The Effect of Gardening Project Activities on Children's Science Ability of 5-6 at Aisyiyah II Kindergarten Sukajadi

Swandra Rahayu
Early Childhood Education Program
Faculty of Science Education
Universitas Negeri Padang, Indonesia
Swandra160592@gmail.com

Farida Mayar
Early Childhood Education Program
Faculty of Science Education
Universitas Negeri Padang, Indonesia
mayarfarida@gmail.com

Dadan Suryana
Early Childhood Education Program
Faculty of Science Education
Universitas Negeri Padang, Indonesia
Dadan.suryana@yahoo.com

Abstract—**The purpose of this study was to find out how much influence gardening project activities have on the scientific ability of children beginning 5-6 years of age at Aisyiyah II kindergarten, Sukajadi District, Pekanbaru. This study uses a quantitative approach and this type of research is an experiment. The sample in this study were all children aged 5-6 years in Kindergarten Aisyiyah, Sukajadi District, Pekanbaru, which is in local B, amounting to 30 children. The results of the study, before the experiment, first carried out the pretest in the form of filling in the observation sheet against the children's scientific abilities. From the pretest results obtained a value of 592 and a value of 49.3%. After carrying out experiments with gardening project activities, then carrying out the posttest in the form of filling out the observation sheet on the children's scientific abilities at the beginning of the child. From the results of the posttest it was obtained a value of 981 and an average of 81.8. Concluded that there is a significant difference in the ability of children to begin before and after treatment and there are effects of gardening project activities on the scientific ability of children beginning 5-6 years of age in Aisyiyah II Kindergarten, Sukajadi District, Pekanbaru.**

Keywords— *gardening project activities; the science of early childhood*

I. INTRODUCTION

Early childhood is a period of humanity that is unique that needs to be noticed by adults, unique early childhood in their potential and services so that every potential can be the foundation in following the next stage of development [1]. Early age is an age that is very important to do with the cultivation of moral values, culture and other values [2]. Early childhood has different characteristics from adults, because early childhood grows and develops in different ways (Mahyuddin Nenny, Yarmis Syukur, 2016)

According to Mulyasa in [3] early age is a sensitive period as well as a critical period of influences that exist in their environment. 50% of one's learning ability is determined at the age (0-4) of the first year which is also called the golden age. 30% developed the following year, namely at the age of (4-8) years. The remaining 20% develops at the age of (8-18) years. The ideal of educators, both teachers and parents, is not to waste this golden opportunity. Sensitive period and critical period at an early age should be used as well as possible to optimize children's abilities. The role of parents and teachers in developing abilities and aspects of child development is very large [4]

Early childhood education is a coaching effort aimed at children from birth to the age of six years, this is done through the help of educational stimuli to help growth and physical and spiritual development, so that children have readiness in better education. Education in Kindergarten was developed based on learning theories that used scientific procedures and strategies for learning, which were supported using learning methods. Learning methods that can be applied in kindergarten are suitable methods for learning early childhood. Aspects of early childhood development at kindergarten institutions are very spacious and it can be achieved with a diverse approach. One of them is through the teaching of science. Learning science is indispensable for early childhood for learning science through the study to observe the dig question did trials or experiments, predict and skills to solve the problem. Preparation ability and creativity to be able to facilitate and find productive ways to boost recognition and mastery of science in early childhood, creative ability will result in something positive for science lessons. The ability of science beginning of the process in early childhood, among others, the ability to observe, classify, draw conclusions, communicating, and applying science based on the experience gained. Science can encourage children to think critically, because the science of children not simply accept or reject anything.

Ability beginning science involves affective and psychomotor aspects of knowledge, so as to understand the concept of knowledge acquired through the process of thinking by having the skills of scientific attitude. This understanding helpful for children to solve problems in everyday life, and can respond to critical development of science[5]. Starters scientific cognition associated with various experiments or demonstrations as an approach scientifically or logically but still taking into account the thinking stages of early childhood. Starters were developed science capability in early childhood, among others: exploring the various objects that are nearby, holding a variety of simple experiments, communicate what has been observed and studied [6].

The learning objectives of science in early childhood, among others, namely: Helping foster interest in getting to know and learn about objects and events in the surrounding environment, Helping to understand and be able to apply the concepts of science to explain natural phenomena and solve problems in everyday life. Help to be able to recognize and foster a sense of love for the nature around so aware of the majesty of God Almighty [7]. One way to improve the ability of science Starters are 5-6 years old children with gardening project activities [6].

argues that the project method one way of giving a learning experience by bringing together children with everyday problems to be solved in groups [8] Methods of this project comes from the idea of John Dewey on the concept of "learning by doing" the process of obtaining the result of learning by doing certain acts in accordance with its objectives, mainly on the process of mastery children how to do any work that consists of a series of actions to achieve the goal, including climbing stairs, folded the paper, put on a shoe string, weaving, establish animal models or building, and so on. Steps of the Project Method [9] suggest steps in learning by using the project method are as follows: a. The teacher determines the theme based on competency standards that must be achieved. b. The teacher associates themes that are determined by other subjects. c. The teacher explains the relevance of the theme to be achieved with other subjects. d. The teacher creates a graph to illustrate the theme links between lessons. e. The teacher determines the indicators that must be achieved with regard to the theme. f. The teacher explains the material according to the theme. g. The teacher asks questions about the theme. To facilitate children, teachers relate to themes subject to themes in other topics, teachers divide children into 3 groups.

For kindergarten children, the introduction of plants can be carried out either by way of gardening. learn gardening for children was nice dikarena activities are directly in contact with nature between Another activity is to create a pile of soil or make a small hole and then insert into the hole to plant seeds exposes shoots upward position after it closes the hole [10] Gardening activity allows them to get the full experience of the world around them, and learn about how plants grow and thrive can affect them and their future.

Based on observations and interviews conducted by the researchers to teachers in kindergarten Aisyiyah District of Sukajadi Pekanbaru show that science's ability Starters children are still low. It can be seen in the following table. Their children who have not been able to classify objects based on function, the majority of children who do not yet show the activity of explorative and probing for example: what happens when water is poured, the majority of children who have not been able to distinguish between high and low and the majority of children who do not know the cause as a result of the environment, such as the wind blows cause the leaves to move, there are still children who are not able to recognize the simple concept in everyday life, Most children are not able to complete the work group quickly and thoroughly.

The purpose of this research is "To know how much influence the activities of gardening projects in the ability of science beginning 5-6 years old children in kindergarten Aisyiyah Sukajadi District of Pekanbaru.

II. RESEARCH METHODS

This study uses a quantitative approach and the type of research is experimental. The place of this research is TK Aisyiyah II Subdistrict Sukajadi Pekanbaru. The sample in this study were all children aged 5-6 years in TK Aisyiyah II, Sukajadi Pekanbaru Subdistrict, which were in local B numbering 30 children. The research design used was One Group Pretest Posttest Design. According to [11] in this design one group of subjects was used. First the measurements are taken, then subject to treatment for a certain period of time.

Data collection techniques used in this study were using questionnaires and observations. To analyze the data, researchers used the SPSS for Windows version 16. The test for the data used was: Normality Test, Homogeneity Test, Linearity Test, and Hypothesis Test.

III. RESEARCH RESULT

A. Data Description

1) Prior Gardening Project Activities (pretest)

To get an idea of the ability of science beginning in kindergarten Aisyiyah Sukajadi District of Pekanbaru, conducted before and after the activities of gardening projects. For the study used observational data collection which is based on ten indicators with four criteria, namely BB = Not Growing, Evolving MB = Start, BSH = Developing accordance Hope and BSB = Developing Very Good. The data of this study are presented in two groups: observation data from before and after treatment were 30 samples that have been established to obtain research data.

TABLE I. BEGINNING SCIENCE CAPABILITY DATA DISTRIBUTION TABLE BEFORE GARDENING PROJECT ACTIVITIES (PRETEST)

No	Category	Score	Frequency	Percentage %
1	BSB	34 - 40	0	0,00
2	BSH	26 - 33	1	3,33
3	MB	19 - 25	18	60,00
4	BB	10 - 18	11	36, 67
	Total		30	100

From the table above it can be concluded that the ability of science starters before the gardening project activities (pretest) belonging to begin developing (MB).

2) After Gardening Project Activities (posttest)

To determine the output of the project after being given treatment can be seen in the table below.

TABLE II. BEGINNING SCIENCE CAPABILITY DATA DISTRIBUTION TABLE AFTER GARDENING PROJECT ACTIVITIES (POSTTEST)

No	Category	Score	Frequency	Percentage %
1	BSB	34 - 40	14	46,67
2	BSH	26 - 33	16	53,33
3	MB	19 - 25	0	0,00
4	BB	10 - 18	0	0,00
	Total		30	100

Based on the above table it can be concluded that the ability of science beginning after gardening project activities (posttest) developed very well classified (BSB).

3) Comparison Before (pretest) and after (posttest)

Comparison before and after gardening project activities in the ability of science beginning in Aisyiyah II kindergarten District Sukajadi Pekanbaru, can be seen in the following table:

TABLE III. COMPARISON OF INITIAL SCIENCE CAPABILITIES BEFORE AND AFTER GARDENING PROJECT ACTIVITIES (POSTTEST)

No	category	Score	Pretest		Postest	
			F	%	F	%
1	BSB	34 - 40	0	0,00	14	46,67
2	BSH	26 - 33	1	3,33	16	53,33
3	MB	19 - 25	18	60,00	0	0,00
4	BB	10 - 18	11	36,67	0	0,00
			30	100	30	100

Based on table 4.3 above can be seen that most of the children who participated in the gardening project increased the ability of science there are starters who originally grown children with very good category (BSB), then increased be 14 children or 46.67% after being given treatment. While those in the category of developing according to expectations (BSH), which was originally only one child or 3.33% and then increased by a score of 16 children, or 53.33%, after being given treatment. Furthermore, in the category begins to develop (MB) prior to the execution of the treatment given initially only 18 children or 60% and then increased by no one

yet berkembangn obtain criteria (BB) before being given treatment initially only 11 children, or 36.67% and then increased after a given treatment

B. test assumptions

Analysis of the data used in this study is the correlation Product Moment by using SPSS 16.0 for Windows. Prior to test hypotheses then terleih must first test the basic assumptions as a prerequisite to be able to use the Product Moment Correlation test person as data analysis technique. Test the basic assumption that.

Normality test data. Normality can be used to determine a score sig. that of the person product moment count results. When the number sig. greater than or equal to 0.05, then the normal distribution, but if less, then the data is not normally distributed [12]. Normality test by using One-Sample KolmogorovSmirnov to determine whether the data were normally distributed population or not. Namely a significant level test p = 0.05 compared with the significant level compared with a sample size of 30 children. Normality Test gardening project activities influence the ability of the child beginning science, test was conducted on the basis of the One-Sample Kolmogorov-Smirnov as found in the table below:

TABLE IV. RESULTS OF TESTING THE NORMALITY OF THE ONE-SAMPLE KOLMOGOROV-SMIRNOV TEST.

		Pretest	Posttest
N		30	30
Normal Parameters[a]	Mean	19.73	32.70
	Std. Deviation	3.648	3.669
Most Extreme Differences	Absolute	.180	.110
	Positive	.180	.110
	Negative	-.079	-.105
Kolmogorov-Smirnov Z		.984	.603
Asymp. Sig. (2-tailed)		.287	.860
a. Test distribution is Normal.			

From the results of the above table shows the test results of normality increased ability of science starters child using gardening projects by using SPSS Windows for Ver.16 by Kolmogorov-Smirnov test with due regard to the numbers in the column before and after (sig) is 0.287 and 0.860 greater than = 0.05 (α = level of significance). It can be concluded that the dependent variable is derived from the data distributed population of normal and decent digunakansebagai research data.

Homogeneity test. Homogeneity test is intended to show that two or more groups of data samples come from populations having the same variance. In regression analysis, requirements analysis required the regression line for each grouping based on the dependent variable have the same variance. It is said to have the same variance / did not differ (homogeneous) if the level of significance that is ≥ 0.05 and if the significance level of <0.05 then the data inferred not have the same variance / Different (not homogeneous).

TABLE V. HOMOGENEITY TEST OF HOMOGENEITY OF VARIANCES

Pretest

Levene Statistic	df1	df2	Sig.
2.001	9	17	.104

From the test results using SPSS Window For Ver 17, .104 sig statistics obtained is substantially greater than 0.05 (0.104> 0.05), so we can conclude this research data is homogeneous.

Linearity test .The test aims to determine whether the data that we have in accordance with a linear line or not (whether the relationship between variables are going to be analyzed in a straight line or not). Linearity test in this study using SPSS Windows For Ver 17. To knowMore can be seen in the table below:

TABLE VI. LINEARITY TEST RESULTS TABLE ANOVA TABLE

			Sum of Squares	df	Mean Square	F	Sig.
PRETEST * POSTTEST	Between Groups	(Combined)	254.867	12	21.239	2.756	.028
		Linearity	71.113	1	71.113	9.228	.007
		Deviation from Linearity	183.753	11	16.705	2.168	.074
	Within Groups		131.000	17	7.706		
	Total		385.867	29			

In this test determined that the α of 5% (0.05). Based on output above table can be seen that: a. Sig. Linierity of 0.07. This shows that sig. Linierity <level of significance (α). b. Sig. Deviation from Linierity at 0.074. This shows that sig. Deviation from Linierity> significance level (α). Based on the above two statements can be concluded that the variable gardening project activities and the ability of science beginning the child has significant linear relationship.

Hypothesis testing. To determine the effect of the gardening project activities against child starters science capabilities, this research hypothesis is formulated as follows:
Ho: The ability of a child beginning science or lower after treatment together with the ability of science starters child before treatment
Ha: The ability of a child after treatment onset science is higher than

To find out how much influence the activities of gardening projects in the ability of science beginning 5-6 years old in Aisyiyah II kindergarten District Sukajadi Pekanbaru, Gain test is to look for the difference between the pretest and posttest. Gain score indicates the level of effectiveness of the treatment. To demonstrate the capability enhancement category recognize the ability of science after gardening project activities then tested Gain normalized (N-Gain). From the above it can be concluded that the activities of gardening projects has amounted to 63.98% influence on the ability of science beginning 5-6 years old children in Aisyiyah II kindergarten District Sukajadi Pekanbaru. This shows the value of 63.98% is included instrong category.

IV. DISCUSSION

Based on the results of research influence gardening project activities in the ability of science beginning 5-6 years old children in Aisyiyah II kindergarten District Sukajadi Pekanbaru, before carrying out a pretest beforehand experimental form filling observation form on the ability of science starters child. Pretest results obtained from a total value of 592 and a value of 49.3%. After carrying out the experiment with gardening project activities, then implement the next stage in the form of charging sheet posttest observations of the child's ability starters science.

Posttest results obtained from a total value of 981 and an average of 81.8%. Tests using the t-test test correlate the two parties. To make a decision whether the difference was significant or not, then the price of the t needs to be compared to the price table with dk t n-1 = 30-1 = 29. Based on the value of the t distribution table, when df 29 to test one party with an error level of 5%, then the price of t table = 1.699. When t fall off the reception area Ha, Ha stating the beginning of the science capabilities of children after treatment is higher than before the treatment received. Based on the calculation, the price fell 18.172 t count on acceptance or rejection Ha Ho. It can be concluded that there are significant differences starters science capabilities of children before and after treatment. Ha stating the beginning of the science capabilities of children after treatment is higher than before the treatment received. Based on the calculation, the price fell 18.172 t count on acceptance or rejection Ha Ho. It can be concluded that there are significant differences starters science capabilities of children before and after treatment. Ha stating the beginning of the science capabilities of children after treatment is higher than before the treatment received. Based on the calculation, the price fell 18.172 t count on acceptance or rejection Ha Ho. It can be concluded that there are significant differences starters science capabilities of children before and after treatment.

An increase is caused by the influence of the gardening project activities in the ability of science beginning 5-6 years old children in kindergarten right Aisyiyah II District Sukajadi Pekanbaru. Project method is one way of giving a learning experience to children. Son was faced with everyday issues that require children to perform various activities in accordance with the given project. The activity of the child to gain experience that would shape the behavior as an capabilities. (Djamarah ,Zain 2006: 83) argues that the project method is a way of presenting lessons that starts from a problem, and discussed from various aspects related to the overall solution and meaningful. Furthermore, [9] suggests that implementation of project methods in teaching the same methods that are applied to the teacher in the learning process, has advantages, namely: to establish the mindset of students who are knowledgeable and thorough with due regard to differences of students, provide opportunities for students to develop students in accordance with the interest, students can apply the knowledge, attitudes, and skills in an integrated manner.

Students gain direct experience through various activities and to foster cooperation among students in the group. One of the activities carried out activities suitable for in kindergarten in order to improve the ability of the child is the science of gardening. to establish a mindset of students knowledgeable and thorough with due regard to differences of students, provide opportunities for students to develop the students according to their interests, students can apply the knowledge, attitudes, and skills in an integrated manner. Students gain direct experience through various activities and to foster cooperation among students in the group. One of the activities carried out activities suitable for in kindergarten in order to improve the ability of the child is the science of gardening. to establish a mindset of students knowledgeable and thorough with due regard to differences of students, provide opportunities for students to develop the students according to their interests, students can apply the knowledge, attitudes, and skills in an integrated manner. Students gain direct experience through various activities and to foster cooperation among students in the group.

One of the activities carried out activities suitable for in kindergarten in order to improve the ability of the child is the science of gardening. Students gain direct experience through various activities and to foster cooperation among students in the group. One of the activities carried out activities suitable for in kindergarten in order to improve the ability of the child is the science of gardening. Students gain direct experience through various activities and to foster cooperation among students in the group. One of the activities carried out activities suitable for in kindergarten in order to improve the ability of the child is the science of gardening.

The introduction of plants for children of kindergarten can be done either by way of gardening. Children can recognize the type of plant based classification, the benefits for the environment and health, as well as the development process of growth and development of plants that they grow. This is because by nature a child can get to know a lot of things diverse, unique, and specific. Nature through a child can be introduced with creative patterns. From these results above show that the activity of gardening project activity provides a significant effect. So the research hypothesis which says that "there are significant gardening project activities in the ability of science beginning 5-6 years old children in kindergarten AisyRFiyah II District Sukajadi Pekanbaru, unacceptable.

V. CONCLUSION

Based on the results of data analysis and discussion in this study, conclusions can be taken as follows:

1. Scientific ability of the beginning of children aged 5-6 years in TK Aisyiyah II, Sukajadi District, Pekanbaru, before being given training in low-level gardening activities. Asked for the need for stimuli given to children to improve the scientific abilities of the child's beginning.

2. Scientific ability of the beginning of children aged 5-6 years in TK Aisyiyah II, Sukajadi District, Pekanbaru after being given training in improved and high-level gardening projects, so that it can be used for gardening project activities to help initiate children's science to be used before gardening project activities.

3. Gardening project activities have a positive influence of 63.98% on the ability of the ability to start children aged 5-6 years in TK Aisyiyah II, Sukajadi District, Pekanbaru

References

[1] D. Suryana, *Pendidikan Anak Usia Dini Teori dan Praktik Pembelajaran*. Padang: UNP Press Padang, 2013.

[2] Y. Rakimahwati, "UPAYA MENINGKATKAN PERKEMBANGAN MORAL ANAK USIA DINI MELALUI MENDONGENG DI TK DHARMAWANITA IMPROVING THE MORAL DEVELOPMENT OF EARLY AGE CHILDREN," vol. 7, no. 1, 2012.

[3] T. dkk Damayanti, "KOMPETENSI GURU DALAM PROSES PEMBELAJARAN INKLUSI PADA GURU SD NEGERI KOTA BANDUNG 1," *schema - J. Psychol. Res.*, pp. 79–88, 2017.

[4] F. Mayar, "Perkembangan sosial anak usia dini sebagai bibit untuk masa depan bangsa," *J. Al-Ta'lim*, vol. 1, no. 6, pp. 459–465, 2013.

[5] Sari, "Peningkatan Kemampuan Sains Permulaan Melalui Pendekatan Proyek," Universitas Negeri Padang, 2013.

[6] Novan Ardy, *Psikologi Perkembangan Anak Usia Dini*. Yogyakarta: Gayamedia, 2014.

[7] T. Tina, "Ilmu Sains Untuk Anak Usia Dini," 2016.

[8] Moeslichatoen, *Metode Pengajaran di TK*. Jakarta: Rineka Cipta, 2004.

[9] D. Werkanis, *Strategi Mengajar Dalam Melaksanakan Kurikulum Berbasis Komptetensi*. Pekanbaru: Sutra Benta Perkasa, 2005.

[10] W. Indayani, "Penerapan Metode Proyek dalam Meningkatkan Kecerdasan Naturalis melalui Pembelajaran Berkebun pada Anak Kelompok B1 PAUD Dharma WanitaPersatuan Provinsi Bengkulu," Universita Bengkulu, 2015.

[11] Suryabrata, *Metode Penelitian*. Jakarta: Universitas Gaja Mada, 2006.

[12] Anwar, *Penyusunan Skala Psikologi*. Yogyakarta: Pustaka Pelajar, 2013.