The Effectiveness of Eddy The Clever Fox Animated Show on Improving The Early Math Skills of Children 5-6 Years Old

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Abstract

In 2018, the result of the Program For International Student (PISA), indonesia's mathematics ability had an average score of 379 or ranked 73 out of 79 countries where indonesia's children were not competent and experienced difficulties in learning related to mathematics. The solution to improve children's early math skills is to use innovative and interesting learning media for children, namely animation. Therefore, this study aims to find out whether there is a significant difference between before and after the animation of Eddy The Clever Fox in improving the early math skills of children aged 5-6 years. The type of research is quantitative pre-experiment with one group pretest posttest design. Data collection techniques are carried out by testing and documentation. The worksheets are first tested with validity and reliability tests. The mean results in the pretest and posttest were 69.62 and 89.61, which increased after the treatment. The hypothesis test used is the Wilcoxon test with a significance that H_0 is rejected and H_a is accepted so that there is a difference between the initial mathematical ability of children aged 5-6 years before and after the treatment in the form of animated show of Eddy The Clever Fox and it can be concluded that the animation is effective in improving the initial mathematical ability of children aged 5-6 years.

Keywords: Mathematical Abilities; Beginning Mathematics; Animated Show Eddy The Clever Fox

1. Introduction

Early childhood refers to te period of development of a person from birth to 6 years of aged (Ministry of Education, 2003). This age is a valuable time for children to grow and develop supports by simulation of child development in accordance with its stage. In the first 1000 days, from age 0 to age 3, children's growth and development begins (Husnah, 2017). To maximize the growth and development of children requires the provision of appropriate stimulation. the golden period of child growth and development, supported by the right stimulation. The provision of stimulation is also adjusted to the child's age development (Khaironi, 2020). Fun learning can support child development (Khairani, 2018) cognitive aspect are one of the important aspecsts to be developed in accordance with the Regulation of the Minister of National Education number 137 of 2017 (Khairani, 2018) cognitive development achievement aspects, math skills or number concepts are included in it.

Hakim and Adirakasiwi mentioned that each child has different math abilities, some children cannot understand math concept well due to the thought that learning math is difficult learning (Indarini & Rusnilawati, 2022). Types of math for children in the 4-6 year age range consist of numbers, conbersion, sorting, classification, measurement, distance and patterns (Nurmaliza & Smith, 2023). In 2018, the results of the Programme For International Student (PISA) showed that Indonesia had an average score of 379 for mathematics skills, where Indonesia was ranked 73rd out of 79 countries (Hewi & Shaleh, 2020). These results show that Indonesia children are not yet competent and have difficulty with learning related to mathematics. Interviews conducted by research on Monday, January 8 2024 at RA Perwanida III

Karangnongko, Malang Regency, showed that of all 54 children in group B, with each class containing 27 children. In class B2, it was found that were nine children who did not understand math, including 4 children who could not understand of addition and subtraction, 4 children had a pattern understanding ability that was not optimal and 1 child who had special needs but could understand if guided by the class teacher. The factors that cause this are conventional or boring learning media (Khairani, 2018), lack of early math stimulation, and lack of parental participation in collaborating with schools in terms of motivating children, this was conveyed by the principal and class teacher.

The use of interesting learning media can be used as a solution to deal with these problems, the use of this learning media can make it easier for children to understand math concept (Wayan et al., 2021). The use of media can increase student motivation and a more pleasant learning atmosphere is realized. One of the effective media that can be used to improve children's early math skills is animation which combines visual and auditory elements. Animation is very attractive to children, besides being easily accessible, children's ability to remember learning material can increase if information is conveyed through the senses of hearing and vision (Miranti et al., 2023). This statement is supported by other studies that have an impact on improving student learning out the elementary school level by using animated video media (Izomi et al., 2019). Eddy The Clever Fox animation cn be found on television, youtube and vidio.com pages, and offers beginning math content designed to support learning and increase interest in learning math in a fun way for children. The animation has a youtube channel under pororo the little penguin, with 4.78 million subscribers and 3000 videos. Eddy the clever fox animated won the best animation award from the Korean government in 2006 and received the creative brands award in 2013, making this animation very popular in its home country as well as airing in Indonesia. Previous research studies that support this research are studies that focus on improving number recognition skills using Hamid Kid's animation (Miranti et al., 2023). The difference with the above research only focuses on the ability recognize numbers, while in this study the early math content used is about patterns, classification, geometry and so on. The similarities between these two studies are the research methods and media used. Therefore, based on previous research, the researcher wants to conduct research with title "The Effectiveness of Eddy The Clever Fox Animated Show on Improving the Early Math Skills of Children 5-6 Years Old"

2. Method

The type of research used is quantitative pre-experiment with one group pretest posttest research design. This study only used one experimental and treatment class where there was no control class as a comparison. In this study, the results of children's initial mathematical ability before and after treatment will be compared. The treatment in this study uses Eddy The Clever Fox animation. The following is the design of one group pretest posttest research.

Table 1. Research Design

Pretest	Treatment	Posttest
O1	X	O2

Remarks: O1 = pretest value, O2 = posttest value, X = treatment

The population of this study is children aged 5-6 years in RA Perwanida III with a sample of 18 children with a sampling technique that is purposive sample. The data collection techniques used are tests in the form of worksheets and documentation. Before taking data, a

validity and reliability test of the worksheet is required, the validity test of this study uses a construct validity test with 2 people, miss SD and miss A. The results of the construct validity test showed values of 87.5% and 83.3% which were included in the criteria of a valid instrument and could be used with a slight revision. Meanwhile, the results of the reliability test alpha value are 0.963 so that the instrument is declared reliable with excellent reliability criteria and can be used for research. The prerequisite test uses the normality test, the hypothesis test uses the Wilcoxon test and the effectiveness test with the N-gain test.

3. Results and Discussion

3.1 Result

The following are the results of descriptive statistical analysis of pretest posttest scores for early math skills of children aged 5-6 years.

Table 2. Result of Descriptive Statistical Analysis

	N	Minimum	Maximum	Mean	Std. Deviation
pretest	18	47	85	69.92	9.061
posttest	18	0	100	86.91	22.842
Valid N (listwise)	18				

Based on table 2, it is known that the mean values in the pretest posttest are 69.62 and 86.91 where this shows that there is an increase in the child's score before and after the treatment. After that, a normality test is carried out to find out if the data is distributed normally. The following is a graphic image of the distribution of pretest and posttest values.

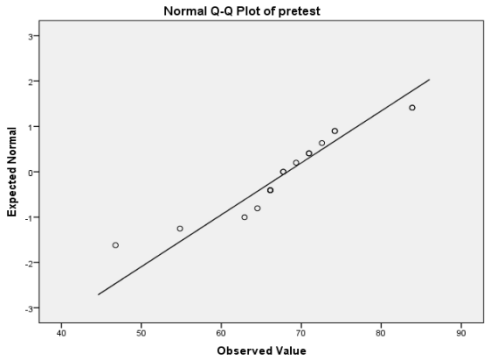

Figure 1. Pretest Value Distribution Graph

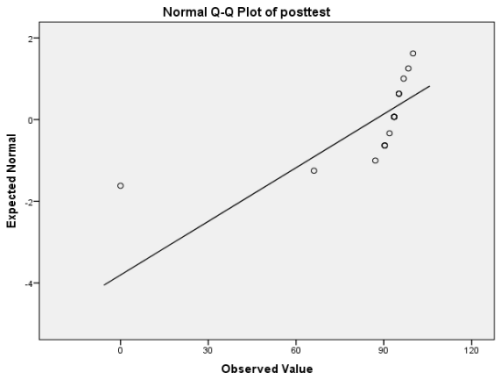

Figure 2. Posttest Value Distribution Graph

In Figure 1, it can be seen that the distribution of the data of the pretest value is straight and even, which indicates that the pretest value is normally distributed, while the pretest value shows that the distribution of the data is uneven, which indicates that the data is not normally distributed. Based on the results of the normality test, it was found that one of them did not meet the requirements of the parametric test, so the test carried out was non-parametric using the Wilcoxon test.

Table 3. Hypothesis Test Result

	posttest - pretest
Z	-2.946[b]
Asymp. Sig. (2-tailed)	.003

In table 3, it can be seen that the results of Asymp. Sig (2-tailed) is 0.003 < 0.05 so that H_0 is rejected and H_a is accepted, it can be concluded that there is a significant difference between the initial mathematical ability of children aged 5-6 years before and after the treatment. The treatment was given twice by showing the Eddy The Clever Fox animation to the class. After that, the effectiveness test using the N-gain test aims to find out how effective Eddy The Clever Fox's animation show is in improving the initial mathematical ability of children aged 5-6 years.

Table 4. Average Result of N-gain Percentage

			Statistic	Std. Error
Ngainpersen	Mean		64.8850	11.49805
	95% Confidence Interval for Mean	Lower Bound	40.6263	
		Upper Bound	89.1438	

5% Trimmed Mean	73.2826	
Median	76.3995	
Variance	2379.692	
Std. Deviation	48.78208	
Minimum	-121.39	
Maximum	100.00	
Range	221.39	
Interquartile Range	20.63	
Skewness	-3.627	.536
Kurtosis	14.268	1.038

In table 4, it can be seen that the mean result of the N-gain percentage is 64.88% which shows that Eddy The Clever Fox's animation is quite effective in improving the initial mathematical ability of children aged 5-6 years.

3.2 Discussion

This research took place at RA Perwanida III, Malang Regency with a population of 54 children and a sample of 18 children with a purposive sampling technique. The type of research is quantitative pre-experiment with one group pretest posttest design. The data collection techniques used are tests with worksheets and documentation. In the implementation of the pretest, the child fills out or works on a worksheet containing questions about starting mathematics, this aims to measure the child's starting mathematical ability before being given treatment. After that, the results of the pretest score with the lowest score of 47 and the highest score of 85 were obtained.

Next is the implementation of treatment with the airing of Eddy The Clever Fox animation which consists of several selected episodes, namely in the first series using episode 5 which discusses the concept of big and small; Episode 6 is about the concept of light weight; Episode 7 regarding the same and different forms; Episode 9 on Sumitization; Episode 11 explains the concept of subtraction; Episode 12 describes the problem of finding the same object; Episode 13 is about patterns and series 2 Episode 1 is about geometry. Treatment was carried out 2 times, which was followed by the implementation of the posttest by obtaining the lowest score of 0 and the highest score of 100. The acquisition of a score of 0 was due to one person who was not present at the posttest.

After the implementation, the researcher saw that Eddy The Clever Fox's animation show could improve the initial math skills of children aged 5-6 years in RA Perwanida III. The results obtained show that the use of animation to support learning can increase children's learning motivation, previously the institution had never used animation to support learning. The use of animation used by this researcher is to minimize boredom caused by the use of conventional or less interesting media (Khairani, 2018). The advantage of Eddy The Clever Fox's animation is that it presents characters and settings that are suitable for children by using animal characters

with snowy mountains in the background. The language used in this animation uses language that is easy for children to understand, with easy discussion of the material. In this animation it gives a few seconds of pause where the child has the opportunity to prepare an answer. Eddy The Clever Fox animation is presented with the provision of a problem solved with a solution and at the end of the episode gives a recall with a song.

The Regulation of the Minister of Education and Culture of the Republic of Indonesia RI No. 137 of 2014 concerning national standards for early childhood education, aspects of mathematical intelligence in children aged 5-6 years are recognizing differences in sizes such as more or less than, classifying objects, recognizing patterns, sorting objects from largest to smallest, mentioning symbols of numbers 1--10, matching numbers and so on (Salamah & Roza, 2023), while in the Regulation of the Minister of Education and Culture of the Republic of Indonesia No. 146 of 2014 concerning the 2013 Curriculum of Early Childhood Education, the indicators of child development achievement related to early childhood mathematics are that children are able to recognize objects by grouping various objects in their environment based on size, pattern, function, nature, sound, texture, and other characteristics; being able to identify objects by connecting one object to another; be able to recognize objects based on five or more series, shape, size, color or number; able to recognize the concepts of big and small, a lot and a little, short length, light weight, high and low by measuring using non-standard measuring instruments (Ministry of Education and Culture, 2014). In addition, there are also indicators of cognitive development of children aged 5-6 years related to initial mathematical skills, namely being able to recognize simple classifications, being able to recognize numbers and understand simple mathematical concepts, being able to recognize geometric shapes and being able to recognize patterns. This is supported by the scope of early childhood mathematics according to the National Council of Teachers of Mathematics including numbers, algebra, classification, patterns, geometry, measurements and analysis of probability data (Santri, 2018).

In the animation Eddy The Clever Fox season 1 which is used, namely 5 which is about the difference between which objects are big and small, in this animation the difference in size and small is presented with differences in fruits, differences in the bodies of the characters and so on, this is in accordance with the Minister of Education and Culture of the Republic of Indonesia No. 146 of 2014 concerning the 2013 Curriculum of Early Childhood Education, an indicator of the achievement of children's development is able to recognize objects based on five or more series, shape, size, color or quantity; be able to recognize the concepts of big and small, a lot and a little, short length, light weight, high and low by measuring using non-standard measuring instruments; Episode 6 is about the concept of light weight, in this episode it is presented with the problem of seesaw which is unbalanced because it is heavier on the other side, besides that in this episode it also explains about the long and short, this is in accordance with Permendikbud No.146 of 2014 where children are able to recognize objects based on five or more series, shape, size, color or number; be able to recognize the concepts of big and small, a lot and a little, short length, light weight, high and low by measuring using non-standard measuring instruments; Episode 7 regarding which is the same and different, in this animation the explanation used is the difference in the color of the car, differences in form and so on where this is also in accordance with Permendikbud No.146 of 2014; Episode 9 about the sum of things; Episode 11 on subtraction; episode 12 regarding finding the same object which is in accordance with Permendikbud No.137 of 2014 where children can classify objects; Episode 13 about the pattern presented using the parable of bread and milk and season 2 in episode 1 about geometry by explaining in the form of using the form of cake molds in accordance with Permendikbud No.

137 of 2014 regarding the aspect of mathematical intelligence of children aged 5-6 years, namely being able to recognize patterns.

Based on the results of the study, the researcher used a normality test to find out whether the data was normally distributed or not, the researcher used the Shapiro-wilk test because the sample used was less than 100 people. The results obtained showed that in the pretest obtained a significance value of 0.149 > 0.05 which indicates that the data was normally distributed, while in the posttest obtained a significance value of 0.000 < 0.05 which means that the data was not normally distributed. Furthermore, the researcher used a non-parametric hypothesis test with the Wilcoxon test, this was done because previously the data was not normally distributed so it did not meet the requirements of the parametric test. The results of the hypothesis test showed that the significance value was 0.003 < 0.05, so it can be concluded that there is a difference in the initial mathematical ability of children aged 5-6 years before and after being given treatment. Furthermore, the test carried out is the N-Gain test to find out how effective Eddy The Clever Fox's animation show is on improving the initial math ability of children aged 5-6 years. The results obtained from the N-gain test were that there were 112 children who experienced an increase in understanding with a high category, 5 children experienced an increase in understanding with a medium category and 1 child experienced a decrease in understanding, In addition, the results of the N-gain percentage obtained an average of 64.88%, which means that the effectiveness of Eddy The Clever Fox's animation show on improving the initial mathematical ability of children aged 5-6 years is quite effective.

4. Conclusion

The results of this study found that the instrument could be used with minor revisions, which previously received validation from 2 competent experts. Based on the tests that have been carried out, there is a significant difference in the acquisition of values between before anf after being given treatment, not only that Eddy The Clever Fox animation shows are quite effective in improving the early math skills of children aged 5-6 years.

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