



# Implementation of Educative Learning Media Counting Tree to Improve Student's Cognitive Abilities in Kartika Tanjung Morawa Kindergarten

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**Abstract:** *Counting is a branch of mathematics which is a basic skill that children need to master from an early age. In fact, the ability to count in early childhood is still very low, this is because children find it difficult to count or pronounce a sequence of numbers, count by pointing at objects and pointing to a sequence of objects. On the other hand, teachers do not take advantage of the learning media used to support children's learning outcomes in arithmetic. To overcome this problem, learning to count is carried out using educational learning media Counting Tree because by utilizing educational learning media Counting Tree (counting tree) learning to count will be easier, interesting and fun for children. This study aims to describe the implementation of learning by applying the Counting Tree educational learning media to improve the cognitive abilities of students in Kartika Tanjung Morawa Early Childhood Education. Classroom Action Research with a qualitative approach consisting of three cycles. With the research instrument used was a test of mathematical problem solving abilities. The target output to be achieved in this study is an international journal.*

**Keywords:** *learning media; counting tree; cognitive ability*

## I. Introduction

Education is something important and cannot be separated from a person's life, both in the family, society and nation. The progress of a nation is determined by the level of educational success. In the world of education, early childhood education (PAUD) is one of the early forms of school education known by children, which is the starting point for children to get to know the world of education. Law of the Republic of Indonesia Number 20 of 2003 concerning the National Education System in article 1 paragraph 14 states that early childhood education is an effort of guidance aimed at children from birth to six years of age carried out by providing educational stimuli to assist growth and development. physically and spiritually so that children have readiness to enter further education.

One of the aspects of development developed in early childhood education, especially in early childhood education students, is the aspect of cognitive development. Cognitive learning is needed by students to develop knowledge about what they see, hear, feel, feel, or smell through their five senses. it has. And cognitive is a thought process that occurs in the brain so as to produce cognitive knowledge that includes various mental activities such as paying attention, remembering, symbolizing, counting, classifying, planning, reasoning, producing, and imagining. In fact, most kindergarten children have not yet developed subtle motoric children (Deliati, 2019).

New media theory is a theory developed by (Al Faruqi, 2019), which suggests that new media is a theory that discusses the development of media. In the new media theory, there is a view of social interaction, which distinguishes the media according to their proximity to face-to-face interaction (Antony et al., 2015). Antony et al (2015) view the World Wide Web (WWW) as an open, flexible and dynamic information environment that enables humans to develop new knowledge orientations and also engage in a democratic world about mutual sharing and power giving that is more interactive and based on society (Khatib et al., in Syakur, 2020).

One learning model that can help achieve student learning outcomes effectively is the interactive learning model Type Number Head Together. The Number Head Together learning model is part of an interactive learning model that emphasizes specific structures designed to influence student interaction patterns in searching, processing and reporting information from various sources which are finally presented in front of the class so that they can train students to share information, listen carefully and speak with calculation so that students are more productive in learning. By using the interactive learning model Type Number Head Together there is a tendency for teachers to train students in working together to find their own concepts about learning (Nasution, 2020). The importance of increasing numeracy skills in PAUD Kartika students is one thing that needs to be considered in Early Childhood Education. The ability to count in PAUD Kartika is to know the basics of learning to count so that in time the child will be more ready to take part in learning to count at the next more complex level and the child can adjust and involve himself in social life, which requires numeracy skills on a daily basis. educators must also improve in all aspects, including pedagogical, personal, social and professional competencies (Dahnial, 2017).

The development of cognitive abilities in counting in PAUD Kartika students is for the preparation stage towards a concrete work organization and shows a sensitive period for counting. Based on the results of research conducted by Orborn (1981), intellectual development in children develops very rapidly between the ages of zero and pre-school (4-6 years). Therefore, the pre-school age is often referred to as the "sensitive learning period". The statement was supported by Benyamin S. Bloom who stated that 50% of the intellectual potential of children had been formed at the age of 4 years and then reached 80% at the age of 8 years. This is evidenced by the results of children's work in each semester. The value data of 24 students, there are only 8 students who are active in learning to count, while the others are passive in participating in learning to count.

Researchers realize that education in PAUD, media (visual aids) is needed. Therefore, to solve the above problems, the researcher tries to find a way out by using the Counting Tree media through classroom action research which aims to improve the numeracy skills of PAUD Kartika students. Maria Montessori expressed the opinion that children learn through their hands. For this reason, the teacher uses a material that is expected to be familiar with the children who are concrete, semi-abstract and abstract. Educational principals must adhere to a balance (cosmic plan). Because of that he created a visual aid in the form of duplication. From this explanation, it is known that using the Counting Tree educational learning media is better able to be applied in learning, because it involves many activities so that it provides an overview of learning directly known to students. So that researchers are interested in conducting research with the title "Application of Educational Learning Media Counting Tree to Improve Student Cognitive Ability in PAUD Kartika Tanjung Morawa".

## II. Research Methods

This type of research used in this research is classroom action research. Classroom action research (CAR) is research conducted by classroom teachers with an emphasis on perfecting or enhancing the learning process. The main steps that must be taken in carrying out action research are as follows: (1) action planning, (2) action implementation, (3) observation / observation, (4) reflection for follow-up planning. Researchers will describe the Application of Counting Tree Educational Learning Media to Improve Students' Cognitive Ability in PAUD Kartika Tanjung Morawa. Time and Place This research was conducted at PAUD Kartika Tanjung Morawa which was held in the 2020/2021 Academic Year. The subjects of this study were 24 children of PAUD Kartika Tanjung Morawa. The research instrument is the tool chosen by the researcher in collecting data so that the activity becomes systematic and easier. There are two instruments made, namely documentation and observation sheets Data analysis in the PTK research was carried out before entering the field, during the field and after finishing in the field. Data analysis was performed using the –t test.

## IV. Discussion

### 4.1 Results

The indicators that are assessed are Identifying the form of numbers and their symbols and understanding the sequence of numbers well and completing the number operation. The recapitulation of the results of pre-action can be seen in the table as follows :

**Table 1.** Recapitulation of Cognitive Ability Results

NO	Indicator	Pretest		Percent Average
		Observation	Worksheet	
1	Identify the form of a number and its symbol	54,2%	60%	57.1%
2	Understand the sequence of numbers well and complete number operations	56,7 %	63,33%	60 %

Based on the data above, the researcher must take actions that can improve students' cognitive abilities. Efforts that can be made to improve cognitive abilities by applying the Counting Tree educational media on number material.

Counting Tree educational media can be applied to be able to help PAUD Kartika Tanjung Morawa students in identifying the form of numbers and their symbols and understanding the sequence of numbers well and completing number operations.

Based on the learning results in the pre-action, we can see the recapitulation of the results of cycle I which can be seen as follows:

**Table 2.** Recapitulation of Cycle I Cognitive Ability Results

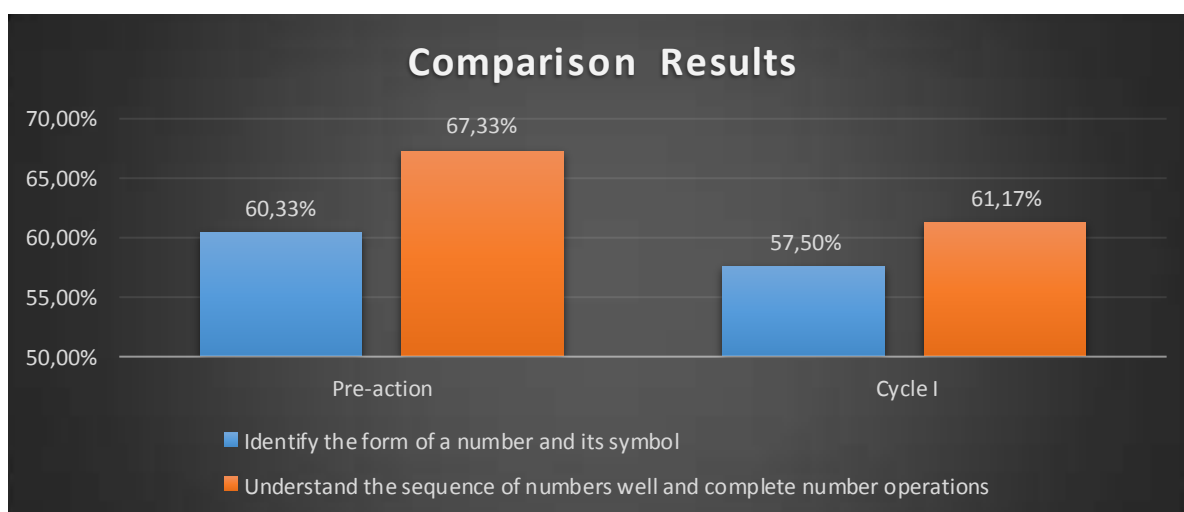
NO	Indicator	Cycle I		Percent Average
		Observation	Worksheet	
1	Identify the form of a number and its symbol	55,5%	76%	67,3%
2	Understand the sequence of numbers well and complete number operations	65,5 %	70%	61,1 %

The comparison of the percentage of pre-action learning outcomes and after the first cycle can be seen in table 3 as follows:

**Table 3.** Comparison of Cognitive Ability Results for Action and Cycle I

NO	Indicator	Percent		Percentage of Increase
		Pre-action	Cycle I	
1	Identify the form of a number and its symbol	57.1%	67,3%	10.2%
2	Understand the sequence of numbers well and complete number operations	60%	61,1 %	1.1%

The comparison of the percentage of achievement indicators for pre-action results and cycle I can also be seen in Figure 1 as follows:



Because the treatment results obtained in cycle I have not met the classical completeness percentage of 65% and there are still problems that hinder learning from.

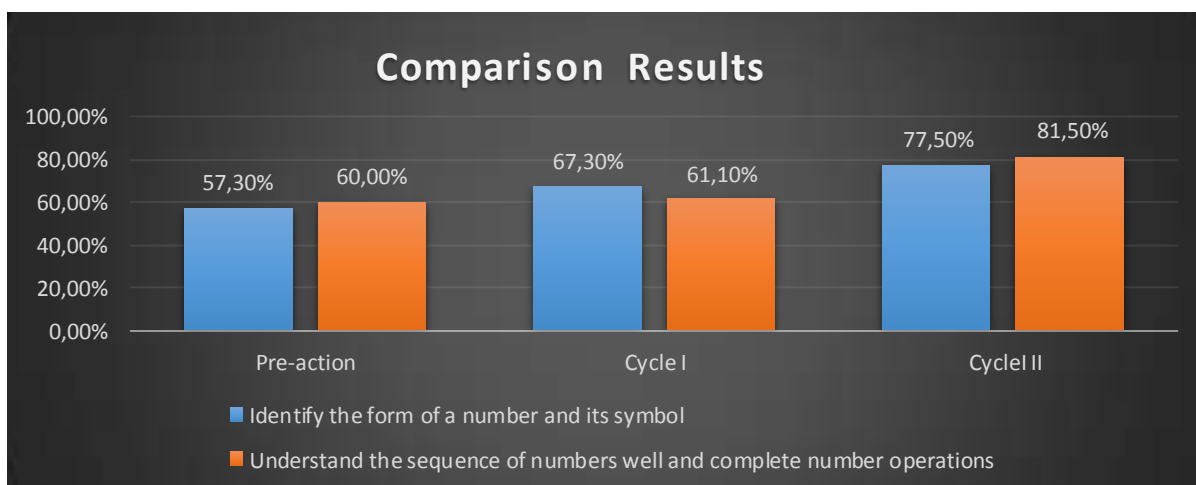


Figure 2. Diagram of the Comparison of Cognitive Ability Results in Action, Cycle I and Cycle II

Table 4. Comparison of Cognitive Ability Results in Cycle I and Cycle II

NO	Indicator	Persentase			Percentage of Increase
		Pre-action	Cycle I	Cycle II	
1	Identify the form of a number and its symbol	57.3%	67.3%	77.5%	67.3%
2	Understand the sequence of numbers well and complete number operations	60%	61.1 %	81.5%	67.5%

Based on the figure and table above, it shows that there is an increase in each indicator of the ability to identify the shape of a number and its symbol by applying the Counting Tree media in pre-action, cycle I and cycle II have achieved success indicators. The ability to identify children in pre-action, cycle I and cycle II increased by 67.3% for indicators of identifying the form of numbers and their symbols by applying Counting Tree media and understanding number sequences well and completing number operations with the application of Counting Tree media 67.5%.

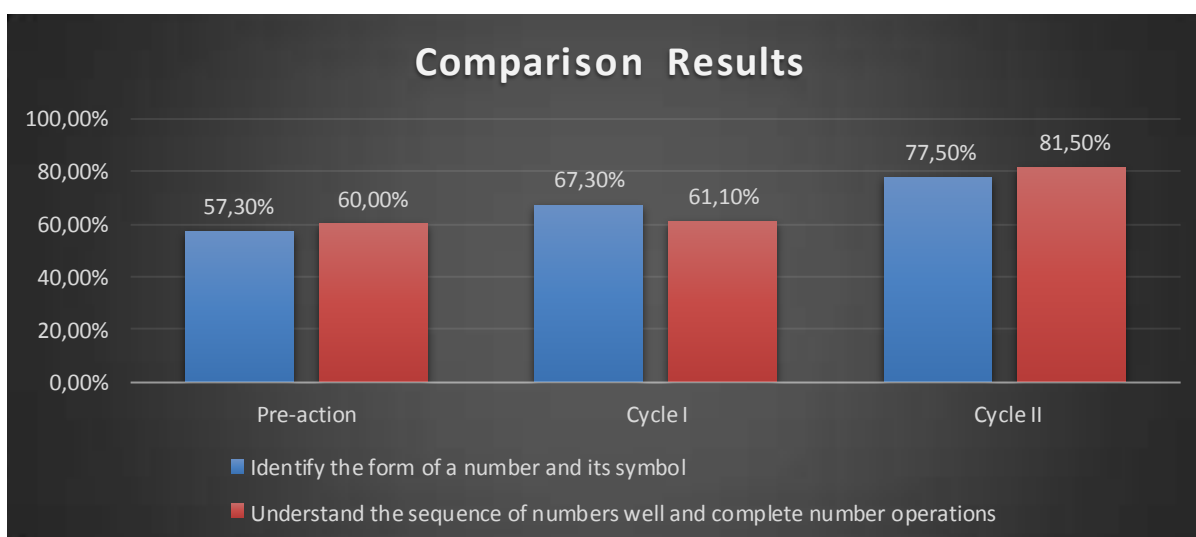
#### 4.2 Discussion

This classroom action research was carried out in stages, starting from the pre-cycle, then the first cycle and continued to the second cycle, where the action planning in cycle I originated from problems that hindered children's cognitive abilities so that the initial ability in children's cognitive abilities was relatively low. With math games using the Counting Tree Educational media in this classroom action research, it is hoped that children can master the concept of numbers and their symbols and number sequences and complete number operations well. From the results of cycle I and cycle II, there was a significant increase in learning outcomes, both related to completeness achieved by children. In addition, it can be seen from the results of children's activities using Counting Tree educational media, many

children are happy and respond positively to the media used, this can be seen from the results of children's activities during the learning process which increased from 57.3% in cycle I to 67,3% in the second cycle to 77.5%.

This increase in learning outcomes occurs because of a new atmosphere in learning, for example children are required to say and show number symbols using the Counting Tree Educational media in front of the class so as to train children's self-confidence and increase children's memory which is getting stronger and children will be more motivated to follow learning process. Thus the use of media can add to the attractiveness of the appearance of the material presented by the teacher which in turn can increase children's motivation and interest and with the use of media can take children's attention to focus on following the material presented, so it is hoped that the quality of children's learning will increase. Therefore, the use of media in the teaching process is highly recommended to enhance the quality of teaching (Sudjana & Rivai, 2010: 3), namely the use of media in the teaching process is highly recommended to enhance the quality of teaching.

Based on the results of this study, it is known that learning using the Counting Tree Educational media has been able to bring changes to children's learning outcomes, although there are still deficiencies in its application. Teacher creativity and innovation are needed to fix the weaknesses that occur, both those experienced by the teacher himself and children in every learning process. The improvement of the action steps for teaching activities carried out by the teacher has a very significant effect on child performance. This can be seen from the quality of learning in classroom action which has succeeded in improving children's performance indicators which are increasing in each cycle. This can be illustrated in the following graph:



**Figure 3.** Diagram of the Comparison Results of the Ability to Identify Number Forms and Symbols and Understand Sequences Numbers Well and Completes Operations Numbers in Action, Cycle I and Cycle II

From Figure 3, it shows that the child has increased in each cycle. The process of learning mathematics using the Counting Tree Educational media is considered successful in improving children's cognitive abilities in counting. In cycle I, learning completeness on children's cognitive abilities was 65%, increasing in cycle II to 77.3%. There is an increase in children's cognitive abilities from each level of the cycle, this is because with counting math games using Counting Tree Educational media, children can master the form of numbers and

their symbols and number sequences well and complete number operations, so that children's cognitive will increase. In early childhood, various activities that greatly assist children's cognitive development can be done through math games, because playing is a vehicle for learning and working for children, especially in introducing the concept of numbers and their symbols and the sequence of objects for numbers. For all these activities can be done by playing. Math games using the Counting Tree Educational media are used so that children are interested in listening to the introduction of the concept of numbers and their symbols and the order of objects for numbers presented by the teacher and so that they don't feel bored with learning math to count, so that children's cognitive abilities increase. Thus this study proves the theory of Sudjana & Rivai (2010: 3) that math games using the Counting Tree Educational media can help children master the concept of numbers as an indicator of children's cognitive development. This means that the use of Counting Tree media can improve children's cognitive abilities in PAUD Kartika Tanjung Morawa.

## V. Conclusion

Based on the results of the research conducted, it can be concluded that there is a significant increase in children's cognitive abilities through math games by applying the Counting Tree educational media to children aged 4-5 years at PAUD Kartika Tanjung Morawa. Children can be said to have cognitive abilities. which is good because it has a percentage of 77.3% Other specific conclusions can be presented as follows: (1) Learning planning contained in the RKH using educational media Counting Tree on the observation sheet cycle I and II shows that the teacher can design improvements in learning planning. (2) Implementation of learning in improving children's cognitive abilities through educational media Counting Tree on the observation sheet cycle I and II shows that the teacher can carry out learning well. (3) Increased cognitive abilities of children through educational media Counting Tree has increased significantly.

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