The Influence Of Block Medium Usage Toward The Logical Mathematical Ability Of Children In Kindergarten.

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Abstract: The background of this research is the phenomenon which is found in the real life that children understanding to math is still abstract. There is assumption that study math is hard. The problem of this research is how the media usage influence the mathematical logic ability of children in kindergarten. This research is conducted by using the experimental quasi method with the sample are children of group B in Juwita Kindergarten. The group devided into two, group B-1 as control class and group B-2 as experimental group. Based on the data analysis, the result of post test then was tested by normalitas test and Mann-Whitney test with assumption the data which is not distributed normally had a significant value 0,000. That significant value is lesser than 0,05 therefore Ho is rejected. It means that there is significant difference in math logic ability between the children who study math using block medium and the children who do not using the medium. This research is recommended for (1) kindergarten teacher to understand and increase the knowledge particularly in utilising media, chosing method, increasing the quality of study and facilitating the student's learning in kindergarten; (2) Manager of teacher education program for education of young children programs as a suggestion either the material or substance to formulate the learning material which had an effect on learning quality; (3) the researcher then make a contribution in increasing the knowledge about the benefit of using block as medium learning due to learning quality which integreated with another learning field in kindergarten.

Index Terms: Influence , Block Medium, Mathematical , Math Logic. Ability, Children, Kindergarten

1 INTRODUCTION

Young children education is a development way of children since born until 6 age which performed by giving stimulation to support spiritual and physical growth and development, in order that children ready to enter the next education stage. The purpose of this program is to facilitate children growth and developent in a whole. As a part of early childhood education, learning activities in kindergarten involving all aspects of development is conducted integrately or cohesively. The activities consist of learning substance which appropriate with children's interest and ability. A variety of children's new abilities and intelligences such as read, write, and arithmetic will give an opportunities to the children to undrestand their environment, they recognize something in line with their development stage. Based on the pre-test in Juwita Kindergarten, it is found an opinion that study math is hard, teacher's understanding about math logic is still low. Teacher's role in learning process is not communicative enough with the children, and children's understanding about math logic is still abstract. There are teachers who do not maximize learning medium, they use it only for game, in fact, besides a toy, block can be used in math logic learning such as introducing geometric shapes, pattern, colours, number, and to create building or everything what children imagine. Block can be used in learning activity such as recognizing colour, making pattern, classifying, ordering and constructing many shapes. By virtue of those description it can be concluded that block is predicted to be useful as a medium to increase math logic learning in kindergarten student. If math is important for human life, then of course the learning and the stimulation should be given early on. When a child is in range of early childhood, it means that he/she is in the golden age of their life. In that age, the children's potential is in the peak of growth and development. In that time, they have a multiple intellegences, one of them is logical mathematical intellegences such as a set of abilities to know shapes, colours, things, classify shapes and things, size, recount and make pattern. The study strengthen the early experts opinion about the existence of the golden age in the early childhood. This age comes only once in a lifetime and never repeated, so do not ever waste it away. Thus, the researcher intends to conduct a research entitled The Influence of Block Medium Usage toward The Logical Mathematical Ability of Children in Kindergarten.

2 THEORETICAL FRAMEWORK

Stated that early childhood education is based on a number of methodical didactic consideration the aim of which is provide opportunities for development of children personality. Therefore, early childhood education particularly kindergarten is necessary to provide varieties of activities in developing all of growth aspects involve cognitive, language, social, emotional, independence, and motoric aspects[1]. The academic abilities mentioned above are amendable with a fun method, such as playing, story telling, and singing. The application of those methods will be interesting if supported by some relevant learning medium such as block, flash card, maze, and puzzle [2]. Block is constructive game equipment which made from wood or plastic with interesting colour (such as red, yellow, greenm bluem and white) and with a vary of shapes (such as triangle, cube, rectangle, cylindric, and round)[3]. The children learning is teaching math to the children in early on by using a medium and method which appropriate with the age. If the children learn math in simple way, consistent in condusive atmosphere and fun, then the right side brain will be trained to growth and the children can enjoy to study math [4]. The only key in teaching math which is fun for children is by patience, creativity and teachers ability to choose the medium and method and building study ambience. Teachers who teach math in happy way, imaginative and give a support will be better than the teacher who shows intellectual act and seldom give approbation or appreciation in the children's learning process[5]. Children in the age of kindergarten (4-6 years old) are in the time of golden age. The children sensitively accept many efforts of their growth potential, and also in this age occurs the maturity of physical and psychological functions, ready to response the stimulation from the environment. In this age is the time to put the first foundation in developing the abilities of physical, cognitive, language, social, emotional, self-concept, dicipline,

independence, arts, moral, and religion values. Therefore, the children need appropriate condition and stimulation in order to reach the optimal growth and development [6]. While, the result of study in neurology set forth that intellectual development has reached 50% when child is 4 years old, increasing as much 30% in 8 years old and reached 100% when they are 18 years old [7].

3 RESEARCH METHODOLOGY

This research uses experimental quasi method. This method is conducted to know what will be in a group of subject which is given a treatment over a particular period. This research involves two groups of sample, the first as an experimental group and the second as a control group. The experimental group will be treated by using block medium while the control group is not given any treatment. The use of quasi method is appropriate in this research because this research aims to get the information about the influence of the use block medium to the logical mathematical ability particularly to the children in kindergarten age (4-5 years old). The design of this research is as follow:

Treatment group 0 X 0

Control group 0 0
Information :
0 and 0 = Pre-test or posttest
X = Science learning using block medium

4 FINDINGS AND DISCUSSION

4.1 Data Analysis

Data analysis is needed to process the data in order to answer the research problem. This data analysis aims to kown the influence of the use block medium to the logical mathematical ability of the children in kindergarten. The data which obtain from the result of the research will be given a score using likert scale 1 for the minimum score and 4 for the maximum score. The total score is resulted from sum up the process score and result score, pre-test and posttest score is calculated using average difference test to see whether there is a significant difference or not between two average. This research uses inferential statistic. The quantitative method involves normality test, homogeinity test, and two averages difference test. In calculating the statistical data, the researcher using SPSS 17.0 application for Windows and Microsoft Excel 2007. The result of pre-test from experimental group and control group are 5 for the lowest score and 10 for the highest score. The mean for the experimental group is 6,29 and for the control group is 6,26 while the median is 5,00 and 6,00. Standard deviation which is obtained from experimental group and control group are not too far which is 2,02 and 1,72, with variance is 4,049 and 2,98. The description can be seen in the table below:

Pre-test Statistic Score
Experimental Group and Control Group

Statistic Description							
Pre-test score	N	Min	Max	Mean	Median	Std. Deviatio	Variance
Experimental group	17	5	10	6,29	5,00	2,02	4,09
Control group	19	5	10	6,26	6,00	1,72	2,98

Based on the table above, there is a difference median in significant amount between experimental group and control group.

Postest Statistic Score
Experimental Group and Control Group

Statistic Description							
Posttest Score	N	Min	Max	Mean	Median	Std. Deviation	Variance
Experimental group	17	14	20	17,64	18.00	2,08	4,36
Control group	19	6	17	10,73	10,00	3,08	9,53

Based on the table above, there is a difference mean in the significant amount between experimental group and control group

4.2 Normality Test

In this test, the data which is tested is the pre-test data of experimental group, the pre-test data of control group and post-test data of control group. To obtain the normality score, the researcher used lilifors test, this is related to the sample numbers in this research which can be categorized as a small data. The result process of normality test of the pre-test and posttest from experimental group and control group is described as follow:

Group		Kolmogorov-Smirnov[a]		
		Statistic	Df	Sig
Pre-test	Experimental	.386	17	.000
	Control	.297	19	.000

Group		Kolmogorov-Smirnov[a]		
		Statistic	Df	Sig
Post-test	Experimental	.214	17	.037
	Control	.121	19	.200

Based on the test using Kolmogorov-Smirnov test, the result of normality test from experimental group and control group is the value of significancy experimental group 0,000. Therefore with that value the Ho is rejected, because the significancy value of experimental group is lesser than standard significancy value 5% (0,05). This result shows that pre-test data of experimental group originated from abnormal distributed data. The significancy value in control group is 0,000, therefore Ho is rejected because the significancy value of control group is lesser than standard significancy value 5% (0,05). This result shows that pre-test data of control group originated from abnormal distributed data. Thus the test of two average is conducted by non-parametric using Mann Whitney test considering the sample are from the two free samples.

4.3 Two Average Difference

The result of two average difference test from the pre-test of experimental group and control group is described as follow:

	Pre-test
Mann-Whitney	146.000
Wilcoxon W	299.000
Z	-.542
Asymp.Sig.(2-tailed)	.588

Based on the table, by using Mann-Whitney test, the result of two average difference test from the pre-test of experimental group

and control group are the significancy value of experimental group is 0,588. Therefore the Ho is accepted because the significancy value of experimental group is higher than standard siginificancy value as much 5% (0,05). The result shows that there is not significant difference between the group which using block medium and the one who do not toward the logical mathematical ability of children in kindergarten age.

4.4 Homogeneity Test

Homogeneity test according to Ruseffendi (Lestari, 2011) is a test concerning the similarity and difference of variances between two distribution or more. In this research, the homogeneity test is conducted by Fmaximum test. Based on the result of Homogeneity of variance which become the reference to decide whether the data is homgene or not can be seen from the significancy on Level Test. The data is said to be homogene if sig ≥ 0,05 on the contrary the data is not homogene if sig < 0,05. If the data is distributed homogene, then the data continue to the next test using t test formulation. Whereas the data is not homogene, then the test using t' test formulation.

4.5 Two average difference test

The test of average difference is used for the value of pre-test, post-test and gain. This test purpose is to know is there a difference average in significant amount between experimental group and control group. If the data is distributed normally and homogene then the data will be tested by parametric test and the two average difference test using t (t-test) of two samples. Whereas the data is not distributed normally, then the data will be tested by non-parametric test and Mann-Whitney test if the data from two independent samples from one or two populations, in other way the Wilcoxon test will be conducted if the data is from the sample which interrealted or dependent.

4.6 Result

After doing anlaysis toward the pre-test of experimental group and control group, it is found that in experimental group the pre-test average score is 6,29 and in control group is 6,26, thus the difference between them is 0,03. Nevertheless, it can not be assumed that the experimental group and control group have a difference. The data then should be continued to the next test, which is two average difference test either by parametric test or non parametric test with the standard of significancy is 0,05. Before doing the two average difference test, the normality test and homogeinity test should be conducted first. After doing a normality test, the significancy value in exxperimental group is 0,000 and in control group is 0,000. Because of the two groups are not distributed normally, so the two average difference test is conducted using nonparametric of Mann-Whitney test to see the difference from the two independent samples. In Mann-Whitney test there is a signficancy value of 0,588. Based on the result of two average difference test with Mann-Whitney test in the score of pre-test, the difference is 0,588 > 0,05. It can be conclude that there is no difference signicant increasing of logical mathematical ability between the children who learning science by using block medium and the other who do not use block medium. After doing a treatment in the experimental group and control group, then in experimental group results average score of 17,64 and in control group results average score of 10,73. The difference average between them is 6,91. In normality test, the result of experimental group is 0,037 and in control group is 0,200. Based on those result, there is a group which is not distributed normallly, therefore the test continue to non-parametric test using Mann-Whitney test because the data is from independent sample. Based on the Mann-Whitney test, the result is significancy value of 0,000. According to that calculation, it can be conclude that there is a difference ability in learning logical math by using block medium than learning logical math without block medium.

5 Conclusion

According to the result and analysis of this research, it can be concluded that there is a difference ability between learning logical math by using block medium and learning logical math without block medium. This can be seen from the result of the test which shows that the children in experimental group got a significant average difference value than the children in control group. The logical math ability by using block medium is better than do not use block medium. In statistic, the average value of experimental group is 17,64 while the control group is 10,73. Therefore, the average difference between experimental group and control group is 6,91. Based on the Mann-Whitney test, the result is significancy value of 0,000. This significant value is lesser than 0,05, thus based on the criteria of hypotesis decision rule, Ho is rejected. In other words, the average population of two groups in posttest is difference.

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