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The Effectiveness of The Animated Show Eddy The Clever Fox in Improving The Initial Mathematical Abilities of Children Aged 5-6 Years

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Abstract

In 2018, the results of the Programme 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 62.62 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 and 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 is a person's condition from birth to the age of 6. In this age range is the golden period of child growth and development, supported by the right stimulation according to the child's developmental age. A fun learning is needed to support child development (Khairani, 2018), the cognitive aspect is an aspect that needs to be developed. In the Regulation of the Minister of National Education No. 137 of 2017 (Khairani, 2018), mathematical skills or the concept of numbers are included in the aspect of cognitive development achievements. Mathematical skills are a forum for children to know, understand and analyze the world (Sumardi et al., 2017). Mathematics in children has the goal of improving thinking skills, developing talent interests and fostering positive qualities such as critical thinking, independence, logical thinking and others.

Hakim and Adirakasiwi (Indarini & Rusnilawati, 2022) mentioned that each child has different mathematical abilities, some children cannot understand mathematical concepts well because of the thought that learning mathematics is difficult learning. The types of mathematics for children in the age group of 4-6 years consist of numbers, conversions, sorting, classification, measurement, distances 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). The results show that Indonesia children are not competent and have difficulties with learning related to mathematics. The results of interviews

conducted at RA Perwanida III out of a total of 24 children in group B2 there were 4 children who lacked understanding of addition and subtraction, 4 children who had not maximized their ability to understand patterns and 1 child who had special needs but could understand commands with the help of class teachers. The causative factor for this is that they still use conventional learning media so that learning is less interesting and causes children to get bored quickly (Khairani, 2018), In addition, the lack of stimulation regarding mathematical concepts from an early age and the participation of parents in establishing cooperation with schools is not optimal. Media that can be used to improve children's early math skills can be by using animation. In addition to being liked by children, with animation the acquisition of information can be increased, because children's memory ability towards learning materials increases through the senses of hearing and vision (Miranti et al., 2023). This statement is supported by research findings that state that the use of animated videos can improve children's learning outcomes in elementary school (Izomi et al., 2019).

Eddy The Clever Fox animation has 4.78 million subscribers and 3000 videos on the youtube page whose content contains episodes about elementary mathematics such as large and small concepts, short lengths, light weights, geometry and many more. The previous research study that supports this research is a study by Windi Miranti in 2023 with the title "The Effect of Hamid Kids Animation Videos on the Ability to Recognize Numbers of Children Aged 5-6 Years at Bima Al-Kirana Sekayu Kindergarten". The difference between this study and the study is that this study focuses on all aspects of initial mathematics while the previous research was only limited to recognizing numbers. Therefore, based on previous research, the researcher wants to conduct a study with the title "The Effectiveness of Eddy The Clever Fox Animation Show on Improving Early Mathematics Skills of Children Aged 5-6 Years".

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. 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

a. 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. Results of Descriptive Statistical Analysis

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
pretest	18	47	85	69.62	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.

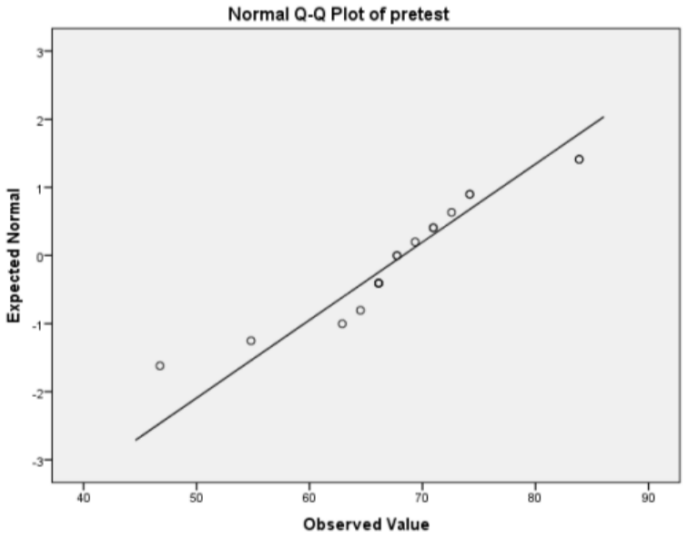

Figure 1. Pretest value distribution graph

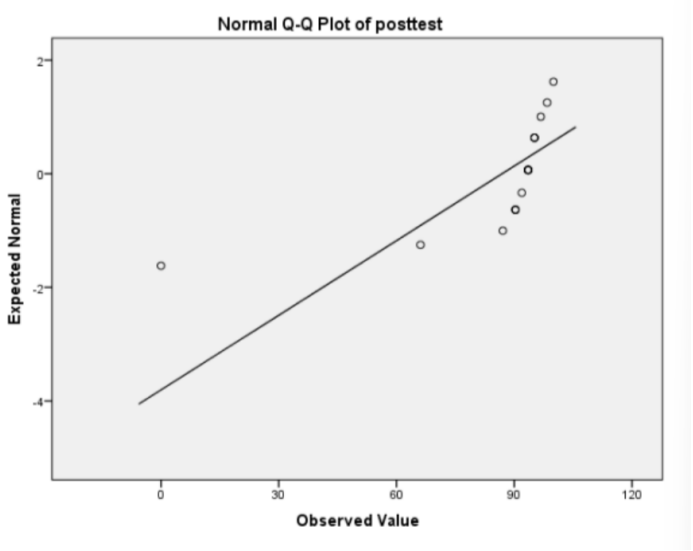

Figure 2. Posttest value distribution graph

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. Hyphothesis Test Result

Test Statistics[a]

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

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

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. 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

Descriptives

			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	

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

Various lessons can be learned from social religious activities, as stated by an informant who explained that one of the informal learning experiences gained from participating in these activities is listening to sermons. Sermons in Bajulmati Hamlet are held every Friday Pahing, where the community is responsible for inviting a religious figure to deliver a sermon.

Other informal learning experiences include instilling religious values such as morality, discipline, and exemplary behavior. During every mosque youth activity, there is always a learning element included for the members. For example, scheduling activities trains the youth to always arrive on time, eliminating excuses for tardiness as the time has been set. This discipline can impact their daily lives, such as being punctual in going to school or submitting assignments, making this habit ingrained in their behavior. Another practice is the habit of reciting prayers before starting any activity and performing congregational prayers. These practices are intended to express gratitude and seek protection so that the activities to be carried out will be facilitated. Congregational prayers are conducted to ensure that the youth do not neglect their obligations as Muslims. The goal of these practices is to acquire or maintain new behaviors that are more in line with current societal standards and values. The last form of informal learning is giving advice. In the process of internalizing religious values, advice, reprimands, or guidance are given if an individual has done something that deviates from religious teachings.

Social religious activities often face various challenges that hinder their progress. One of the challenges mentioned is the lack of active participation from members, which can be attributed to several factors, including a lack of interest in these activities. In this context, some youths are less actively involved in the activities, with some attending only to take the snacks or food provided and even engaging in jokes with other members during the activities. Usually, other members will reprimand and advise them, but sometimes these warnings are ignored,

requiring the intervention of elders. Some members of the mosque youth organization are graduates of Islamic boarding schools, which sometimes makes regular school students feel inferior because they see themselves as different from others, and usually, the senior members will provide understanding and encourage them to socialize with the others.

Despite these challenges, support is one of the most important aspects of participating in social religious activities. When family members support each other, individuals are more motivated and confident to participate in religious activities such as religious studies, community service, or charity events. Moral encouragement, logistical support, or even the direct presence of other family members can be forms of support. Additionally, family involvement in religious activities strengthens family relationships and reinforces positive spiritual and social values. Therefore, the presence and support of family are crucial for both the individual and the community as a whole, as both contribute positively to the overall well-being and harmony of society. In carrying out their activities, the youth in Bajulmati Hamlet receive full support from their families. Logistical support, such as transportation to the activity location and fulfilling the children's needs, ensures that they can participate smoothly without any issues. Family involvement in these activities not only enriches spiritual experiences but also strengthens family bonds and instills positive moral and social values. Therefore, families play a crucial role in shaping character and preparing them to be active and caring members of society.

b. Discussion

This research took place at RA Perwanida III, Malang Regency with a population of 54 children and a sample of 18 children. 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 season 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 season 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

Based on the analysis that has been carried out, it can be concluded that Eddy The Clever Fox animation can effectively improve the initial mathematical ability of children aged 5-6 years at RA Perwanida III Malang Regency. The results of the study in the previous chapter showed that hypothesis testing using the Wilcoxon test showed a significance value of 0.003 < 0.05 so that H_0 was rejected and H_a was accepted. In addition, the average results of the Pretest and Posttest scores of 69.62 and 86.91 which showed that the experimental class experienced a significant increase after being treated, the results of the N-Gain percentage test obtained a value of 64.88% where the effectiveness of Eddy The Clever Fox's animation show on improving the initial mathematical ability of children aged 5-6 years was included in the category of quite effective.

The improvement of children's initial mathematics skills occurs due to the influence of animation to support learning where children are motivated and interested in learning early mathematics in a different way than before where institutions have never used animation as a learning support. The use of Eddy The Clever Fox animation shows makes the atmosphere of learning by playing so that children do not get bored quickly. Based on the results of the research conducted, it can be concluded that Eddy The Clever Fox animation is effective in improving the early math skills of children aged 5-6 years.

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