

IMPROVING THE ABILITY TO RECOGNIZE NUMBERS THROUGH THE NUMBER SPINNING WHEEL MEDIA IN CHILDREN AGED 4-5 YEARS

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Abstract. This study is motivated by the results of observations of researchers in group A children at Dharma Wanita Sitimerto Kindergarten that there are still many children who are less able to recognize numbers 1-10. This can be seen from the learning methods and learning media that are monotonous and do not attract children's attention when learning so that children are less focused on learning delivered by the teacher. Therefore, this research aims to improve the quality of learning, especially on the material of recognizing numbers in children. This research uses classroom action research with research subjects for children aged 4-5 years totaling 19 children at Dharma Wanita Sitimerto Kindergarten, Kediri Regency. This study used numerical rotating wheel media which was carried out in two cycles. Data collection methods used observation sheets and documentation. The child observation sheet has 4 indicators that are used to determine the level of success and evaluation material in each cycle. This study began with observations in the pre-cycle with the results of completeness of 57.89% then an increase in cycle I of 63.16% after being given action in the form of learning by using numerical rotating wheel media. This also happened in cycle II which experienced an increase in percentage to 84.21% after being given action.

Keywords: *Numeric Play Wheel Media, Number Recognition, 4-5 Years Old Children*

1. INTRODUCTION

Early childhood is also known as the “Golden Age” period. at an early age children experience growth and development quickly and rapidly, it can even be said to be a very rapid developmental progress in this period. Therefore, this golden age is the right phase to provide a lot of educational stimulation to children [1]. One aspect of learning achievement in the foundation phase or early childhood is cognitive ability and maturity. Cognitive is the process of thinking and one's ability to connect, evaluate, and consider one or more events [2]. Cognitive development is crucial for learning in early childhood as it can influence how children process information, solve problems and understand their environment [3]. Teaching children about numbers is fundamental to cognitive development in early childhood as it lays the foundation for math skills. These skills promote logical thinking, systematic reasoning and problem solving, and enable children to face more complex math challenges in the future [4]. In addition, the ability to recognize numbers is classified in the category of cognitive development which is the foundation of children's growth and development [5]. The introduction of basic mathematical concepts in early childhood can be done by using learning media, learning media can be referred to as physical tools used to stimulate students in their learning [1]. Learning media such as visual aids and interactive

tools are essential in early childhood math education. They promote understanding and retention of basic concepts by connecting abstract ideas with real-life applications, thereby promoting cognitive development and promoting better academic outcomes [6].

The development of counting skills applied until now at Dharma Wanita Sitimerto Kindergarten is carried out using Children's Worksheets. This eventually led to problems because children felt bored and the ability to recognize children has not increased. The use of children's worksheets can cause boredom among pupils, which has a negative impact on learning success [7]. Therefore, it is necessary to have educational game tools that can make children feel happy in introducing numbers to children. Educational game tools are games that are not only fun and entertaining, but also specifically designed to instill educational values in children. Educational game tools are tools or media used in the learning process to explain concepts, provide a real picture of something abstract, and increase student understanding of the lesson material [8]. Educational play tools play an important role in early childhood math education by promoting children's understanding and engagement. The use of effective educational play tools enhances children's learning experience and makes math learning fun and suitable for everyday life [9]. Educational game tools can optimize children's growth and development according to their age and level of development [10]. Educational Game Tools (APE) can also provide concrete visualization to improve student understanding [11]. One of the tools that can be utilized to improve number recognition skills in children is the rotary wheel.

The rotary wheel is one of the learning tools in the form of a wheel that can rotate [12]. The Rotary Wheel media is used to make the classroom lively and interesting, but it can also help students ask questions, actively participate, and improve learning outcomes [13]. The use of this media can increase student engagement in learning and help them remember the information presented better [14]. The rotating wheel media can be used to clarify learning concepts so that it is effective in increasing learning interest and concept understanding [15]. Based on several previous studies, the rotary wheel can be a solution to the problem of improving the ability to recognize numbers in understanding the concept of number symbols 1-10. Therefore, researchers try to modify the rotary wheel media into a numerical rotary wheel. Numeric rotary wheel media is a modification of media in the form of a circle and accompanied by an arrow at the top and modified by adding a place to stick pictures tailored to the theme. How to play the numeric rotary wheel media is to rotate the circle wheel attached to the numbers 1-10, then the child will see the arrow stops at what number. After the child mentions the number obtained, the child looks for the appropriate number and attaches it to the sticky board provided in the media. Based on the problem formulation and research objectives, the action hypothesis that can be proposed in this study is: "Through the use of numeric rotating wheel media can improve children's cognitive skills in the ability to recognize numbers 1-10 in group A children at Dharma Wanita Sitimerto Kindergarten, Kediri Regency".

2. RESEARCH METHOD

This study used a classroom action research design with the Kemmis and Mc Taggart cycle model. Class action research enables teachers to identify specific learning problems, design contextualized solutions and implement improvements based on their research findings. This process fosters a dynamic learning environment, improves teachers' analytical and reflective skills, and ultimately makes learning more effective and relevant for children[16].

The research steps with Class action research begin with planning, action, observation and reflection. Here is a picture of the spiral cycle of Kemmis and Mc. Taggart.

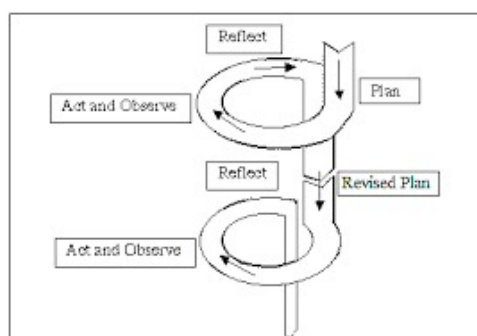


Figure 1. The Kemmis and Mc. Taggart Spiral Cycle Model.

(Source: Kemmis and Mc. Taggart in Nuraeni et all [17])

This research focused on Group A children at Dharma Wanita Sitimerto Kindergarten. The subjects studied were group A students consisting of 19 children aged 4 to 5 years with 9 boys and 10 girls. The reason why the researcher chose 19 children is because it covers the total number of group A at Dharma Wanita Sitimerto Kindergarten.

There are 2 data collection techniques used, namely using observation and documentation. There are 2 types of observation techniques used, namely teacher observation and child assessment observation. The following is a table of child assessment observation grids

Table 1. Child Assessment Observation Grid

Aspects Taken	Achievements	Criteria
The child recognizes and uses pre-mathematical concepts to solve everyday problems	Children can mention numbers 1-10	The child can mention the numbers obtained through the media of the numerical numerical rotating wheel
	Children can recognize the direction and position of objects around them	Children can recognize the direction of the arrows of the numerical spinning wheel

Aspects Taken	Achievements	Criteria
	Children can find the corresponding number	media numerical stop at what number The child can find the number that corresponds to the one obtained on the numerical spinning wheel.
	Children can use counting skills to solve problems in everyday life.	Children can count using concrete objects in accordance with the numbers obtained on the numerical rotating wheel.

Indicators of Completion

- Children who carry out at least 3 predetermined achievements
- Children get the value criteria that have been determined
- Children can play well according to learning objectives

Incomplete Indicators

- The child does not carry out the specified achievements
- The child carries out less than 3 late specified achievements
- The child gets a low score / does not match the criteria

Data analysis techniques researchers use quantitative data analysis and use the formula

$$P = \frac{f}{N} \times 100\%$$

(Source: Haryadi in Asma'urrahman et all [18])

to calculate the percentage of children's success in group A. The study was successful if the children reached 75% of the average in that area.

3. RESULTS AND DISCUSSION

3.1 Results

A. Pre-cycle

The results of the initial survey conducted by researchers at Dharma Wanita Sitimerto Kindergarten showed that the ability to recognize numbers of children in group A1 still had not appeared. There are 11 children having difficulty in recognizing and understanding the concept of numbers so that it is not in accordance with the objectives of learning. The following table shows the results of the initial observation of the ability to recognize numbers in group A1 of Dharma Wanita Sitimerto Kindergarten.

Table 2. Pre-cycle Observation Results

Criteria	Number Recognition Skills	
	Number of Children	Percentage
Appears	8	42,11 %
Not Yet Appeared	11	57,89 %

Total	19	100 %
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B. Cycle I

1) Plan

At this stage, the researcher compiled a lesson plan according to the material on the day of the first cycle implementation, namely with the theme “house” with the subtheme “living room”. In addition to lesson plans, researchers also make observation sheets for children and observation sheets for teachers which aim to facilitate researchers in assessing the success of each cycle.

2) Act

Activities at the implementation stage are carried out in accordance with the planning that has been made at the previous stage. There are 3 core activities at this stage, one of which is using the numeric rotary wheel media to introduce the concept of numbers 1-10.

3) Observe

In observation activities, researchers make observations by completing child and teacher observation sheets. Child observation is used to improve children's number recognition skills while teacher observation is used to reflect on the success of learning.

4) Reflect

At the reflection stage, the results of the first cycle observations using observation can be seen that children's ability to recognize numbers has increased from the pre-cycle. The following is a table of observation results for cycle I.

Table 3. Percentage of Children's Learning Completeness in Cycle I

No.	Child Development Assessment Results	Total	Percentage
1.	Completed	12 children	63,16%
2.	Not Completed	7 children	36,84%
	Total	19 children	100%

Based on table 3, there are 11 children who still lack the ability to recognize numbers 1-10. In cycle I, although some children were able to carry out the numerical spinning wheel game, there were still 7 children who still needed help from the teacher and were not fully able to recognize numbers 1-10.

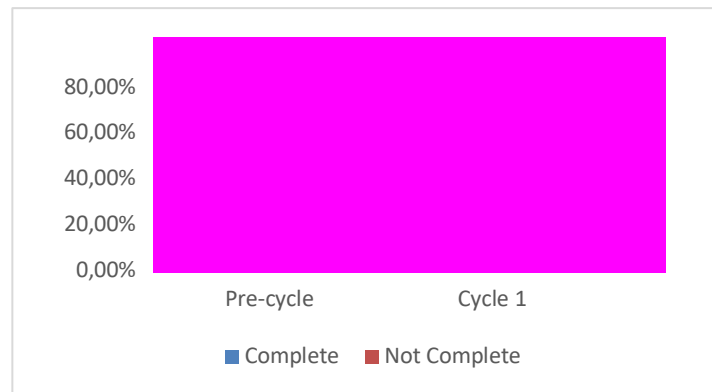


Figure 2. Percentage Chart of Increasing Children's Learning Accomplishment in Cycle I

From the percentage chart of cycle I above, it can be seen that children's ability to recognize numbers through the media of the numerical rotating wheel is still less than the percentage of completeness so that cycle II needs to be continued.

C. Cycle II

1) Plan

Cycle II planning is the same as cycle II planning. At this stage the researcher made a lesson plan with the theme “home” and the sub-theme “kitchen”. The basis of evaluation from cycle I was used as material for improving the learning implementation plan in cycle II. In addition, researchers also prepared assessment instruments for child observation sheets and teacher observation sheets with the same indicators as cycle I.

2) Act

The implementation of activities was carried out based on the plan that had been prepared at the previous stage. At this stage there are three main activities, one of which is the utilization of the numeric rotating wheel media to introduce the concept of numbers 1 to 10. The implementation of cycle II is also based on the results of cycle I evaluation.

3) Observe

In observation activities, researchers make observations by completing child and teacher observation sheets. Child observation is used to improve children's number recognition skills while teacher observation is used to reflect on the success of learning.

4) Reflect

After analyzing the child assessment instrument, the researcher conducts self-reflection on the actions that have been taken. From the results of observations that have been carried out by researchers, the percentage of children's learning completeness in Cycle

II is obtained. The results of the action in Cycle II are presented in the form of the following table:

Table 4. Percentage of Children's Learning Completeness in Cycle II

No.	Child Development Assessment Results	Total	Percentage
1.	Completed	16 children	84,21%
2.	Not Completed	3 children	15,79%
	Total	19 children	100%

Based on Table 4. The percentage of children's learning success has increased. The percentage of success in table 4 shows that the learning process of introducing the concept of numbers in children aged 4-5 years using the numerical rotating wheel media achieved success.

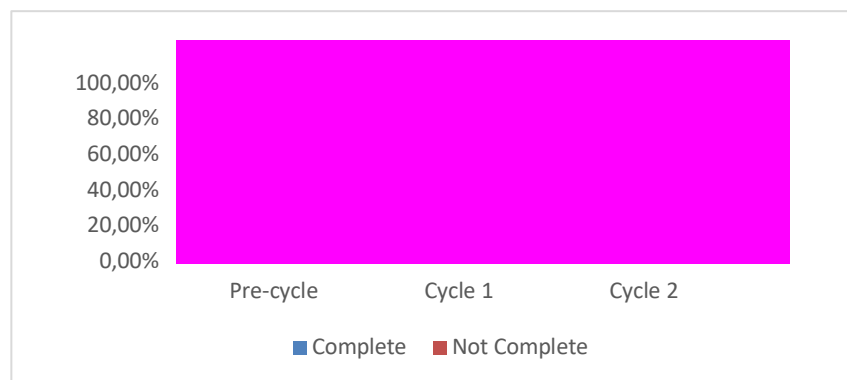


Figure 3. Percentage Chart of Increasing Children's Learning Accomplishment in Cycle II

Based on Figure 3, it can be concluded that this class action research does not require a further cycle, because the results that have been attached have been proven and meet the desired criteria.

3.2. Discussion

The results of research that have been conducted prove that learning media has a significant impact on the learning process of early childhood, because if there is no diverse learning media, the learning process will feel uninteresting and monotonous [19]. Learning through play for children is very important as it is in line with their active brain development and short attention span [20]. Therefore, learning media is very important for children. The learning media used is intended to improve certain aspects, including cognitive aspects. Early childhood cognitive development involves stimulating children's thinking abilities through appropriate learning activities. It includes logical reasoning, problem-solving, and

symbolic thinking, crucial for understanding their environment and acquiring knowledge, significantly impacting their overall development and future learning capabilities [21]. Learning media is everything that plays a role in conveying learning, stimulating children's thinking abilities and skills to support the achievement of the desired learning objectives [22]. This is indicated by an increase in the ability to recognize children's numbers starting from pre-action until the action of cycle II is completed. In the pre-cycle there were 57.89% in the complete category, then in cycle I it increased to 63.15% and in cycle II it increased to 84.21%. So, from the data that has been done by researchers in cycle II there is an increase in children's learning outcomes and declared successful.

Efforts to develop children's abilities always rely on the elements of play and learning [23]. Play and learning is characterized by flexibility and creativity, encouraging children's involvement and actualizing their potential in early childhood education [24]. Play activities can use educational game tools in the form of interesting learning media. It also facilitates children's hands-on experience and sensory engagement, so it can support teachers in effectively fostering critical thinking and cognitive development [25]. In addition, educational game media can stimulate curiosity and strengthen focus in children. Training children's cognitive abilities is very important [26]. This is in accordance with Vygotsky's opinion which suggests that cognitive abilities help individuals to solve problems, expand children's skills, and can help children to do what they want with the abilities they have [27]. Cognitive includes all conscious and unconscious processes that play a role in thinking, understanding and reasoning [28]. Susanto argues that the ability to recognize numbers belongs to the category of cognitive development which is the foundation of children's growth and development [5]. One way that can be used to improve children's cognitive abilities is to use a rotating wheel media.

Rotary wheel media has many advantages, namely entertaining, fun, and attracting children's attention so that it allows active participation of children to learn [29]. Rotary wheel media is useful for training children's memory and thinking speed, because this rotary wheel media can be directly played by children.

In some studies also mention that there is a successful increase in the ability to recognize numbers after using the rotary wheel media, this is in line with Novianti's opinion that the principle of the rotary wheel media can provide a sense of fun and interest in order

to provide stimulus to children's abilities to the maximum [30]. This is confirmed in Pratiwi's research which states that the rotary wheel game can improve children's number recognition skills at the age of 4-5 years [31].

Therefore, the researcher changed the rotary wheel into a numerical rotary wheel. From the results of class action research conducted over 2 cycles, it can be seen that the percentage of success in children's ability to recognize numbers has increased from the initial state before the implementation of the research to the completion of class action research. Thus, this study proves that the numerical rotary wheel media can improve the number recognition skills of children in group A of Dharma Wanita Sitimerto Kindergarten, Kediri Regency.

4. CONCLUSION

Based on the results of classroom action research conducted at Dharma Wanita Sitimerto Kindergarten, Kediri Regency, there was a significant increase in the ability to recognize number symbols in group A children through the application of numerical rotating wheel media. At the pre-cycle stage, the level of children's learning completeness was still relatively low, which amounted to 57.89%. After taking action in Cycle I by applying learning aided by the number spinning wheel media, the completeness increased to 63.16%. Furthermore, the action was improved and continued to Cycle II with a more focused approach and more optimal media utilization. As a result, children's learning completeness increased significantly to 84.21%. This shows that the use of numeric rotating wheel media can help children understand and recognize numbers well. Thus, it can be concluded that the application of the numeric rotating wheel media is proven effective in improving the ability to recognize number symbols in group A children at Dharma Wanita Sitimerto Kindergarten, Kediri Regency.

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