The Effect of Puppet Numbers Learning Media on Cognitive Ability in Recognizing The Numbers Symbol of 4-5 Years Old Children

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Abstrak. This study aims to determine the effect of puppet numbers learning media on the cognitive abilities of children in recognizing the number symbol. The type of research is a quasi-experimental research. The research design used Post Test Only Control Group Design. The study population was a child of group A in second semester TK PGRI Tangleg Winong Academic Year 2017/2018 totaling 50 children. Data was collected using an observation sheet. The data obtained were analyzed using descriptive and inferential statistical analysis techniques, namely t-test. The results of data analysis using t-test, it is known t_count = 15.37 and t_table, with a significance level of 5% = 0.2021. The results of these calculations show that t_count > t_table, so the results of the study are significant. The average M% in the experimental group was 88%, in the high category and in the control group 66% in the low category. These results prove that there is a significant influence on the implementation of puppet numbers learning media on cognitive abilities in recognizing the numbers symbol. Then it has a positive effect on classroom learning.

Key Words: puppet numbers learning media, cognitive, numbers

1. Introduction

According to Act No. 20 of 2003 section 1 on the National Education System states that education is a conscious and planned effort to realize a learning atmosphere and learning process so that student actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character and skills needed by him. Society, nation and state are universal aspects that always and must exist in human life, so education to shape character cannot only be done in formal schools, but will get maximum results if given from an early age.

Early childhood education or PAUD is education aimed at early childhood in the age range 0-6 years under an educational institution that aims to develop the potential of early childhood, so that children develop in accordance with developmental achievements. Therefore, educators are required to be able and willing to provide various stimulations in accordance with the child's intelligence potential. Stimulation is based on the belief that every child has a variety of intelligence that needs to be developed.

Education provided by children from an early age will affect further life of the child. The need of proper stimulation that can support the growth and development of six aspects of development must be developed. These six aspects consist of moral and religious development, motoric physical development, language development, cognitive development, emotional social development and children's artistic development. Children are the next generation, so that they must be prepared early so that they have the ability, character and concern for the development of their nation and country. Ability, character and concern for the environment can be instilled since pre-school age.

Development is a cumulative process, which means that previous developments will be the basis for further development. Therefore, if there is a problem in the previous development then the next development tends to
experience obstacles. Early childhood is at a golden age throughout human development. Early age is a critical period. Critical period is a time when individuals get stimulation, treatment or environmental influences at the right time, if both stimulation by a child will have a good impact on the child's development as well as on the contrary, Reber (Mutiah, 2010). In this sensitive period there is maturation of physical and psychological functions so that children are ready to respond and realize all developmental tasks that are expected to emerge in daily behavior patterns.

One of the most important aspects that children need to develop is aspects of cognitive development. Five aspects of development in early childhood will develop based on children's cognitive abilities. According to research conducted by Osborn and Bloon (Mutiah, 2010) stated that from birth to 8 years old children experience brain development up to 80%. If this period is not used maximally by adults around the child, then the development of brain cells will be in vain because unused brain cells will die automatically. But if the brain cells in children are growing with stimulation given by adults around the child, the child will be more intelligent. This proves that cognitive development in children is very important to be developed from an early age.

Cognitive development is a process of thinking that is an individual's ability to connect, assess, and consider an event. Besides, Gardner (Susanto, 2011: 47) states that cognitive as the ability to solve problems. So cognitive development is the ability of children to solve problems they experience through reasoning using cognitive. To train children's cognitive abilities the need for stimulation through concrete objects. Piaget (in Santrock, 2007: 252) states that children's thinking is symbolic, egocentric and animistic. Children learn through concrete objects that are around them, including the movements of grabbing, grasping, waving, and writing. With a child's mindset that is concrete, in the learning process the need for real media so that learning becomes meaningful.

From the observations there are several problems experienced related to children's cognitive development including: (1) children have not been able to understand the concept of numbers and symbol numbers, children do not understand the concept of color, shape, size and children have not been able to recognize geometric shapes. (2) Lack of real-form learning media that can be seen, touched and felt by children. (3) The use of learning models that are less effective by applying the lecture method, so that children are easily bored and difficult to focus on learning activities. (4) Learning systems often use LKA worksheets and are given according to the learning theme. This causes children to lack understanding about the basic concepts of the material presented in learning activities, one of which is about basic mathematical concepts related to the introduction of number concepts for early childhood.

Learning activities must be packaged into real examples or objects so that children are easier to understand, considering the current development of children is at a concrete time. This makes children understand the concept of numbers taught through exploring, observing and practice when learning activities take place. The use of appropriate and varied media will be used as a motivational tool in teaching and learning activities in schools. A learning process will not work in accordance with the learning objectives without the right learning model used by the teacher.

A learning goal cannot be achieved maximally without planning a learning strategy and using the right learning model. Rusman (2010: 133) states "Model is a general pattern of learning behavior to achieve the expected learning goals". In the learning process, the role of the model is important in providing child protection related to the material provided.

In addition, Joyce and Weil (2010: 133) stated that "Learning models are a plan that can be used to shape the curriculum, design learning materials and guide classroom learning". Models have an important role in the learning process. Here, the model plays a role as a means that greatly supports the achievement of learning goals.

From this theory, it can be concluded that the learning model is a choice pattern which means that the teacher can choose an efficient learning model with learning objectives. Selection of the right learning models and media will greatly affect the success of achieving the expected learning goals.
Learning media of puppet numbers is one of the learning media that is very close to the world of children, this is seen from the mindset of children that children learn from concrete things to things that are abstract. Jhonson (in Rusman, 2010: 187) says that "contextual learning is a system that stimulates the brain to compose patterns that embody meaning". Furthermore, Elaine (in Rusman, 2010: 187) states "Contextual learning is a learning system that matches the brain that produces meaning by connecting academic content with the context of everyday life". Learning media for puppet numbers is a learning medium made from modified used cardboard boxes like shadow puppet. The numbers are 1 to 9 in large enough sizes that are given legs and hands.

This puppet numbers learning media can help early childhood easier to recognize and remember the numbers 1-9. In linking learning material with real conditions on the field the teacher can use illustrations such as media, related learning resources that have a relationship in reality so that the learning process will be more interesting and meaningful for children (Rusman, 2010: 187).

Knowledge will be gained from people around the child. So that there is social interaction and effort to help each other in certain groups. Modeling is a learning process by displaying something as an example that can be copied by a child. Modeling can be done by the teacher as a model or the child himself who is considered capable of the guidance of the teacher. Modeling can also be done using a real model according to its function.

2 Method

This type of research is a quasi-experimental research because not all variables and experimental conditions can be regulated and controlled strictly (full randomize). This is because the research sample is distributed in intact classes and it is not possible to control the other variables as a whole other than the variables studied. In this study, the thing that will be tested effectively is the influence of puppet numbers learning media on cognitive abilities in recognizing the number symbol.

This research was carried out in TK PGRI Tanggel Winong, along the second semester of the Academic Year 2017/2018. This study uses the Post Test Only Control Group Design. This design was chosen because experiments did not allow changing existing classes. The group treated was called the experimental group, while the untreated group was called the control group (Sugiyono, 2012). Agung (2014: 69), states "Population is the whole object in a study. In this study, the population is defined as the number or unity of individuals who have some similarities in characteristics. The population in this study were all students of group B TK PGRI Tanggel Winong. The total number of classes is 2 groups. The sampling technique in this study uses total sampling technique. Total sampling is a sampling technique where the number of samples is the same as the population (Sugiyono, 2012). After a match test, the entire population is equal, so to determine the experimental group and the control group the two groups are drawn. The draw results found the experimental group was group B-1 and the control group was B-2.

Data collection in this study uses the observation method. Observation is a method of data collection that is used to collect research data by observation. This observation is carried out by observing ongoing activities using observation guidelines.

The measurement scale is an agreement that is used as a reference to determine the length of the short interval in the measuring instrument, so that the measuring instrument when used in the measurement will produce quantitative data. The research instrument is made in the form of a checklist. Before the observation sheet can be used, an instrument trial is conducted which consists of 1) content validity test using the Gregory formula (in Candiasa, 2011, 2) Test Validity of Instrument’s point used product moment correlation techniques and Instrument Reliability Test calculated by the formula Alpha- Cronbach.
Data analysis conducted in this study consisted of data processing activities and statistical analysis. Data analysis in this study was carried out in 3 stages: analysis of description data carried out by searching for mean, median mode and PAP 5 scale, analysis prerequisite test consisting of normality test with Liliefor test analysis, variance homogeneity test with F-test, and hypothesis testing using t-test analysis.

3 Results and Discussion

The results of the data analysis prove that there are significant differences in cognitive abilities in recognizing the number symbol between children who take part in learning using puppet numbers learning media with children who do not participate in learning using puppet numbers learning media. This is shown by the results of data analysis using the t-test, it is known that tcount = 15.37 and ttable with a significance level of 5% = 0.2021, the results of these calculations indicate that tcount is greater than ttable (tcount> ttable), so the results of the study are significant. This means, there are significant differences in cognitive abilities in recognizing the symbol of numbers between groups of children who learn to use puppet numbers learning media and groups of children who learn not to use puppet numbers learning media in groups of children B Semester II Academic Year 2017/2018 at TK PGRI Winong Tanggel .

The difference is seen from the average score of cognitive abilities in recognizing numbers on the experimental group and control group. Based on the description of the research data, the group of children who study with the puppet numbers learning media have the results of cognitive abilities to recognize the symbol of numbers higher than the group of children who learn without puppet numbers media. This review is based on the average score of cognitive abilities in recognizing the symbol of numbers in children. The average score of the results of the development of children who learn through puppet learning media is 88% in the high category and the average score of cognitive abilities in recognizing the symbol of the number of children who study without contextual learning model is 66% in the low category. If the scores in the experimental group depicted on the polygon chart, it appears that the curve of the data distribution is a negative squint which means that most of the scores of children tend to be high. This is inverse to the control group, if it is depicted in a polygon graph it appears that curve distribution of data is a positive squint which means that most of the scores of children in the control group tend to be low.

The findings of this study indicate that learning in children in group B in TK PGRI Tanggel Winong with puppet numbers media have a significant influence on cognitive abilities in recognizing the symbol of numbers in children. By using puppet numbers learning media the acquisition scores on children have a high tendency, this is due to several advantages over the puppet numbers learning media compared to the learning media in the control group.

There are three important things in learning by using puppet numbers. First, puppet numbers learning media emphasizes the process of involving children to find material. That is, the learning process is oriented directly to the experience process. The learning process in the context of contextual learning does not expect that children only receive lessons, but the priority is the process of finding and discovering their own subject matter. Secondly, puppet numbers learning media encourages children to find relationships between the material learned and real life situations. That is, children are required to be able to get the relationship between learning experiences in school and real life. This is very important because by being able to correlate the material found with real life, the material learned will be functionally meaningful and embedded in the memory of the child so that it will not be easily forgotten. Third, contextual learning encourages children to be able to apply their knowledge in life. That is, learning by using puppet numbers does not only expect children to understand the material they are learning, but how the material can be remembered and understood by children. Study material in the context of learning using puppet numbers media is not to be stacked in the brain and then forgotten, but as a provision for those in real life.

Puppet numbers learning media provides a real learning experience to children so that children are able to explore their own knowledge, can educate children to be more confident in their ability to find answers to every question that arises from themselves. The application of the learning model with puppet numbers media received a positive response from children when the learning process took place. When learning by using puppet numbers takes place, children no longer become recipients of passive information as listeners. However, children become more active, creative, able to interact with friends, are able to work together, children can find out their own knowledge by exploring. This is in accordance with the theory from Elaine (Rusmawan, 2010: 193-199) in which contextual learning models have principles in their application including (1) constructivism, children are able to explore, build and obtain their own knowledge through observation and direct experience, (2 ) inquiry, children learn to find their
own knowledge so that children have higher self-confidence, (3) questioning, children always want to ask questions and have a higher curiosity, (4) learning community, children learn to cooperate in solving problems they face and learning to socialize with friends, (5) modeling, where in the learning process there is a model as a learning material or topic, (6) reflection where there is reflection at the end of each meeting so that it strengthens the child's memory of what has been learned and (7) authentic assessment, the assessments based on the learning process that occur rather than results.

The development of children's cognitive abilities based on Piaget (in Santrock, 2007: 245-259) states that early childhood is at the stage of concrete pre-operational cognitive development where children learn from concrete things to things that are abstract, have high egocentricity and think symbolically. Based on these opinions, researchers formulated learning activities that were not separated from the characteristics of the developmental stages of children aged 5-6 years. The selection of media and activities provided is adjusted to the principle of applying contextual learning models. To improve cognitive abilities in recognizing number symbols through contextual learning models are provided using puppet numbers which are enthusiastically welcomed by children. The selection of these activities is adjusted based on the opinions expressed by Muchtar (in Purnamasari, 2013), related to how to introduce the number concept through counting objects, games, question and answer, and simple assignments through LKA. Based on the discussion above, it can be interpreted that learning using puppet numbers learning media has a significant influence on cognitive ability in recognizing the symbol of numbers in children in group B of the second semester of the academic year 2017/2018 in the TK PGRI Tanggel Winong.

4 Conclusions And Suggestions

The conclusions that can be conveyed after carrying out the research is the difference in the results of cognitive abilities in recognizing the number symbol seen from the average score of the results of data analysis. The results is the average cognitive ability score results in recognizing the number symbol in the experimental group of children who follow the contextual learning model with M% = 88%. If the scores in the experimental group depicted on the polygon chart it appears that the curve of the distribution of data is a negative squint which means that most of the scores of children tend to be high. The average acquisition of cognitive ability scores in recognizing number symbols in the control group of children who learn without using puppet numbers learning media with M% = 66%. If it is depicted on a polygon graph it appears that the curve of data distribution is a positive squint which means that most of the scores of children in the control group tend to be low.

It is seen from the calculation of hypo-thesis, the results of the data analysis were found using the t-test, it was found that $t_{\text{arr}} = 15.37$ and $t_{\text{tab}}$, with a significance level of $5\% = 0.2021$. The results of these calculations show that $t_{\text{arr}}$ is greater than $t_{\text{tab}}$ ($t_{\text{arr}} > t_{\text{tab}}$), so the results of the study are significant. This proves that there are significant differences in the results of cognitive development in recognizing the symbol of numbers between groups of children who learn to join a contextual learning model with groups of children who study without puppet numbers in the children of group B Semester II at the TK PGRI Tanggel Winong.

Based on the results of the conclusions of the study, it can be suggested that the Head of Kindergarten motivates teachers to take policies in the use of innovative learning media in the learning process in kindergarten such as puppet numbers learning media in improving the cognitive abilities of children in recognizing the number symbol. For teachers to be able to optimize learning activities in the classroom by applying puppet numbers learning media so that learning’s quality is better in terms of process so that it has a positive effect on every aspect of early childhood development. At other researchers who are interested in doing further research on puppet numbers learning media for the development of cognitive abilities in recognizing numerical symbols and other developments in order to use the results of this study as a comparison or consideration for improvement and refinement of research to be carried out in kindergartens or other institutes.

Referensi
