

# Improving Number Ability Through Demonstration Method in Children Aged 4-5 Years

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## ABSTRACT

This study aims to improve numerical abilities through demonstration methods at 4-5 years of age. This type of research is Classroom Action Research conducted in 2 cycles. The subjects of this study were 13 children consisting of 7 boys and 6 girls. Research data on cognitive development in recognizing numbers are collected by the method of observation, interviews, and documentation. Research data were analyzed using qualitative descriptive. The results of data analysis showed that there was an increase in cognitive development in recognizing numbers after the application of the demonstration method. In the pre-cycle of early childhood cognitive development in recognizing numbers there are 5 children who have not yet developed (BB) and 8 people who have begun to develop (MB). In the first cycle of early childhood cognitive development in recognizing numbers there are 1 person who has not yet developed (BB), 3 people have begun to develop (MB), and 9 people have developed according to expectations (BSH). Then, in the second cycle of early childhood cognitive development in recognizing numbers reached 1 person began to develop (MB), 3 people developed according to expectations (BSH), and 9 people developed very well (BSB).

**Keywords:** number, early children education, cognitive, demonstration method

## 1. INTRODUCTION

Early Childhood Education (PAUD) is a coaching effort undertaken by children from birth until the age of six years, which is done through the provision of educational stimuli to help physical and spiritual growth and development, so that children have readiness to enter further education [1]. Early childhood education is a period where the development of children is developing very rapidly. So that early age is called the golden age. That is because about 50% of human intelligence capacity has occurred when the age of 4 years, 80% has occurred when the child is 8 years old, and reaches a 100% culmination when the child is 8-18 years old [2].

At this time, all aspects of development that exist in early childhood grow and develop quickly and violently. At this stage a stimulus from the closest people is needed. Thus, its growth and development is not hampered. Development is expected to occur with a progressive process, moving forward, not backward, and continuous.

Aspects that must be developed at this time include religious and moral values, physical motor, cognitive, language, social emotional, and art. All aspects of development need to be developed from an early age so that growth and development are achieved optimally, especially cognitive development.

Cognitive development is one of the developments that children must have so that children can adapt and interpret objects and events around them. Piaget considers that children play an active role in compiling their knowledge of

reality. Children do not passively accept information even though the process of thinking and conception of children in thinking reality has been modified by their experiences with the world around them, but the child also has an active role in interpreting the information he obtained from experience, and in adapting it to the knowledge and conception of the world he already has [3].

Mena & Eyer [4] suggested that cognitive development is a concern because it deals with skills, memory, language and problem-solving abilities. Cognitive development is a change that occurs in thinking, intelligence and language of children to provide reasons so that children can remember, formulate strategies creatively, think about how to solve problems and can connect sentences into meaningful conversations [5].

Cognitive development was developed by Jean Piaget, a Swiss psychologist who lived 1896 - 1980. His theory provides many main concepts in the field of developmental psychology and influences the development of the concept of intelligence, which for Piaget, means the ability to more accurately represent the world and perform logical operations in conceptual representations based on reality. This theory discusses the emergence and acquisition of a scheme of how a person perceives his environment in the stages of development, when a person acquires a new way of representing information mentally. This theory is classified into constructivism, which means it is not like the theory of nativism (which describes cognitive development as the emergence of innate knowledge and abilities). This theory holds that we build our cognitive abilities through self-motivated actions towards the environment. For the

development of this theory, Piaget obtained the Erasmus Prize. Piaget divides the schemes that children use to understand their world through four main periods that are correlated with and increasingly sophisticated with age:

- a. Sensorimotor period (age 0-2 years)
- b. Preoperational period (ages 2-7 years)
- c. Concrete operational period (ages 7-11 years)
- d. Formal operational period (11 years to adulthood)

In the development of cognitive abilities that must be possessed is mathematics related to numbers. Knowledge of numbers is very important and fundamental for early childhood [6]. Even children start to develop number sense even well before they start the school [7]. Besides that, in the current mathematics teaching literature, there is a strong emphasis on the need to capitalize on number sense in the early years of schooling, and teachers are able to provide children with experiences that will develop number sense and thus improve mathematics outcomes [8].

Developing a strong number sense early in life helps children gain a good understanding of counting and cardinality; learn to count flexibly; compare and estimate quantities; represent, put together, and take apart numbers and sets in different ways; and employ these foundational understandings to solve problems [9]. Even children cognitive development especially children aged 3 to 6 years are at the preoperational stage, namely (1) Using symbols, where children do not have to contact sensorimotor with objects. Children can imagine the object or person has different characteristics from the truth; (2) Understanding identity, where children understand that the changes that occur do not change the scientific character; (3) Understanding cause and effect, where children understand that an event has a cause, (4) Able to classify, children classify objects, people, an event into meaningful categories, (5) Understand numbers, where children can count and understand numbers. Characteristics cognitive development pre-operational stages include: grouping objects that have similarities, counting 1-20, recognizing simple forms, understanding the concept of opposite meanings, being able to distinguish circular or square shapes with real objects or images, pairing and mentioning objects, matching shapes simple forms, classifying numbers, writing, fruit and vegetables, recognizing lower and uppercase letters, recognizing colors [5].

The problem in the field is the ability of children aged 4-5 years in understanding the numbers are still low. This is evidenced by the results of observations that show that as much as 68.75% of children's understanding of numbers has not yet developed. The ability of the number of children aged 4-5 years that has not been suitable is caused by the choice of methods used by the teacher which does not support the improvement of children's abilities. Whereas the success of teaching always lies mainly on the know-how of the subject being invoked and the use of appropriate method (s) that is required per time during the process of transfer of knowledge [10]. One learning method that can be used is a demonstration method.

According to Drajat the demonstration method is a method that uses demonstration to clarify or understand or to show how to do something to other participants. Demonstration is an effective learning method, because students can know firsthand the application of the material in daily life.

Demonstration learning method is a way of presenting learning by demonstrating and demonstrating a particular process, situation or object that is being studied both in actual form and in imitation form that is displayed by the teacher or other learning resources in front of all students.

The purpose of teaching using a demonstration method is to show the process of occurrence of an event according to the teaching materials, how they are attained and the ease to be understood by the students in teaching learning process [11]. The demonstration method is used to introduce new abilities to early childhood, so that children can mimic or modify these new abilities.

## 2. RESEARCH METHODS

The technique used in this research is to use observation and documentation assessment instruments. Sugiyono [12] revealed that observations are used when researchers are concerned with human behavior, work processes, natural phenomena and if the observed respondents are not too large. While Yus [13] argues that observation is an assessment made by observing the behavior and activities of children in a time or activity. Observation in this case is to observe all activities that are being carried out by the teacher to students regarding the learning process of number recognition which is carried out through a demonstration method in children aged 4-5 years. Furthermore, the instrument used in the study is documentation. According to Sugiyono [12], documentation is a record of events that have already passed. Documentation can be in the form of writings, drawings or monumental rich works of a person. Documentation is used as a tool for taking pictures in the form of activities carried out during learning process.

This type of research data is included in two types of data, namely quantitative data and qualitative data. Quantitative data in this study include the learning outcomes of students of the child's ability to recognize numbers by using the demonstration method obtained from the observations made in each cycle. The qualitative data in this study were obtained from observation sheets of students and teachers during the learning process and documentation during the teaching activities process. Thus, data on children's learning outcomes in recognizing numbers and colors using the demonstration method are calculated in the following ways: Observation data to measure teacher and student activities, with the following formula:

$$\text{Percentage} = \frac{\text{Number of activities achieved}}{\text{All activities}} \times 100\%$$

Calculate the percentage of children's learning outcomes in recognizing the numbers and colors of each item number achieved by each student, using the formula:

$$\frac{\text{Scores achieved by students}}{\text{Maximum score}} = 100\%$$

## 3. RESULTS AND DISCUSSION

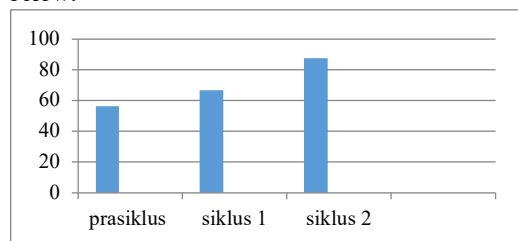
Based on the results of the application of the demonstration method to improve the ability of the number of children

aged 4-5 years with the subject of 13 children have reached the successful stage. This can be seen from the results of the practice of early childhood prayer before using the demonstration method there are five people who have not yet developed (BB) and eight people who have begun to develop (MB). In the first cycle of early childhood cognitive development reached one person who has not yet developed, three people who began to develop (MB) and nine people who developed according to expectations (BSH). Then in the second cycle of early childhood cognitive development reaches one person starts developing, three people develop according to expectations, and nine people develop very well (BSB). Cognitive development data in recognizing early childhood numbers can be seen in the table below:

**Table 1** Data on the results of student learning development recognize numbers

Assessment criteria	Total of Student		
	Pre Cycle	I	II
BSB	-	-	9
BSH	-	9	3
MB	8	3	1
BB	5	1	-

The average value of overall students increased significantly from the pre-cycle value of 56.25 to 66.7 in cycle I and 87.5 in cycle II. So, to find out the increase in the average value of all students can be seen in the diagram below:



**Figure 1** Increased average value

As noted in table 1 and figure 1, the demonstration method can improve children's ability to recognize numbers. This is related to the opinion of Gordon & Jannette (in [13]), if children learn by doing will give a 90% chance of success. One method of learning that provides opportunities for success is the demonstration method. This is because demonstration method refers to the type of teaching method in which the teacher is the principal actor while the learners watch with the intention to act later [10]. The use of demonstration methods is also useful for introducing new abilities to be obtained by children.

**4. CONCLUSION**

Based on the results of the practice of learning number recognition has reached a successful stage. This can be seen from the results of the practice of early childhood prayer before using the demonstration method there are five people who have not yet developed (BB) and eight people who have begun to develop (MB). In the first cycle of early

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