Improving Early Mathematical Concept Abilities Of 4–5-Year-Old Children Through Flannel Board Media In Segara Muncar Kindergarten In The 2024/2025 Academic Year

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Abstract

This study aims to describe whether flannel board media can further improve the early mathematical concept abilities of 4-5 year old children at Segara Muncar Kindergarten in the 2024/2025 academic year. The research method used in this study is classroom action research (CAR) conducted through two cycles, consisting of planning, action, observation, interviews, and documentation. The data collection techniques used include interviews, observation, and documentation. The data analysis techniques used were qualitative descriptive to describe the research results and quantitative to calculate numerical data. The results of this study showed that in the pre-cycle, children's early mathematical skills only reached 33%. In cycle I, children's early mathematical skills increased by 20%, reaching 53% in cycle I. In cycle II, children's early mathematical skills increased by 33% , reaching 86% in cycle II, which means the criteria for very good development with a percentage of 80% have been achieved in this study. On average, children's initial mathematical ability improved, especially with the use of flannel board cards to improve the initial mathematical ability of 4-5-year-old children at Segara Muncar Kindergarten in the 2024/2025 academic year.

Keywords: *Children's Early Mathematical Concepts, Flannel Board Media.*

INTRODUCTION

According to (Ulfah, 2019) Early childhood education is a level of education before entering elementary education which is an effort to foster early childhood in developing all aspects of their development by providing appropriate educational stimuli so that children can grow and develop physically and spiritually and have readiness to enter the next level of education. Children who are in the age range of 0-8 years, according to NEACY (1992) *(National Association For The Education Of Young Children)* , are called an early age child who is at a sensitive time. This period is often referred to as the golden period *(Golden Age*), where during this period the child's brain as the main factor in the formation of intelligence is developing very rapidly. And basically, educational stimulation from teachers and parents around the child is very helpful in the child's growth and development. In the regulation of the Minister of Education and Culture of the Republic of Indonesia number 146 of 2014 it is stated that PAUD is the most fundamental education because the child's development in the future will be determined by various meaningful stimuli that will be given from an early age. In this case, PAUD has the goal of developing six areas of developmental aspects in children. The six areas are the development of religious and moral values, physical, motoric, cognitive, language, social emotional and art (Kemdikbudristek, 2014).

Every individual experience development. Development occurs from early childhood through adulthood. Development cannot be measured, but it can be felt. It is progressive, systematic, and continuous. The development of each individual is the same, but there are differences in the rate of development, and some developments precede previous developments, although in reality, development between one aspect and another occurs simultaneously (Suryana, 2016).

Early childhood education plays a crucial role in further education. Early childhood education provides opportunities to develop a child's personality across various developmental aspects. According to Trianto, several developmental aspects must be developed in every learning process within early childhood education, one of which is cognitive development (Shobikah, 2006).

Cognitive is a thinking process, namely the individual's ability to connect, assess, and consider an event or incident. Cognitive is the process of interaction that occurs between a child and his or her perspective on an object or incident

in an environment. The goal of cognitive development according to Masitoh in (Aisyah, 2006) is to develop children's thinking skills so they can process their learning gains, find various alternative solutions to problems, help children develop their mathematical logic skills, develop sorting and grouping, prepare for the development of careful thinking skills.

One thing that needs to be developed is mathematical ability. Children's mathematical abilities can be developed well through the provision of facilities and learning carried out by teachers, which are accompanied by appropriate learning strategies or methods to produce optimal learning. Learning should be accompanied by media so that the learning provided by teachers is meaningful for children and can develop children's recognition of number concepts and mathematical abilities. The introduction of simple mathematical concepts is very important to be instilled at an early age because at this age children will learn about number recognition, especially the introduction of the concept of numbers with objects (Sudarti, 2021).

Introducing mathematical concepts to early childhood can be done through various methods, including storytelling, question-and-answer sessions, assignments, hands-on practice, or counting. Counting games are a necessary part of mathematics to develop mathematical concept recognition skills that are useful for everyday life, especially recognizing number symbols, which is fundamental to cognitive development. Introducing simple mathematical concepts is crucial at an early age because at this age, children will learn about number recognition, especially the concept of numbers and objects (Alawiyah, 2024).

Early math skills in early childhood are one way to introduce mathematical concepts from an early age. The function of mathematics is not simply for counting, but also for developing various aspects of a child's development. The ability to recognize number symbols is part of cognitive development, which is fundamental to the development of intelligence in children. In general, early counting games are designed to teach the basics of numeracy, so that children will be better prepared to advance to more complex levels of numeracy (Nahdyawati, 2020).

One way to improve children's early math skills is to use effective, interactive, and enjoyable learning media. The word "media" comes from Latin and is the plural form of the word "medium," which literally means "between," "intermediary," or "conductor." Media is an intermediary or medium from the sender to the recipient. Media is also a tool or means of conveying information to students to achieve desired learning objectives. According to (Adawiah, 2023), learning media are tools, methods, and techniques used to enhance communication and interaction between teachers and students in the learning and education process at school. The use of media significantly impacts children's learning because it can stimulate students' thoughts, feelings, interests, and attention to participate in learning activities. Media plays a crucial role in early childhood learning. The presence of learning media during the teaching and learning process makes it easier for teachers to convey existing lessons and attracts children's interest in participating in the learning process. The use of media is expected to have positive impacts, such as creating a more conducive learning process, generating feedback during the teaching and learning process, and achieving optimal results. The use of learning media that aligns with learning objectives will undoubtedly improve learning outcomes.

One medium that can be used to improve cognitive abilities in early childhood is a flannel board. Flannel boards can serve to introduce children to the concept of numbers and number symbols.

Flannel board media is a media that can be used to convey learning messages made of plywood or duplex covered with flannel cloth. Flannel board is a very effective graphic media for presenting certain messages to certain targets. This flannel-covered board can be folded so it is practical. The graphic media to be presented can be installed and removed easily so it can be used repeatedly. Kindergarten, this flannel board can be used to stick letters and numbers (Nurhidayah, Wirya, N., & Ujianti, 2016).

Based on the initial observations made, problems were found in Segara Muncar Kindergarten group A of children aged 4-5 years, it can be seen that the initial mathematical

abilities of children aged 4-5 years are still low in mathematics learning, when children are taught to recognize numbers, children are not yet able to say them fluently and children are still less able to say and show numbers. Children have not been able to say the numbers 1-10 in sequence. The media that teachers use in introducing early mathematics to children only use number blocks so that it makes children bored and less interesting for children in early mathematics learning for children. Therefore, teachers need to use learning media that attract children's interest and improve children's early mathematical concept abilities. Therefore, researchers are interested in using Flannel Board media in developing children's Early Mathematics abilities. The selection of this Flannel Board media aims to stimulate children's Mathematics development and attract children's interest in participating in the learning process so that children do not get bored quickly.

Based on the results of observations and interviews that have been conducted, the development of children's Early Mathematics abilities at Segara Muncar Kindergarten appears to be less interesting for children, this is because teachers still use old media so that children seem to get bored quickly and are not interested in learning mathematics. And in terms of children's abilities, children are only able to order numbers but have not yet understood early mathematical concepts, especially the concept of numbers. This is seen when children are asked one by one to order numbers 1-10 and show which picture of the object matches the number of numbers. Children look confused and have difficulty in determining the number of numbers so there are some children who are reluctant to come forward just to show the number of numbers. In addition, children also appear not to be able to match numbers with the objects they count or even compare between one group of objects with another group of objects.

Based on the background of the problem, the author is interested in conducting research with the title "Efforts to Improve the Early Mathematical Concept Ability of 4-5 Year Old Children Through Flannel Board Media at Segara Muncar Kindergarten in the 2024/2025 academic year".

METHOD

This research was conducted using the classroom action research (CAR) method. Classroom action research is practical research designed to improve classroom learning (Parnawi, 2020). Classroom action research is conducted because of a problem that requires an answer or because the student wants to prove something that has long existed or because they want to prove something that has long existed by inserting a new method that has not been used in that setting.

This research was conducted at Segara Muncar Kindergarten, Gumantar Village, RT 02/RW 02, Montong Gedeng Hamlet, Kayangan District, North Lombok Regency. The researcher chose this location because she found a problem relevant to the research topic, namely that the children's ability to recognize numbers 1-10 was still weak at the institution.

Research procedures are the stages in the research process. The research process includes various research steps. The type of research used by researchers is classroom action research (CAR), where the indicator is the achievement of improved student learning outcomes. Classroom action research is conducted by teachers within their own classrooms by designing, implementing, and reflecting on actions to improve teacher performance and thus student learning outcomes (Arikunto, 2008).

The classroom action research procedure is carried out in a continuous cycle-shaped activity, consisting of two cycles, each cycle consisting of four main activities, namely: *planning*(planning stage), *acting* (do an action), *observing* (data collection) and *reflecting* (reflection) (Fitriyanti, 2021). Meanwhile, the data collection techniques used were observation, interviews, and documentation.

As for the data analysis techniques used, the data analysis techniques used need to be stated clearly and in accordance with the data collected during the observation activities.

a) Student Learning Outcomes Data

   Data on student learning outcomes were taken from children's early mathematical conceptual abilities. Analysis of student learning outcomes data was conducted by

calculating student learning completion individually and as a class.

b) Individual learning completion
Individual learning completion is calculated using the following descriptive data analysis (Ratnawulan, 2013):

$$\text{Value} = \frac{\text{Score obtained}}{\text{Maximum Score}} \times 100$$

c) Classical learning completion
Classical learning completion is calculated using descriptive percentage analysis (Ratnawulan, 2013), namely:

$$\text{Persentae (\%)} = \frac{\text{Number of students who have completed their studies}}{\text{Total number of students}} \times 100$$

Percentage	Criteria
0-40%	Not Yet Developed (BB)
41-60%	Starting to Grow (MB)
61-80%	Developing as Expected (BSH)
81-100%	Very Well Developed (BSB)

The indicator of success of this research is if in each cycle of the assessment survey there is an increase in student learning outcomes in learning using Flannel board media, which is indicated by having reached the achievement of the STPPA (Standard Level of Child Development Achievement) that has been determined. Where individual completeness gets a score of 70 according to the Segara Muncar Kindergarten criteria standard while for Classical Completeness it is 80% of the total number of students.

RESULTS AND DISCUSSION

During the research, the researcher carried out the learning process starting from the initial activities, namely preparing the media used, varying the learning in the form of games and singing before entering the core activities so that children do not get bored easily. The teacher explained about the activities that would be carried out as well and introduced the flannel board media that would be used during the action. After that, the core activities contained activities with children and researchers, namely the researcher asked the children to count and the teacher showed the flannel board media in sequence from 1-10 after which the children were assigned to come forward one by one to stick the numbers according to the pictures on the flannel board media and after that the researcher assigned the children to write the numbers according to the order on the flannel board media that had been attached in front, then after finishing writing the researcher also asked the children to mention the number symbols that the researcher showed either sequentially or randomly that had been provided by the researcher before starting the activities that day. While the final activity the researcher carried out activities, singing number songs, asking children how they felt during the activity, and asking again about the learning that had been done previously, reciting short surahs and daily prayers together after which the researcher closed the activity with a prayer together.

The results obtained in the implementation of the action in cycle I, when compared, show that there has been an increase, but has not yet reached the target that is the reference for researchers, so that further action is needed in cycle II, this is because in the implementation of cycle I there are several obstacles faced so that corrective action is needed in cycle II so that the success indicators expected by researchers can be achieved. The obstacles faced in the implementation of cycle I are, children feel quite bored with the activities carried out, and also when the initial action in cycle I, many children still play with their friends and are not too focused on listening to the teacher when the study time and time used are also quite limited so that researchers need to make improvements in cycle II.

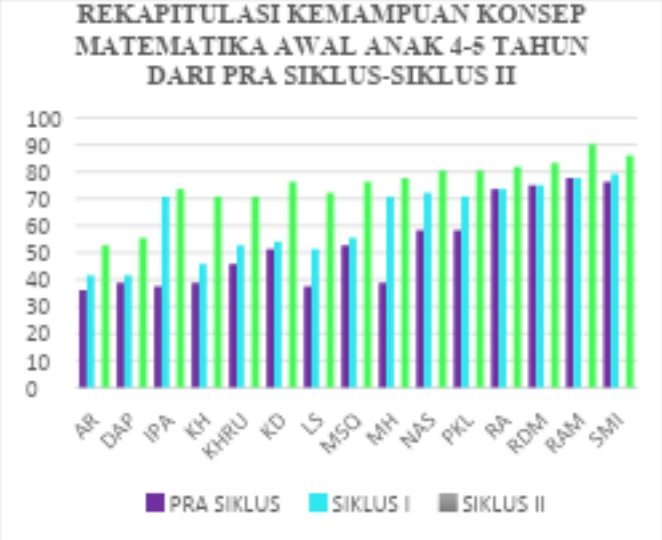
Table 01. Recapitulation of Early Mathematical Conceptual Abilities of 4-5 Year Old Children in Pre-Cycle, Cycle I, and Cycle II.

No	No	Score	Pre-Cycle KI	Score	AND Cycle I	Score	Kiklus II
1	AR	26	36,1	30	41,6	38	52,7

2	DAP	28	38,8	30	41,6	40	55,5
3	VIOL ENCE	27	37,5	51	70,8	53	73,6
4	KH	28	38,8	33	45,8	51	70,8
5	1. KHR U	34	45,8	38	52,7	51	70,8
6	KD	37	51,3	39	54,1	55	76,3
7	LS	27	37,5	37	51,3	52	72,2
8	MSQ	30	52,7	40	55,5	55	76,3
9	MH	28	38,8	51	70,8	56	77,7
10	IN THE	42	58,3	52	72,2	58	80,5
11	street vendo rs	42	58,3	51	70,8	58	80,5
12	DA	53	73,6	53	73,6	59	81,9
13	RDM	54	75	54	75	60	83,3
14	RAM	56	77,7	56	77,7	65	90,2
15	SMI	55	76,3	57	79,1	62	86,1
CLASSICAL COMPLETE NESS		KK= $\frac{4}{15} \times 100\%$ = 26 %		KK = $\frac{8}{15} \times 100\%$ = 53%		KK = $\frac{13}{15} \times 100\%$ =86 %	

Based on the table above, it can be seen that during the observation in improving children's initial mathematical concept abilities in the pre-cycle, it is still low. This can be proven in the table above regarding the achievement of children's success in the pre-cycle, namely only 26% of children whose initial mathematical concept abilities are complete. Seen from these data, the researcher made efforts or actions in cycle I because the children's abilities had not reached the criteria determined by the researcher, then in cycle I the children's initial mathematical concept abilities increased by 27% so that the children's initial mathematical abilities in cycle I were 53% but this still did not reach the completeness criteria determined by the researcher, then cycle II was carried out because the children's completeness had not reached the criteria, after carrying out cycle II the children's initial mathematical concept abilities increased by 33%, so that in cycle II the children's initial mathematical abilities were 86%, and had reached the completeness criteria determined by the researcher.

Figure 01. Graph of the Development of Early Mathematical Conceptual Abilities of Children Aged 4-5 Years, Cycle II



Based on the results of research and observations conducted starting from the Pre-cycle, cycle I to cycle II, there are changes or improvements in children's Early Mathematical Concept Ability using flannel board media. This is a form of result and evidence that there is a positive impact resulting from learning using flannel board media because at the pre-cycle meeting, children's initial mathematical abilities were only 26% of children with the Complete criteria, and 74% of children in the Not Complete criteria.

Then in cycle I there was an increase in children's initial mathematical concept abilities by 27%, so that children's initial mathematical concept abilities in cycle I were Completed by 53%, and were declared Incomplete by 47%.

Meanwhile, in cycle II there was another increase of 33% so that the increase in children's initial mathematical abilities in cycle II was 86%, because in cycle II children's initial mathematical concept abilities had reached classical criteria, so the increase in children's initial mathematical abilities was sufficient until cycle II.

So, from the results of this research and observation, it was found that:

1. The use of flannel board media in learning activities, especially to improve children's early mathematical concept skills, can create a fun learning atmosphere and actually make children much more active and can improve

children's early mathematical concept skills to the maximum.
2. Flannel boards are effective in improving children's early mathematical conceptual skills. This can be seen in the percentage of progress in each cycle, which increases significantly after corrective actions are implemented.

From this, we can understand together that fun learning activities for children are very important to do and the use of media and appropriate steps in delivery is also a process that must be done so that children understand the material and are interested in listening to each lesson carried out. Learning activities are also communication between teachers and children, but because of inappropriate delivery, during learning, children have difficulty in understanding the teacher's explanation and the methods and media used are also inappropriate, this has an impact on children's interest when learning becomes less effective.

This can be seen from research conducted (Sudarti, 2021), which shows that flannel boards are a learning medium that can improve children's early mathematical conceptual abilities. This is because flannel boards are very engaging for children. Numbers and pictures can be attached to them according to the theme, so children are interested when teachers use them. Techniques or methods for using flannel boards are one form of strategy that can be used to focus children's attention and can also be used to design light discussions with children through flannel board games.

CONCLUSION

Based on the results of the research that has been conducted, it can be concluded that the early mathematical concept abilities of children aged 4-5 years can be improved through the use of flannel board media. In the pre-cycle, classical completeness (KK) achieved only 26% or about 4 children who completed out of 15 children, which is a sign that children's interest in reading is still low. Furthermore, actions were carried out in cycle 1, increasing by 8 to 53%. However, this achievement still did not reach the success indicator expected by the researcher. So in the end, Cycle II was carried out and it turned out that there was an increase in improving children's mathematical concept abilities, namely around 13 children to 86%. Therefore, the research was only carried out until Cycle II because it had reached the success indicator expected by the researcher. So it can be concluded that using flannel board media can improve the early mathematical concept abilities of early childhood children.

SUGGESTION

The suggestion in this research is that future researchers can develop other types of games that can develop children's early mathematical abilities with different techniques and methods and with a variety of other research methods because apart from flannel board games, mathematical abilities can be developed through other games.

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