Implementation of Biodiversity Centre in Improving Naturalistic Intelligence of Children in 5-6 Years Old at Paud An Najah, Jatinom Subdistrict, Klaten Regency

Yuyun Kurniawati ✉ , Wulan Adiarti

DOI 10.15294/ijeces.v6i1.15789

Semarang State University, Semarang, Indonesia

Article Info

Abstract

The purpose of the study was to find out the implementation of biodiversity centre in improving naturalistic intelligence of children in 5-6 years old. The study was conducted in PAUD An Najah, Jatinom Subdistrict, Klaten Regency. The study used 30 children as the samples of the study. The study used one group pretest-posttest design as its experimental design. Data collecting utilized the purposive sampling. The result showed the naturalistic intelligences improvement of children in 5-6 years old. Based on the t value measurement, the study found –ttable > tcount > t table included (2.04 > - 28.25 or 28.25 > 2.04), with sig = 0.000, so Ho was declined and Ha was accepted. It explained that there was significant difference of the naturalistic intelligences of children in 5-6 years old after using biodiversity centre implementation.

How to cite

✉Corresponding author:
 Semarang State University, Semarang, Indonesia
 E-mail: yuyunkurniawati08@gmail.com

INTRODUCTION

Children of 0-6 years old are included into golden age. According to Masnipal (2013: 78-81) "Early childhood education is divided by students' ages. Students of 2-3 years old are classified into crèche, 3-4 years old into playgroup, and 4-6 years old into kindergarten/*Raudhatul Athfal.*" Children are born with their potential and talent. They have their own ability, so their intelligences are not same each other. They have their intelligences in certain field.

Children's intelligences can be improved by using smart learning solution method. In line with Violinda (2012: 42) states that using smart learning method improves the children's intelligences. There are three steps of the method, first manipulation (imitation) means that children manipulate or imitate the adult or objects' behavior around them. Second, mastery refers to master an activity by repeating it and make it fun. Then the third gives the essences for the children to trigger the children's motivation in doing.

According to Gardner (Armstrong, 2002: 1-2), Children have some intelligences, they are 1) Linguistic intelligence, 2) Logico-Mathematically intelligence, 3) Spatial intelligence, 4) Kinesthetic intelligence, 5) Musical intelligence, 6) Interpersonal intelligence, 7) Intrapersonal intelligence, 8) Naturalistic intelligence, and 9) Existential intelligence. Then, this study will focus on Naturalistic intelligence. According to Amstrong (Sujiono, 2010: 62) Naturalistic intelligence is the intelligence for loving the beauty of nature through flora and fauna identifications around the society. Naturalistic intelligence can be trained by planned outdoor activities. One of activities done in the outdoor activity is the study of environment about biological diversity through exploring the environment around the children.

The study is based on some environment problems from the general to the specific problems in PAUD institution. Environment problems are for example the affluent exploitation without local wisdom. It harms the environment supporting, cannot be functions properly, and disturbs the environment balancing.

Clearing and land use change affect the lessening of biological diversity. It is based on *Indonesia Biodiversity Strategy and Action Plan 2015-2020* (2016: 167-168) which says that conserving and protecting ecosystem biological diversity means maintaining the carbon inside the wood or other plant. Ironically, for about 1.7 milliard ton carbon are freed per year because of the land use change, it is because the deforestation in the tropical forest. Beside, the greenhouse effect makes the biological diversity worsen.

Another reason is that recently the researcher finds there are some children which ruin the plant by hitting the rod and leaves by using wood beater, repeal the plant from the pot outside class, plant the crop in the school without any treatment, play the fish inside the aquarium, kick and hit a cat, throw the little chicken by the gravel, and do the littering. If it happens continually, it raises problems for example the plant and animal around the environment will be lessening than before, children loss their learning objects. Moreover, children lose their love for animal and plant.

Because of those raising problems, there should the environmental education from the beginning to keep the environment. The teaching should relate with the sphere activity and focus on the plant and animal introduction also its conserving ways. It uses centre approach. Centre approach is an approach which focuses on the children activity by giving scaffolding.

The purpose of centre approach is the process of learning which is done natural and fulfilled the students' facilities to explore themselves. The focus of the research is to introduce the plants and animals which included into biological diversity (biodiversity) and its forms of protection. The activity is done in specific centre to focus on the activity around the plants and animals. The centre is called biodiversity centre.

Biodiversity Centre is the learning which focuses on the distinguishing and protecting the surroundings related with the plants and animals around the children. Childhood begin to raise their responsibility of the sphere. In the biodiversity activity, the children do not become the observer only but have the active roles in conserving the environment. By giving this activity, children will be easier to be understood and conserved the living environment. The proper environment will help children to learn comfortably and happily.

The research is done in the PAUD An Najah which is located in Masjid Street Jatinom Subdistrict Klaten Regency. This institution applies the full day school activities and has almost the graduate teacher from S1. PAUD An Najah is the only PAUD which applies the full day school activities and centre approach learning in Jatianom Subdistrict. The visions of the school are "Seeding the students which become the creative children, consistent by its disposition (*Tauhidullah*), have a skilled for living, and responsible in teaching comfortably and happily."

PAUD An Najah introduces about nature by giving outbond activities once a semester. It is too short to create the natural education. So, there should be explorative activity which relates to children daily activities for example introducing the environment and the way to conserve it. Biodiversity Centre is the way to build the naturalistic intelligence of the children in 5-6 years old by distinguishing the biological diversity and paying attention to the living sphere.

Based on the explanation, the researcher will do a research entitled "Implementation of Biodiversity Centre in Improving Naturalistic Intelligence of Children in 5-6 Years Old at PAUD An Najah, Jatinom Subdistrict, Klaten Regency." The purpose of the research is to know the influences of biodiversity centre implementation to improve the naturalistic intelligence for children in 5-6 years old.

METHOD

The research uses the quantitative approach and it includes into experimental research. The research utilizes pre-experimental in form of one group pre test-post test design. The reason for choosing is the method because the result will be more accurate and can be compared with before and after conditions.

Independent variable is variable which influences or becomes the reason of the changing or the coming of dependent variable (tied). Independent variable in this research is biodiversity centre. Beside, the dependent variable is a variable that is influenced or become the result of independent variable. The dependent variable in this research is naturalistic intelligence of children in five to six years old.

The population of the research is all children with criteria five to six years old in PAUD Jatinom Subdistrict. The amount of PAUD institutions in Jatinom Subdistrict are 57 institutions. The sample of the research is all students group B in PAUD An Najah, Jatinom Subdistrict, Klaten Regency. The sample gathering used in the research is purposive sampling.

The method used in collecting the data utilizes Likert Scale. The scale of the research is the naturalistic intelligence of the early children. The analysis instrument methods are by using validity and reliability analysis. Before using the instrument, it should be tested first to measure the validity and reliability. In this research the respondents are 30 (N=30) with significance level is 5%. The result is r_{table} is 0.36. The amounts of the items are 61 questions and the valid questions are 45 questions.

Furthermore, the data analysis of the research is Paired Sample T-Test. Paired Sample T-Test is used as the comparative test or the difference of both variables scale that the data are quantitative approach. The requirement of Paired Sample T-Test is the difference of two group data in normal distribution. Because of that, there will be normality and homogeneity tests t measure the differences of both groups.

RESULTS AND DISCUSSION

The data analysis of the research uses the descriptive method. It makes the ease of the measurement of the influences of biodiversity centre of children in 5-6 years old before and after the treatment given. The general description of naturalistic intelligence level of children in 5-6 years old before and after the treatment given by using biodiversity centre as follows:

Table 1. Descriptive Data Analysis

Data	N	Mean	Median	Mode	Range	Min	Max
Pretest	30	95,97	96	96	31	80	111
Posttest	30	130,17	129,50	127	26	115	141

The data explain the amounts of respondents (N) are 30 children. The mean of the pretest is 95.97 and the mean of posttest is 130.17. The median of the pretest is 96 whether in the posttest is 129.50. The lowest score (minimum) of the respondent in pretest is 80 beside the lowest score of the respondent in posttest is 115. The highest score (maximum) in pretest is 111 whether in the posttest is 141.

Table 2. The Categories of Naturalistic Intelligence Level of Children in 5-6 year old *Pretest*

Interval	Criteria	Frequency	Percentage
45-72	Very Low	0	0
72-99	Low	22	73.3
99-126	Medium	8	26.6
126-153	High	0	0
153-180	Very High	0	0
Total		30	99.9

The table shows there are 22 children that have low naturalistic intelligence and the percentage is 73.3%. On the other hand, there are 8 children who have medium skill of naturalistic intelligence with percentage 26.6%. In general, the naturalistic intelligence level before treatment

is included into the low category with index percentage is 73.3%.

Table 3. The Categories of Naturalistic Intelligence Level of Children in 5-6 year old *Posttest*

Interval	Criteria	Frequency	Percentage
45-72	Very Low	0	0
72-99	Low	0	0
99-126	Medium	5	16.5
126-153	High	25	83.2
153-180	Very High	0	0
Total		**30**	**99.7**

The table above explains that the naturalistic intelligence level of the children in 5-6 years old in medium category is 5 children with percentage is 16.5%. Whether the amounts of naturalistic intelligence in high level are 25 children with percentage is 83.2%. In general, the level of children's intelligence in 5-6 years old after given by biodiversity centre treatment is included into high category that is 83.2%.

The normality test uses Kolmogorov-Smirnov. The value of α which is used is 0.05. From the result of normality test, the researcher gets significance level of naturalistic intelligence of children in 5-6 years old when pretest is 0.75 and posttest is 0.82. From the result, it can be concluded that the significance level is higher than α. It can be conclude that the naturalistic intelligence of children in 5-6 years old comes from the normal distribution.

Based on the calculation, the significance value is 0.14. The criteria of homogeneity data test are if the significance value > 0.05 means that the data is homogeny or there is no variant. If the significance value < 0.05 so the variant is not distributed or it is not homogeny. Based on the table, it can be concluded that the naturalistic intelligence of children in 5-6 years old have the same variant or homogeny because 0.14 > 0.05.

Based on the t calculation, the value gotten is $-t_{table} > t_{count} > t_{table}$, that is (-2.045 > - 28.253 or 28.253 > 2.045), with sig = 0.00, so H_o is rejected whether H_a is accepted. So the difference of naturalistic intelligence significance of children in 5-6 years old is applied by biodiversity centre. The significant difference can be seen from the value of sig 2 tailed <0.05 that 0.00. Further, it can be seen from the mean of the before and after conditions of the biodiversity centre applied.

Biodiversity Centre is the learning which focuses on the distinguishing and protecting the surroundings related to the biological diversity included to the plants and animals around the children's sphere. Flora and fauna introduction are very good to be applied for early children. It can be remembered by the children until they come to adult. It influences them to become more responsible to save and conserve the flora and fauna. The way begins with the simple way, for example giving children responsibility to plant the crops they are planting and animals they are maintaining.

The treatment given for biodiversity centre helps the students to know and improve the knowledge of biological diversity as flora and fauna. By that, it influences the naturalistic intelligence to increase. Before given by the treatment, the researcher does pretest to know the naturalistic intelligence level of the students in class B5.

After giving the treatment, based on statistical calculation, the result shows that data calculation *t-Test* through differentiate calculation *Paired Sample t-Test* using SPSS program. The calculation value *t-Test* is gotten $t_{count} < - t_{table}$ (-28.253< -2.045) with significance value (2-*tailed*) is 0.00. It explains that there is a significance of naturalistic intelligence of children in 5-6 years old after applying the biodiversity centre. The mean of naturalistic intelligence of children in 5-6 years old before and after biodiversity centre implementation shows the mean of pretest is 95.97 whether the posttest is 130.17. Hence, the

Table 4. The Calculation of *Paired Sample t-Test*

				95% Confidence Interval of the Difference				
Paired Samples Test								
			Paired Differences					
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	Df	Sig. (2-tailed)
Pair 1 Pretest - Posttest	-34.200	6.630	1.210	-36.676	-31.724	-28.253	29	.000

result shows that biodiversity centre improves the naturalistic intelligence.

By implementing biodiversity centre, hope the naturalistic intelligence of the students in PAUD institution can be improved. Naturalistic intelligence is very important to be improved and developed about flora and fauna with the natural beauty around them. It is aimed to make the students care and love their surroundings. In line with Gardner (2006: 45-46) which says the naturalistic intelligence is the result of the skill to differentiate the natural phenomenon, for example: a plant with other plant, an animal with other animals, between the clouds, rocks formation, flows pose formation, and others.

The activities in biodiversity centre relate with the surroundings explorations or field study. It is aimed to make the children have the experiences and knowledge directly in learning biological diversity. The research has been done by Mu'iz Abdul, Parmin and Eling Purwantoyo entitled The Implementation of Field Study Model in Biological Diversity by Using School Environment which is published by Unnes journal of Biology Education, concludes that both research classes give mean value 82.5% with classical completeness 87.5%. The learning activities of the biological diversity through the field study model exploits the sphere to guide the students in maximizing the learning skill and give the experiences to the students directly.

CONCLUSION

Based on the research entitled "Implementation of Biodiversity Centre in Improving Naturalistic Intelligence of Children in 5-6 Years Old at PAUD An Najah, Jatinom Subdistrict, Klaten Regency" the conclusions are: The naturalistic intelligence of children in 5-6 years old before applying the biodiversity centre is low on the other hand, after applying biodiversity centre shows the increasing of the mean. The values are 95.97 before the treatment and 130.17 after the treatment. There is an improvement score for about 34.20.

The conclusion can be concluded is that the naturalistic intelligence of children in 5-6 years old after applying biodiversity centre is improve. There is a significant difference, so the writer concludes that the implementation of biodiversity centre is effective to improve the naturalistic intelligence of children in 5-6 years old in PAUD An Najah Jatinom.

REFERENCES

Abdul, M. (2013). Penerapan Model Studi Lapangan pada Materi Keanekaragaman Hayati dengan Memanfaatkan Lingkungan Sekolah. *Unnes Journal of Biology Education* .

Afita, Y. D. *Pengaruh Penggunaan Contextual Teaching and Learning terhadap Kecerdasan Naturalis Anak Kelompok B di RA Muslimah NU 139 Candi Sidoarjo.* Surabaya: Universitas Negeri Surabaya.

Arikunto, S. (2010). *Prosedur Penelitian.* Jakarta: PT Rineka Cipta.

Armstrong, T. (2013). *Kecerdasan Multiple di dalam Kelas.* Jakarta: PT Indeks.

Asmawati, L. (2014). *Perencanaan Pembelajaran PAUD.* Bandung: PT Remaja Rosdakarya.

Bappenas. (2016). *Indonesian Biodiversity Strategi and Action Plan (IBSAP) 2015-2020.* Jakarta: Kementerian Perencanaan Pembangunan Nasional.

Bharadia, R. (2008). *Roots and Wings1.* Jakarta: Gramedia.

Budiarti, F. (2015). ANALISIS PEMBELAJARAN SENTRA BAHAN ALAM. *Jurnal Pendidikan dan Pembelajaran* , 3.

Chatib, M. (2012). *Sekolah Anak-Anak Juara.* Bandung: PT Mizan Pustaka.

Darmawan, D. (2013). *Metode Penelitian Kuantitatif.* Bandung: PT Remaja Rosdakarya.

Violinda, Q. (2012). Implementasi Metode Smart Learning Solution Berdasar Teori Multiple Inteligence dalam Pengembangan Potensi Anak Usia Dini. *Indonesian Journal of Early Childhood Education Studies*, *1*(1), 37-43.