Abna Journal of Islamic Early Childhood Education
p-ISSN: 27749533 | e-ISSN : 27760731, hal. 11-20
Vol. 3, No. 1, Juni 2022
DOI :

The Effect of Using Project Methods and Lecture Methods on Early Childhood Science Knowledge in Nurul Iman Islamic Kindergarten Karanganyar Academic Year 2020/2021

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Abstract

The problem in this study is the ability to recognize color mixing in children is still low. The purpose of this study was to determine the effect of using the project method and the lecture method on early childhood science knowledge. This research used experimental quantitative research, carried out at Nurul Iman Islamic Kindergarten Karanganyar in July-November 2020. The population in this study were 53 B grade children in Islamic Kindergarten. Nurul Iman Karanganyar, a sample of 17 children. The sampling technique in this study used a simple random sampling technique. The data collection method used a test in the form of a project carried out by children. Data analysis used unit analysis and prerequisite tests, namely normality test, homogeneity test, and hypothesis testing. The results showed that there were differences in the effect of using the project method on early childhood science knowledge in Nurul Iman Islamic Kindergarten Karanganyar. The project method has an effect on early childhood science knowledge, with the project method the average score is 21.35, which is greater than the lecture method, the average value is 15.47.

Keywords: project method, science knowledge, early childhood eduaction

Abstrak

Permasalahan dalam penelitian ini adalah kemampuan mengenal pencampuran warna pada anak masih rendah. Tujuan penelitian ini untuk mengetahui pengaruh penggunaan metode proyek dan metode ceramah terhadap pengetahuan sains anak usia dini Penelitian ini menggunakan penelitian kuantitatif eksperimen, dilaksanakan di TK Islam Nurul Iman Karanganyar pada Juli-November 2020. Populasi dalam penelitian ini adalah 53 anak kelas B di TK Islam Nurul Iman Karanganyar, sampel 17 anak. Teknik sampling dalam penelitian menggunakan teknik sampling simple random sampling. Metode pengumpulan data menggunakan tes berupa proyek yang dilakukan anak. Analisis data menggunakan analisis unit dan uji prasyarat yaitu uji normalitas, uji homogenitas, dan uji hipotesis. Hasil penelitian menunjukkan bahwa terdapat perbedaan pengaruh penggunaan metode proyek terhadap pengetahuan sains anak usia dini di TK Islam Nurul Iman Karanganyar. Metode proyek berpengaruh pada pengetahuan sains anak usia dini, dengan metode proyek diperoleh nilai rata-rata 21,35 lebih besar dari metode ceramah diperoleh nilai rata-rata 15,47.

Kata Kunci : Metode Proyek, Pengetahuan Sains dan Anak Usia Dini

INTRODUCTION

Humans are individual beings, and also social beings. Humans live together with other humans, and need the help of other humans by interacting with

p-ISSN: 27749533 | e-ISSN : 27760731, hal. 11-20
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individuals and groups. Humans are categorized into several phases including the toddler phase, the childhood phase, the early adolescent phase, the late adolescent phase and the elderly phase. According to NAEYC (National Association for the Education of Young Children), infancy and pre-school children can be categorized as early childhood. They take education programs in playgroups, family care, or children care service (Suyadi, et al. 2013:16).

Early childhood education is a coaching effort aimed at early childhood through the provision of stimuli that help children in their growth and self-development. Childhood is a golden age that experiences very fast growth and development. Golden age of children begins when the child was in the womb until six years old, but start at the age of four years is the crucial period for the children on developing their knowledge. Giving stimulus to children from an early age is very important because at this time children are very sensitive to receive stimuli through their senses. In increasing the growth and development of early childhood requires media and learning methods that can attract children. Early childhood learning applies learning and playing, through fun games can attract children's interest to learn more about everything around their environment.

Interesting learning method for early childhood can make children think actively, innovatively, and effectively by giving children a variety of activities in order to develop their skills and knowledge. Active learning for early childhood, can encourage the activity of student in the learning process. The child's activity often triggered by the child's high curiosity. Innovative learning for early childhood using fun and innovative learning models can stimulate children to think effectively. Effective learning supports the process of children's brain development, by using effective teaching methods children have a connection to learning. Children's interest in learning can make children better understand the material.

Method is a series of steps (things to be done) arranged systematically (logical order). Learning is an interaction of knowledge transfer from teacher to the student, both inside or even outside the classroom. Outside the classroom, teacher can use various learning resources as an object of study. This is called as material for implementing the plans that have been prepared in the form of practical and practical activities to achieve learning objectives. Therefore, the learning method is a plan that is carried out in order to achieve learning objectives that have been determined before.

According to Directorate General of Early Childhood Education and Community Education (2015: 1-3), the material provided for early childhood is guided by the Development of Learning Themes for Early Childhood Education so that children learn well. The use of themes in pre-school learning process must be

p-ISSN: 27749533 | e-ISSN : 27760731, hal. 11-20
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adjusted to the interests of children, the situation and conditions of the child's environment. Learning themes for Early Childhood such as self, family, home environment, school environment, animals, plants and the natural environment. In conveying the right themes, educators must use language or term that is easily understood by children, so that children have no difficulty on understanding the learning material, then they can learn many things in order to develop their knowledge.

Science for early childhood is science aimed at early childhood and how to understand scientific process from the child's point of view. Currently, science is an important thing to introduce to children at an early age. This is because science can encourage children's critical thinking, so they can investigate about the information before they accept or reject it. Educating children to have scientific abilities can help parents and children to actively build self-defense against disinformation around their surroundings (Izzuddin, 2019).

Learning difficulties are a psychological disorder that includes understanding and using spoken or written language, disorders referred to in terms of listening, thinking, speaking, reading, writing, spelling and arithmetic. The causes of children's learning difficulties include neurological dysfunction, giving wrong learning materials and strategies, learning activities that do not arouse children's motivation, providing inadequate and inappropriate reinforcement. The inadequate preparation of learning process and the misleading of learning materials in Islamic Kindergarten Nurul Iman Karanganyar make it difficult for children to understand the material, so many children do not understand the material presented by the teacher. In many cases, the student does not pay attention to the learning process, since the intrusive learning material and unattractive learning process. Learning process must be evaluated to determine the quality of the process itself. Evaluation is part of the educational curriculum, that conducted in order to ensure that learning objective are achieved through the learning process. If the learning objective is not achieved yet, the teachers must improve either their method or material (Subar Junanto, 2018: 181).

The project method according to Yuliani et al (2006: 5.19) is a method that gives children the opportunity to explore the environment around them by using the environment as a children's learning project. This method is often interpreted as the use of the natural surroundings as a material of learning process. According to Daryanto in Widowati et al (2015: 49) the project method is a way of teaching that utilizes daily life process as learning materials, it focuses on the thinking freedom either individual or group, in order to achieve the learning objective. Meanwhile, according to Mursyid (2017: 88) the project method is a way of providing learning experiences by giving children daily problems or problems that must be solved in

p-ISSN: 27749533 | e-ISSN : 27760731, hal. 11-20
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groups. Based on these opinions, it can be concluded that the project method is the provision of learning experiences in the environment around children by observing activities so that children are able to solve problems by achieving the desired goals.

The lecture method according to Harsono et al (2009: 71) is the teacher's narrative and explanation orally. Where in practice the teacher can use learning media to support the learning process. Meanwhile, according to Uswatun (2019: 811) the lecture method is an oral communication method between teachers and students in the teaching and learning process. Based on the opinions before, it can be concluded that the lecture method is the method of teaching that dominated by oral communication by the teacher, while the student watch the learning process. The relationship between the project method and the lecture method is providing learning experiences in the environment around children by conducting observation activities so that children are able to solve problems by achieving the desired goals and delivery of learning materials in the teaching and learning process orally conveyed by teachers to students.

Early childhood science knowledge according to Ahmad (2019: 354) learns about nature that is in the environment around children by understanding scientific process from the child's point of view. Science allows children to do simple experiments to find out how things happen and why things happen. Science invites children to explore various living and non-living objects. Children will find objects and symptoms in the environment around them, further more they can explore their science knowledge outside the school.

According to Putri (2019: 45) early childhood find out about the universe trough the discovery process that emphasizes direct experience using their senses. Children gain new knowledge from the environment or objects around them by interacting. The knowledge obtained by children can be used as material thought. The material thought acquired by children can be used to conduct simple experiments. A simple experiment trains children to relate the causal effect of a treatment so that it trains children to think logically. In science, children also practice using measurement tools to measure an object, thus they know about measurement units. These learning process is dedicated to encourage the student critical thingking. In this article, the author will present an article regarding the Effect of Using Project Methods and Lecture Methods on Early Childhood Science Knowledge in Nurul Iman Islamic Kindergarten Karanganyar for the 2020/2021 Academic Year.

METHOD

The type of research used in this research is quantitative experimental research. According to Purwanto (2007: 180) experimental research is research in

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which the value of dependent variable (observed variable) is formed and observed by using behavior manipulation, such as treatment or action, to the observed object (sample). While experimental research according to Jakni (2016: 1) is a study to find out the effect of a treatment or action that given to the subject of the study. In other words, experimental research tries to examine the causal relationship between the subject and the action or treatment (Suharsimi, 2005: 207). This research used true experimental method, while post-test only control design was used to analyze the impact of the treatment.

The selection of experimental research was in accordance with the conditions at the research school in the "B" group children of Islamic Kindergarten Nurul Iman Karanganyar. This experiment was purposed to evaluate the student's science knowledge after being given different treatments in both of experimental and control groups. based on the explanation above, the research design can be described in the following table:

Table 1 Experiment Research Pattern

R	**X**	**O_1**
R		**O_2**

Description :

R : Group that chose *randomly*

X : The first group was treated while the other one was not treated

O_1 : *Post test of experiment group*

O_2 : *Post test of controlled group*

Based on the research above, the researcher intends to know the scientific knowledge both of the experimental group and the controlled group, then give treatment to the experimental group and control group. After that, both groups are given a post test of science knowledge. This study uses a quantitative experimental method to conduct a planned experiment to prove a truth about the effect of using the project method and the lecture method on the science knowledge of class B students in Nurul Iman Islamic Kindergarten Karanganyar.

This research was carried out at Nurul Iman Islamic Kindergarten Karanganyar in June-November 2020. The population in this study was 53 children in grade B of Islamic Kindergarten Nurul Iman Karanganyar by taking a sample of 17 children. The sampling technique used in this research is simple random sampling. The data of this study was collected using test by evaluating the stundet's project. The data of this study was analyzed using unit analysis, prerequisite tests

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consisting of the Normality test, Homogeneity Test and Hypothesis Testing the Independent T-test formula is as follows:

$$t = \frac{\underline{X_1} - \underline{X_2}}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

Description:

t : T $_{Observation}$ Score
$\underline{X_1}$: Mean of experiment group
$\underline{X_2}$: Mean of controlled group
S_1^2 : Variance of experiment group
S_2^2 : Variance of controlled group
n_1 : Total sample of experiment group
n_2 : Total sample of controlled group

RESULT AND DISCUSSION

Descriptive Statistic of Student Science Knowledge

Based on the calculation of the frequency distribution of the control and experimental group data carried out on class B student of Nurul Iman Islamic Kindergarten Karanganyar for the 2020/2021 academic year, the calculation results obtained in the control class has lower score than the experimental group. The following results of the calculation of the frequency distribution can be seen in the following table:

Table 2 Frequency Distribution Data of Controlled and Experimental Groups

Frequency Distribution Data of Controlled Group (Lecture Method)				Frequency Distribution Data of Experimental Group (Project Method)			
Interval Class	Frequency	Relative Frequency	Category	Interval Class	Frequency	Relative Frequency	Category
9-11	2	11,76%	Very low	14-16	2	11,76%	Very low
12-14	5	29,41%	Low	17-19	3	17,64%	Low
15-17	6	35,29%	Moderate	20-22	6	35,29%	Moderate
18-20	2	11,76%	High	23-25	3	17,64%	High
21-23	2	11,76%	Very high	26-28	3	17,64%	Very high

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Based on the table above, it can be seen that from the seventeen students of the control group, there are two students (11.76%) have very low score of science knowledge, five students (29.41%) have low score, six students (35.29%) have moderate score, two students (11.76%) have high score and the last two students (11.76%) have very high score. In the other hand, based on the seventeen students of the experimental group, there are two students (11.76%) have very low score, three students (17.64%) have low score, six students (35.29%) have moderate score, three students (17, 64%) have high score and the last three students (17.64%) have very high score. The results of the frequency distribution calculation showed that the control and experimental groups are dominated by moderate score of science knowledge. However, the interval class limit is different, the controlled group has 15-17 interval class with a relative frequency of 35.26%, while the experimental group have 20-22 interval class with a relative frequency of 35.29%. Based on the description above, it can be described in the following diagram:

Figure 1

Bar Chart of Frequency Distribution Data of Controlled Group Using Lecture Method

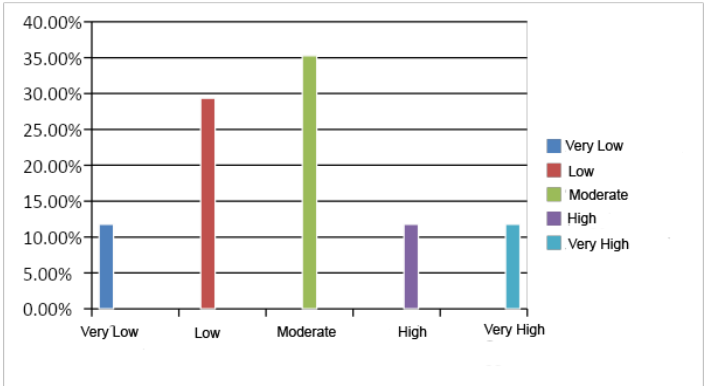
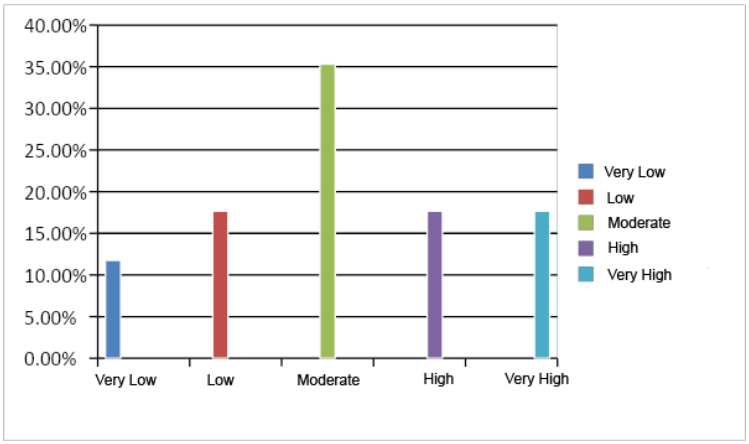


Figure 2.

Bar Chart of Frequency Distribution Data of Controlled Group Using Project Method



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Based on **Figures 1** and **2**, it can be seen that the group which using project method have higher mean value. This result indicates that the project method has a significant effect the science knowledge of grade B children at Nurul Iman Islamic Kindergarten Karanganyar for the 2020/2021 academic year.

Prerequisite Test

Based on the results of data analysis, the control group that applied the lecture method got an average score of 15.47, and most students were in the moderate score (35.29%). The mode value was 15.1 while the median value was 15.25, and standard deviation was 3.5. While the results of the analysis for the experimental class that applied the project method to science knowledge got an average value of 21.35, most of them have medium score (35.29%). The mode value was 21, while the median value was 21.24, and standard deviation was 3, 80. Although the scores from both groups were equally dominant in the medium score, in the high score group of the experimental group had a higher value than the controlled group. Based on the calculation above, the group whose using project method has significant effect on student's science knowledge in Islamic Kindergarten Nurul Iman Karanganyar than the group that using lecture method.

The result of independent t-test showed that the value $t_{observation}$ was 4,48, while the t_{table} at 5% significance was 2,353. So these results indicate that the use of the project method has significant effect on early childhood science knowledge in Nurul Iman Islamic Kindergarten Karanganyar for the 2020/2021 Academic Year.

Based on the results of the research described above, it can be seen that the group using the project method has a higher score than the group using the lecture method. To find out the comparison between the control group and the experimental group can be seen in the following table:

Table 3 Result of Unit Analysis of Experiment and Controlled Group

Component	***Post Test Result***	
	Experimental Group	**Controlled Group**
Total Student	17	17
Highest Score	28	23
Lowest Score	14	9
Mean	21,35	15,47
Median	21,24	15,25
Mode	21	15,1
Deviation Standard	3,80	3,5
Homogeneity Test Result	1,21 (homogenic)	
Normality test result	Normal	Normal
Independent T-test hypothesis test result	$T_{observed}$ 4,48 > t_{table} 2,353 H_o rejected and H_a accepted	

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Based on table 3 which has been described above, it can be concluded that the group which using the project method has a higher score than the group using which the lecture method. This is because children are more interested in fun learning methods, so they think actively and effectively by using project method. This method also ensure that children can explore to build their knowledge by collecting information from various sources, children able to solve everyday problems and children can get to know the nature around children to add insight to the child.

CONCLUSION

Based on the analysis of the research that has been conducted on the effect of using the project method and the lecture method on student science knowledge in Nurul Iman Islamic Kindergarten Karanganyar for the 2020/2021 academic year. Then it was concluded that there was a significant effect of using the project method and the lecture method on the science knowledge of B3 graders student who used the project method and B1 graders who used the lecture method. The use of the project method got a higher score than the use of the lecture method on student science knowledge at Nurul Iman Islamic Kindergarten Karanganyar in 2020/2021. The statistic test has proven that the value of $t_{observation}$ 4,48, while the value of t_{table} at 5% significance is 2,353. That score showed that $t_{observation}$ is higher than t_{table} (4,48 > 2,353), so it can be concluded that the alternative hypothesis that expressed before was accepted.

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