

The Influence of Frame 10 Media on the Ability to Calculate Summary 1-20

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Abstract

This study aimed to gather empirical data on the impact of Media Frame 10 on the computing ability of 5-6-year-old children. The research was conducted on children from Group B BKB PAUD Angrek in Munjul Village, Cipayung District, East Jakarta. A quantitative method was employed using an experimental approach with a Pre-Experimental Design in the form of a One-Group Pretest-Posttest Design. The results indicated a significant effect of Media Frame 10 on the ability of 5-6-year-old children to count from 1 to 20. The hypothesis testing utilized a t-test and involved 15 students from BKB PAUD Angrek. The data passed the normality test, demonstrating normal distribution for both pretest and posttest results. The homogeneity test revealed equal or homogeneous population variances. The t-test calculation yielded a tcount value (23.216) greater than the ttable value (1.770) at a significance level of $\alpha = 0.05$. Therefore, the study concludes that Media Frame 10 has a significant effect on the ability to calculate.

Keywords: calculate summary 1-20, frame 10 media, numeracy skills.

1 INTRODUCTION

Early Childhood is an individual who is going through a process of growth and development rapidly and quickly within the span of human life and is fundamental for further life (Dewi, Mayasarokh, & Gustiana, 2020) The process of growth and development that rapidly and quickly in the span of development of human life. A child will absorb all the knowledge that is explored by his growth and development through the senses during the learning process is given. Learning given to early childhood must pay attention to the characteristics possessed by each stage of its development.

The period of early childhood development is a strategic period to build children's understanding of mathematics. Mathematics is one of the cognitive aspects that must be presented in early childhood to achieve a standard of cognitive development called the Child Development Achievement Standard (STPPA) in accordance with the stipulated regulations of the Minister of Education and Culture of the Republic of Indonesia. Number 137 of 2014 (Lubis & Umar, 2022).

Cognitive development of early childhood can be broadly divided into two domains, namely mathematical logic and natural sciences. Great curiosity about new information, allows children to learn various things from an early age, including mathematics. Mathematical knowledge given early on with the correct concept and in accordance with the stages of child development is expected to provide meaningful experience in knowing and understanding mathematics.

Mathematics comes from the Latin word *Mathematica*, the Latin word *Mathematics* comes from the Greek word *Matematice* which means "related to learning". The word *mathematics* means knowledge, science. Mathematics has ideas that are arranged

logically, meaning that mathematics has an abstract nature. Namely in relation to abstract concepts and deductive reasoning Hasanah, (Bong, Fakhira, Shafira, & Wulandari, 2022).

Learning mathematics for early childhood helps their process of understanding life, such as: solving problems, distinguishing, separating, measuring, recognizing the concept of numbers, and so on. As an educator in this case a teacher and as caregivers in the family in this case are parents, they can provide inspiration about mathematics literature that will continue after children leave school, so that in time children can use mathematical concepts, as an example of children's mastery of simple addition arithmetic operations according to their capacity in everyday life.

Early Childhood Education is pre-scholastic or pre-academic education, which means it does not develop primary responsibility in introducing addition operations skills. The ability to operate arithmetic addition all depends on the child's experience manipulating objects.) that the function of understanding the concept of the number of children at the age of 5-6 years is: 1) counting ten, 2) showing the sequence of numbers, 3) forming a series of numbers Combine 1-10 with objects , 3).symbol numbers with objects, 4)separate and make two groups of things that have the same amount. (Kamisna & Yeniningsih, 2022).

The National School Mathematics Program has six basic principles of the Council Of Teachers Of Mathematics (NCTM) Mathematics Learning Strategy which must be included in order to achieve quality mathematics teaching (NAEYC, 2010:2): a) the principle of equality; b) curriculum principles; c) teaching principles; d) learning principles; e) valuation principles; f) technological principles.

According to the National Council of Mathematics Teachers (NCTM) (NAEYC, 2010), teachers and other key professionals in providing quality mathematics education to children aged 3 to 6 years are:1. Use it to understand a child's social and physical world. 2. Gather information and experiences from the child. 3. The curriculum and teaching of PAUD is basic knowledge of mathematical practice. 4. Using curricula and learning processes related to problem solving and children's reasoning, as well as presenting, communicating, and combining mathematical ideas. 5. The curriculum is consistent and consistent with known contexts and important mathematical ideas. 6. Provides children with deep and ongoing interaction with key mathematical ideas. 7. Combine math with other activities or vice versa. 8. Provide time, materials, and teacher support for children to engage in play, a context in which they explore and process mathematical ideas with interest. 9. Actively introduce mathematical concepts, methods and language through various experiences and appropriate teaching strategies. 10. Support children's learning by teaching and continuously assessing all children's math skills, knowledge, abilities, and strategies. 11. Fostering a child's natural interest in mathematics (Husna & Nurhafizah, 2022)

The purpose of learning mathematics in early childhood is to develop and optimize aspects of cognitive development (Kartini & Mulyanto, 2019). The introduction of mathematical concepts naturally occurs according to the level of development of their age and also through learning that is interesting and fun for children. Learning mathematics from an early age is one way to train children's logical and systematic thinking and improve children's thinking skills so that they are ready to learn mathematics later (Azhima et al., 2021).

Based on these principles and standards, it can be explained that knowing, studying and understanding numbers is important in learning mathematics, and is the foundation for understanding other mathematical concepts related to numbers. then one of the introductions to basic mathematical concepts that must be mastered by early childhood is about understanding numbers, one of which is counting. Learning math is learning numbers and their analysis. Early childhood math is all about understanding numbers, measurement and classification. Mathematics is needed to stimulate children's thinking skills and memory and influence the development of other aspects. Children need the ability to face global challenges in life and solve problems in their own lives (Misrawati & Suryana, 2022).

According to Clement & Sarama, learning to count in early childhood goes through several stages. The stages of counting differ at the level of thinking and at age. This table shows the stages of learning to count by Clement and Sarama (2009) which is referred to as the learning trajectory for counting. For children aged 5 years, their numeracy skills are at the Counter and Producer stage (10+). Children are able to count verbally and accurately count objects up to 10, then so on; have an explicit understanding of cardinality (how a number indicates how many); keep track of objects that have been and have not been counted, even in different settings; write or draw to represent 1 to 10 (then 20, and then 30), while 6 year olds are in the following phase: Counter of Qualitative Units/Place Child understands the base ten number system and the concept of place value, including the idea of counting in units and multiples hundreds, tens, and units. When counting object sets of 10, one can decompose them into 10 units if that is useful (Ariyana, 2021).

The Ministry of National Education introduced the principles of implementing counting games in Kindergartens, namely: counting games are given in stages, starting with counting the experiences of concrete objects or events experienced by observing the natural environment and the level of difficulty. for example from concrete to abstract, from simple to complex, and from simple to more complex. Mathematical games are successful when children are given the opportunity to participate and are encouraged to solve their own problems (Maryam, 2019).

Early Childhood is in the pre-operational stage. According to Piaget, at the pre-operational stage, children cannot think logically. Pre-operational thinking is the initial ability to reconstruct at the level of thinking what has been done in behavior. Pre-operational thinking includes a shift in the use of symbols from the primitive to the more sophisticated (Setiyo, 2017). With the help of a structured or regular space within the reach of the children's view (concrete) in frame 10, it will reduce the risk of confusion and errors in counting.

Frame 10 media is expected to build a child's procedural knowledge in solving problems related to understanding numbers and number compositions. If procedural knowledge is built systematically and thoroughly, then there will be a great chance for a child to build conceptual knowledge by arithmetically adding 1-20.

2 RESEARCH METHODS

In this model the observations were made 2 times, namely before the experiment and after the experiment. Observations made before the experiment (Y1) group were given a pretest or pretest to measure the initial conditions and observations after the experiment or posttest (Y2), (Y1 x Y2). With information Y1 is the pretest value (value before being given treatment) and Y2 is the posttest value (value after being given treatment). The difference between Y1 and Y2, namely $Y2 - Y1$, is assumed to be the effect of treatment or experiment.

The research design chosen was pre-experimental with a one-group pretest posttest design. In this method, there is no need for a control group to be compared with the experimental group, does not use equalization of characteristics in one treatment group, and does not require variable controllers (Setiawan, A. R. (2017).

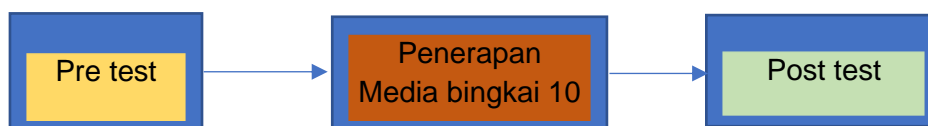


Figure 1. The research design

The instrument used in this study was an assessment rubric containing the child's ability to do the pretest and posttest, with the criteria: a) BB = not yet developed (score 1), b) MB = starting to develop (score 2), c) BSH = successful as expected (score 3), d) BSB = very good success (score 4).

The indicator of the instrument is to measure the ability to count addition which includes the child's ability to master addition 1-20. The research sampling technique used in this study was determined by cluster simple random sampling technique (Creswell, 2017).

3 RESULT AND DISCUSSION

In this section, we will explain the results of the research and discuss the results of the research.

3.1 Normality Test

Normality test is one of the requirements in hypothesis testing in inferential statistics. According to Kadir, the normality test for data distribution using the Liliefor test is to test whether the data from each group is normally distributed or not (Kadir, 2010). The sample is said to be spread in a normal distribution if the value of L count < L table and vice versa if the price of L count > L table then the data obtained is not normally distributed.

From the results of the data analysis presented, it shows that the p-value for all groups is > 0.05 so that H0 is accepted and the two group data are normally distributed. Based on the results of calculations before being given treatment (pre-test), obtained L count = 0.155 and L table = 0.220 at a significant level $\alpha = 0.05$ for the number of respondents (n) = 15, so that L count (0.155) < L table (0,220). The sample is said to be normally distributed with the criteria L count < L table, as well as the results of the calculation of the normality test after being treated (posttest).

3.2 Homogeneity Test

According to Kadir, the homogeneity test is the distribution of data using the Bartlet test to test whether the data is homogeneous or not homogeneous at a significance level of $\alpha = 0.05$. Homogeneity test is a test carried out to find out whether the variance of samples taken from the same population is uniform or not.

Based on the calculation results Fcount = 1.401 Based on the table list F table ($\alpha = 0.05$; 14) = 2.48. So we get F count (1.401) < F table (2.48). Thus we get t count < t table. This means that the ability to calculate the sum of the two groups comes from a homogeneous population, meaning that the samples from the research groups have the same abilities.

3.3 Hypothesis Test

Testing the hypothesis using the t test is to calculate the average difference. The aim is to see the results of research from the experimental group before and after carrying out the final test. This test was carried out at a significant level $\alpha = 0.05$. The t test was used to test the hypothesis of each group, both those that had not received treatment and those that had received treatment, so that the t test formula included a standard error. The formula used is:

$$t_0 = \frac{|S_1^2 - S_2^2|}{2s_1s_2\sqrt{\frac{1 - r_{12}^2}{db}}}$$

4 CONCLUSION

Based on the results of the study, it showed that there was an effect of media frame 10 on the ability to count 1-20 for children aged 5-6 years. The hypothesis testing in this study uses the t-test. The research was conducted at BKB PAUD Anggrek with 15 students. From the results of normality test calculations for the pretest L count (0.155) < L table (0.22)

while the results of the normality test for the posttest L count ($0.131 < L \text{ table } (0.22)$) significance level $\alpha = 0.05$ thus the data is normally distributed. In the homogeneity test, the results obtained were $F \text{ count } (1.401) < F \text{ table } (2.48)$, thus the population variance was stated to be the same or homogeneous. In the calculation of the t test, the value of t count ($23.216 > t \text{ table } (1.770)$) is obtained at the significance level $\alpha = (0.05)$, then H_1 is accepted and H_0 is rejected.

Based on the results of the test criteria, if $t_{\text{count}} > t_{\text{table}}$ then H_1 is accepted, H_0 is rejected and if $t_{\text{count}} < t_{\text{table}}$ then H_1 is rejected H_0 is accepted. From the calculation results, it is obtained that $t_{\text{count}} (23.216) > t_{\text{table}} (1.70)$ significant level $\alpha = 0.05$ is 1.70 means that testing if $t_{\text{count}} > t_{\text{table}}$ then H_1 is accepted, H_0 is rejected.

Based on the hypothesis testing after conducting the hypothesis on the hypothesis testing data it is known that the value of t count = (23.216) is greater than t table = 1.70 at a significant level $\alpha = 0.05$, $n = 15$. Based on the test results, H_0 (Null Hypothesis) is stated that there was no significant effect of the use of frame 10 on the ability to calculate additions in children aged 5-6 years, was rejected. Furthermore, H_1 (Research Hypothesis) which states that there is a significant effect of using frame 10 on the ability to count sums in children aged 5-6 years, is accepted. These results indicate that if children are given learning using the 10th frame, their arithmetic sum skills will also increase.

In addition, when using frame 10 children are actively involved and see concretely abstract concepts related to learning addition. This allows more senses to be involved in learning so that the understanding process will be better developed. Thus the more often children use this concrete media in learning addition, the child's ability will increase

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