

## IMPLEMENTATION OF SERIOUS IMAGE MEDIA IN DEVELOPING THE COGNITIVE DEVELOPMENT ASPECTS OF EARLY CHILDREN

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### Abstract

This study aims to prove that there is an effect of using serial image media on cognitive development by playing science activities to recognize butterfly metamorphosis. This study used a quantitative research design, quasi experimental design with a pretest-posttest controlled group design model. Learning in the control group uses a conventional model that is centered on the teacher while in the experimental group using serial image media. This research was conducted in RA. Masyithah 5 Karanganyar Paiton in group B with 20 children for the control group and 20 children for the experimental group as research subjects. From this research, it shows that there is an influence on the experimental class children who use serial image media has a higher average when compared to the control class who uses the conventional model that is centered on the teacher. The average score for the experimental class was 82.25 and the mean score for the control class was 75.5. Based on the data analysis that has been done, that  $t_{count} > t_{table}$ , namely  $2.163 > 2.08387$ . Thus it can be concluded that serial image media has an effect on cognitive development by playing science activities to recognize butterfly metamorphosis.

**Keywords:** serial image media; cognitive development; science

### Introduction

Early Childhood Education is education before basic education as an effort to guide children from birth to 6 years of age by providing educational stimuli to help the growth and development of children both physically and spiritually so that children have readiness to obtain further education (Aprinawati, 2017). Nugraha states that early childhood has a major influence on a person's adult life, so that the right to education for early childhood becomes very fundamental and cannot be negotiated (Sugiantiningsih & Antara, 2019). Sujiono states defines that early childhood is a child who is only born until the age of 6 years. This age is very decisive in shaping the character and personality of children. At this time, optimal stimulation is also needed so that the

potential of the child can develop and grow optimally. This age is a determinant in shaping the character and personality of early childhood (Huitt & Hummel, 2003).

The activities of the teaching and learning process should emphasize the development of cognitive structures by providing stimuli to children so that they get the opportunity directly in various learning activities that contain meaning (F. Fardiah, S. Murwani, 2020). Science learning activities are often delivered conventionally monotone, namely by the lecture method so that teaching and learning activities are only one way centered on the teacher. So that children are less trained to develop cognitive abilities, so that learning activities are less than optimal and children's potential can develop optimally (Watanabe, Flores, Fujiwara, & Tran, 2005).

The use of media in teaching and learning activities is needed because the information conveyed by the teacher will be more memorable and easily understood by children (Sugiarti, Putra, & Abadi, 2014). Media that is suitable or appropriate for use in cognitive development by playing the science of butterfly metamorphosis is by using serial image media. Serial image media is defined, namely visual media that contains a sequence of images, between images that are interconnected and represent an event (Qomariah, 2016). The media describes a series of events from the beginning of the incident to the end of the incident. Serial image media is used to stimulate children's thinking power in reading and to look for a main idea in an activity and to solve a problem (Sugiarti et al., 2014).

#### **A. Serial Image Media**

Series image media is defined as learning media in the form of images that contain stories in several sequences so that between one image and another it forms a unity that describes events in the form of a structured story (Aprinawati, 2017).

Serial image media is a series of pictures that tell an event and each picture tells a part of the story. The pictures can be arranged in order to form a coherent story. Serial image media is one of the visual media that contains a sequence of images, the images are related to one another and represent an event (Qomariah, 2016).

The use of media in teaching and learning activities is very good because the information conveyed by the teacher will be more remembered and easily understood by children (Watanabe et al., 2005). Dhieni stated that the advantages of serial image media are concrete images, images can limit space, time and the ability of human senses, images serve to explain a problem, whether concrete or abstract, images are easy to obtain and cheap media, easy images used either individually, in groups, classically, throughout the class or school (Sugiantiningsih & Antara, 2019).

Serial image media is the right media on the grounds that the media is simple without having to cost a fortune besides that it can be useful for increasing student motivation, can attract students' attention and students can pour ideas, ideas as interesting as possible (P. Media and G. Berseri, 2017).

## **B. Early Childhood Cognitive Development**

According to Sujiono, cognitive development is a change that occurs in children's thinking, intelligence and language to provide reasons so that children can remember, develop creative strategies, think about how to solve problems and be able to connect sentences into meaningful conversations (Retnaningrum, 2016).

According to Santrock, cognition refers to mental activities about how information can be entered into the mind, stored and transformed, and recalled and used in complex activities such as thinking (Khiyarusoleh, 2016).

Hasnida stated that basically this cognitive development is determined at the time of conception which is influenced by heredity, but whether or not this cognitive potential can develop or not also depends on environmental factors and maturity on the opportunity given to be able to determine the maximum limit of development at the level of intelligence (Arimbi, Saparahayuningsih, & Ardina, 2018).

Teaching and learning activities should be emphasized on the development of cognitive structures, namely through providing opportunities for children to have direct opportunities in various teaching and learning activities that are in accordance with the learning theme and contain meaning (F. Fardiah, S. Murwani, 2020).

Cognitive development aims to develop thinking skills which in its development are manifested in thinking habits (Ravanis, 2017). The ability to think includes the ability to think analytically, critically, innovatively, and creatively. Early childhood are invited to recognize and learn about certain objects that are around them so that children can understand simple concepts and find various kinds of alternatives to solve simple problems in everyday life (Handayani, 2020).

## **C. Science Learning Activities**

Conant defines science as a series of concepts and conceptual schemes that are related to each other that grows as a result of a series of experiments and observations and can be observed and in further trials. Science learning activities are closely related to tracing symptoms and natural facts around the child's environment (Roza, 2012).

Rosalind and Karen states that science learning activities are a way to try to find the essence of things, attitudes and skills that allow children to solve problems they face in everyday life (Worth, 2010).

Henniger (Lind, 1998) science has two components, namely content and process. Content is the total knowledge that wants to be developed, while the scientific process is the method and attitude used by scientists to obtain information and solve problems.

## **Method**

Based on the problems studied, namely the implementation of serial image media in developing aspects of cognitive development by playing the science of butterfly metamorphosis in RA.Masyithah 5 Karanganyar Paiton, the form of this research is quantitative research with the type of Quasi Experiment research (quasi-experimental).

The population of this research is all group B RA.Masyithah 5 Karanganyar Paiton which has a total of 40 students. Techniques in taking research samples using purposive sampling technique. The sample in this study were groups B1 and B2. Group B1 was used as an experiment with 20 children and group B2 was used as a control group with 20 children. The data collection technique used in this study was a teacher-made test, in which the test had been tested for validity. In the assessment, the instrument used was a checklist format. With the assessment criteria, namely developing very well, given a score of 4, developing according to expectations, given a score of 3, starting to develop 2, not developing 1.

The data analysis technique used in this study is an analysis that compares the differences between the two average values, so it is carried out with the t test (t-test). However, before analyzing these differences, it is necessary to test the normality with the Liliefors test, and the homogeneity test with the Barlett test. If it is known that the data is normally distributed and homogeneous, then the data analysis is carried out in accordance with the analysis technique that has been done, namely by looking for comparisons using the t-test.

### Result and Discussion

The data described in this study consisted of two groups, namely data about the pre-test results in the experimental group (B1) and in the control group (B2) on the cognitive development of early childhood before being given treatment.

**Table 1**  
**Recapitulation of Pre-test Results for early childhood cognitive development in the Experiment Class and the Control Class (source of data analysis)**

Variable	Experimental Learning B1	Control Learning B2
N	20	20
highest score	80	80
Lowest Score	50	50
Total Score	795	750
Median	68,5	65,5
Average	66,8	62,2
SD	7,06	8,8

Based on the table above, the experimental class with a total of 20 children received the highest score of 80 and the lowest score of 50. From the scores of the experimental class children, the overall score was 795 median 68.5 with an average value of 66.8 with a standard deviation of 7, 06. While the control class with 20 children received the highest score of 80 and the lowest score of 50. From the value of the control class children, the total score was 750, the median of 65.5 with an average value of 62.2, with a standard deviation of 8.8.

**Table 2**  
**Recapitulation of Post-test Results for early childhood cognitive development in the Experiment Class and the Control Class (source of data analysis)**

Variable	Experimental Learning B1	Control Learning B2
N	20	20
highest score	90	90
Lowest Score	70	70
Total Score	980	900
Median	84,25	82,2
Average	82,2	75,5
SD	8,8	7,60

Based on table 2 above, the experimental class with the number of 20 children got the highest score of 90 and the lowest score of 70. From the scores of the children in this experimental group, the total score was 980, the median was 84.25 with an average value of 82.2 standard deviations 8.8. While the control group with 20 children received the highest score of 90 and the lowest score of 70. From the value of the control class children, the total score was 900, the median was 82.2 with an average value of 75.5, the standard deviation was 7.60.

So from the results of this study it is stated that cognitive development with the activity of playing the science of butterfly metamorphosis in the experimental group and the control group, the results show that the children in the experimental group (group B1) were higher than those in the control group (group B2).

To test the hypothesis, the t-test is used. From the results of hypothesis testing using the t-test, the following results were obtained:

**Table 3**  
**Calculation Results of Pre-test Testing with t-test**

No	Group	N	Average	$T_{test}$	$T_{table\alpha 0,05}$	decision
1	Experiment	20	66,8	2,613	2,08387	Acceptance
2	Control	20	62,2			H0

Judging from the table above for the real level  $\alpha = 0.05$  (5%) with a df of 22 is = 2.08387. Thus, it can be seen that at the real level  $\alpha = 0.05$  (5%), t count is smaller than t table ( $0.6215 < 2.08387$ ). So it can be concluded that there is no significant difference between cognitive development and butterfly metamorphosis science playing activities in the experimental class and control in the pre-test scores.

**Table 4**  
**Calculation Results of the Liliefors Post-test Test for the Experiment Group and the Control Group**

No	Group	N	$\alpha$	L0	Lt	Explanation
1	Experiment	20	0,05	0,1 67	0,2 42	Normal
2	Control	20	0,05	0,1 68	0,2 42	Normal

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Based on the table above, it can be seen that the experimental group's value of L count 0.167 is smaller than L table 0.242 for  $\alpha$  0.05. Thus the value of the experimental class comes from data that is normally distributed. For the control class, it is obtained that Lhitung 0.168 is smaller than L-table 0.242 for  $\alpha$  0.05. This means that the control class data comes from data that is normally distributed.

### **Conclusion**

Based on the results of data analysis that has been carried out, it can be concluded that the results of research conducted at RA. Masyithah 5 Karanganyar Paiton in cognitive development by playing the science of butterfly metamorphosis using serial image media, namely children in the experimental class (B1) are higher than with the control class (B2), namely (82.2) for the experimental class and (75.5) for the control class.

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