explanation from the teacher without understanding the concepts that they learn. As a result, the students feel bored, passive and they do not understand the concepts in doing the exercise. Therefore, a learning innovation is needed that can improve the students mathematical concepts understanding.

One of the learning that can improve students mathematical concepts understanding is the Alqurun Teaching Model. Sutiarto (2016: 29) states that the learning of the Alqurun Teaching Model is a learning that has a sequence by combining the modification of bloom's taxonomic sequence and the core curriculum of the 2013 curriculum. Alqurun Teaching Model requires students to be active and independent in learning by constructing an understanding of individual material. Next, this learning does not only focus on achieving knowledge (cognitive) but also on attitudes (affective) and skills (psychomotor).

Alqurun Teaching Model has seven stages of learning activities. The sequence of activities is in accordance with the fragment of the word 'ALQURUN' in Alqurun Teaching Model which is Acknowledge means recognition, Literature means literature searching, Quest means investigating, Unite means uniting, Refine means filtering, Use means applying, and Name means name it. Through these stages, students are given the opportunity to demonstrate their understanding of mathematical concepts. Thus, using the Alqurun Teaching Model is expected to facilitate teachers in creating more meaningful learning, especially in mathematics so that students can improve mathematical concepts understanding.

## **2. LITERATURE REVIEW**

### **Alqurun Teaching Model**

Alqurun Teaching Model is a learning that has a sequence by combining the modification of bloom's taxonomy and curriculum core competencies 2013. Alqurun Teaching Model does not only focus on achieving knowledge (cognitive) but also on attaining attitudes (affective) and skills (psychomotor). The application of the Alqurun Teaching Model is focused on the completion of tasks with the aim of achieving students mathematical concepts understanding. This learning was developed by Sugeng Sutiarto in 2016 which is expected to be an alternative learning model in mathematics as well as achieving competencies according to the 2013 curriculum. Alqurun Teaching Model has seven stages of learning activities. Alqurun Teaching Model has a sequence that matches the letters, namely: A, L, Q, U, R, U, N. The letter A means Acknowledge (recognition), L means Literature (literature searching), Q means Quest (investigating), U means Unite (uniting), R means Refine (filtering), U means Use (applying), and N means Name (name it).

The following is an explanation of each sequence of stages in applying the Alqurun Teaching Model according to Sutiarto (2016), namely: In the first stage of Acknowledge or recognition is a preliminary activity in learning. Recognition in this case means that the teacher

invites students to acknowledge the greatness of God who has provided knowledge and must recognize the limitations of the initial abilities of students, so that teachers need to provide apperception that is tailored to students diverse initial abilities. The second stage Literature or literature searching is done by the students, and the teacher provides or facilitates various learning resources from the material that the students learn. The third stage of Quest or investigating is the activity of investigating students on several objects, facts, or data from the material. The fourth stage of Unite or uniting is an activity combining various elements that have the same characteristics or characteristics of various objects, facts, or data from the material. The fifth stage Refine or filter is the activity of students filtering or selecting a combination of elements from the results of unite activities. Refine activities aim to precipitate important elements from the results of unite activities. In the refine stage, the teacher gives the opportunity to students to internalize (incorporate) the material in his mind. The sixth stage of Use or applying is the activity of implementing knowledge received by students from the results of previous core activities. The seventh stage Name or name it is the activity of determining the new way of solving problems and students giving names to the new way. The teacher has a role in directing and testing the effectiveness of new ways students name it.

Based on the explanation above, it can be concluded that the Alqurun Teaching Model is a learning that has a sequence by combining the modification of bloom's taxonomy and curriculum core competencies 2013. Furthermore, the Alqurun Teaching Model has seven stages of learning activities. The Alqurun Teaching Model has a sequence that matches the letters, namely: A, L, Q, U, R, U, N. The letter A means Acknowledge (recognition), L means Literature (literature searching), Q means Quest (investigating), U means Unite (uniting), R means Refine (filtering), U means Use (applying), and N means Name (name it).

### **Mathematical Concepts Understanding**

Sanjaya (2007) suggests that concepts understanding is the ability of students in the form of mastering a number of subject matter, students does not only know or remember a number of concepts learned, but they are able to express them in other forms that is easy to understand, to provide interpretation of data and able to apply concepts that are in accordance with cognitive it has. Next, according to Jihad and Haris (2012: 149) concepts understanding is a competency shown by students in concepts understanding and in performing procedures (algorithms) appropriately.

According to Skemp and Pollatsek (Sumarmo, 1987: 24) there are two types of understanding, namely: the instrumental understanding and rationale understanding. Understanding instrumental can be defined as the understanding of the concept of mutually separate and only formula in memorized in performing simple calculations. While rationale understanding included one scheme or structure that can be used in problem solving.

In addition, the concept understanding is also important in learning mathematics. It has a relation with the opinion of Zulkardi (2003:7) that states that mathematics lesson emphasis on concepts. It means that in studying mathematical learners must understand in advance in order to solve problems and be able to apply that learning in the real world.

Thus, it can be concluded that the concept understanding is an important part in the learning of mathematics. Furthermore, mathematical concepts understanding is defined as the ability of the students in the mastery of a number of subject matter, students do not just know or remember a number of concepts were studied, but they are able to reveal back in an easy way to understand, to have capability of performing procedures (algorithms) precisely to solve problems and to apply that learning in the real world.

## Mathematics

Post (1981) suggests that mathematics is of great importance in our lives especially for describing and predicting the events happening around the world. It can be said that it is an abstraction in its pure sense as it exists independently of mankind and the world around us. Mathematics creates abstract structures of real world counterparts with similar features and properties.

While according to Marsigit (2003: 2-4) define school mathematics is called as mathematics, there are many definition of it such as:

- a. Mathematics as a search for patterns and relationships.
- b. Mathematics as creativity that requires imagination, intuition and discovery.
- c. Mathematics as an activity of problem solving.
- d. Mathematics as a communication tool.

Therefore, it can be concluded that mathematics is very important in our lives especially to describe and predict events that occur throughout the world. In addition, mathematics is also a search for patterns and relationships, creativity that requires imagination, intuition and discovery, activity of problem solving, and communication tool.

### 3. RESEARCH METHODS

The type of research used is a meta-analysis. Meta-analysis is a study conducted by researchers by summarizing research data from several pre-existing research results. Research data collection is carried out by researchers by tracing articles contained in online journals, thesis results in the repository, using google scholar. The keywords used by researchers in searching articles are "Alqurun Teaching Model", "Concepts Understanding".

From these searches obtained several articles then selected articles that can fulfill the criteria, namely the availability of pretest and posttest data in the form of scores. From the Alqurun Teaching Model 4 research results were chosen to be analyzed further. The analysis uses a comparison method to determine the impact of applying research based learning models, the difference in the pretest-posttest value as the magnitude of the increase, then divided by the pretest score (in form %) to determine the magnitude of the application of Alqurun Teaching Model in improving students mathematical concepts understanding.

### 4. DISCUSSIONS AND ANALYSIS OF RESULTS

After browsing google scholar, the results of the study are as follows. With the keywords of Alqurun Teaching Model, Concepts Understanding. From the search results obtained 4 selected studies: Puspitasari (2017), Hayati (2017), Hafifah (2017), Hardani (2017).

Based on the results of browsing conducted using selected google scholar as above, the results of the analysis related to the application of Alqurun Teaching Model to improve students mathematical concepts understanding in mathematics lesson at school can be seen in the following table.

Table 1. The magnitude of the increase in students mathematical concept understanding as an application of the Alqurun Teaching Model

No	Title	Researcher	Pretest	Posttest	Gain	Gain (%)
1	Development of LKPD Based on Alqurun Teaching Model (ATM) to Improve Mathematical Concepts Understanding	Puspitasari (2017)	35,83	75,89	40,06	111
2	Development of Teaching Material Based on Alqurun Teaching Model (ATM) in Cubes and Beams Concepts Effectiveness of Alqurun	Hayati (2017)	34,67	75,03	40,36	116
3	Teaching Model in terms of Students Mathematical Concepts Understanding Development of SMP	Hafifah (2017)	47,25	67	19,75	42
4	Mathematics Teaching Materials Based on Alqurun Teaching Model (ATM) in Comparative Concepts	Hardani (2017)	9,85	41,18	31,33	318
Average			31,9	64,78	32,88	146,75

Based on analysis of results are presented in table 1, it can be concluded that the application of the Alqurun Teaching Model can improve the students mathematical concepts understanding in mathematics lesson at school. Increased students mathematical concepts understanding from a low of 42% to a high of 318% with an average of 146.75%. Average scores pretest students mathematical concepts understanding is 31.9 and the average score posttest the application Alqurun Teaching Model increased became 64.78.

From the problems of research that examined, problems occurred because the study used is conventional learning or the usual done. Other problem are less conducive atmosphere while learning to take place. It causes the student feel saturated, passive, and the ability of the students in concepts understanding of less developed. Then the students just listen to the explanations of material from teachers and do the exercises without concepts understanding that they learn that make them difficult to finish the math problem. These problems occur because the selection of learning innovation is not appropriate by the teacher.

Next, it can be seen in the table presented above that the application of Alqurun Teaching Model can improve the students mathematical concepts understanding in mathematics lesson at school. Alqurun Teaching Model is a learning that has a sequence by combining the modification of bloom's taxonomy sequence and the curriculum core competency 2013. This learning also does not only focus on achieving knowledge (cognitive) but also on attaining attitudes (affective) and skills (psychomotor). Alqurun Teaching Model has seven sequences of activities, namely: acknowledge (recognition), literature (literature searching), quest (investigating), unite (uniting), refine (filtering), use (applying), and name (name it).

## 5. CONCLUSIONS

Based on the discussion and analysis of results above, it can be concluded that the application of Alqurun Teaching Model improves the students mathematical concepts understanding in mathematics lesson at school. This summary is taken from 4 results research that has been done before by applying Alqurun Teaching Model of students mathematical concepts understanding that shows improvement from a low of 42% to a high of 318% with an average of 146.75%. Average scores pretest mathematical concept understanding students is 31.9 and the average score posttest application Alqurun Teaching Model increased became 64.78. Therefore, it can be seen that a summary of Alqurun Teaching Model can be applied as an alternative in teaching mathematics at school that make students become active and enjoy in learning.

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