

# Development of A Nature-Based Learning Model to Improve the Environmental Character of Early Childhood in Surakarta

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**Abstract:** The purpose of this research is to analyze the needs, develop a design, and analyze the effectiveness of a nature-based learning model to foster environmental stewardship in Surakarta. This research is a type of R&D and development study. The product developed is a learning model. The aim of this research is to describe how the planning, implementation and learning outcomes of children from the development of the Learning Model Nature Based for Increase Environmental Characteristics of Early Childhood Education in Surakarta. This research method is an applied research method with a mix-methods type that has an exploratory design variant. The research design uses Research and Development (R&D) with three stages, namely: the preliminary study stage, the development stage, and the validation stage. The preliminary stage includes literature studies, field studies on needs analysis, description and analysis of needs in research development, the development stage, and the validation stage for the development of learning models based Nature. Data collection techniques using interviews, observations, questionnaires and tests both pretest and posttest at Miftahul Alam Kindergarten Jannah, Aisiyiah Al Amin Kindergarten, Aisiyiah Kindergarten Punggawan and KB-TK Sains Qur'an Insan Scholars. Validation is carried out by material experts and media experts. Analysis study This using quantitative and qualitative data. Results study shows that: 1) Model learning based natural needed by teachers and students to develop character Love environment. 2) Development of learning models based natural worthy used For develop character Love environment child age early. 3) The N-Gain value in the control class was 0.8103 in the high category. In increasing the character of environmental love, the N-Gain % value in the control class was 81.03, which is included in the effective category. 4) There is an influence significant in development of learning models based natural For increase character Love environment based nature.

**Keywords:** Learning Nature-based, Environmentally-loving Character

## 1. Introductions

Current world conditions This it 's very worrying, This it appears to be visible damage environment around We (Ke et al., 2019). trees around We start reduce consequence deforestation forest as well as the more pile it up rubbish plastic need solutions that do not easy, thing This caused by character human beings who have not formed with Good (Tabášková, 2019).

Problems in urban areas more complex, besides problem garbage, frequent water flow hampered consequence founding buildings tall become reason flooded, things This in accordance with opinion from Davis & Naumann (2017).

Rubbish plastic that is not decompose can endanger health man although moment This the simplest solution is with burned (Kalina, 2020). Required solutions appropriate For support go green concept so that damage environment No increase severe and continuous awake its sustainability, things This in accordance with opinion from Aziz et al (2017). For minimize inorganic waste including plastic required character Love environment as form pro- social attitude so that little by little problem environment can We overcome together (Siddique & Hossain, 2018).

Life man moment This No Can let go from water needs even though in reality trees Lots reduce Because logging that results in reduced water production (Naryoso & Febriyani, 2020). Happiness and peace life man Lots influenced by the sufficiency of needs main like sufficient water, oxygen and plants as well as animals as source food, things This in accordance with opinion from McGee (2022).

Age early is age gold (Golden age) where all development Good physique and mental development in a way maximum. For That strengthening character will more easy built moment age early development character at age mature will more difficult Because habits that have been bleeding meat will difficult For fixed, thing This in accordance with opinion from Khairi (2018). character building start from age early aim For glorify man in accordance its nature to have dignity and honor glorious as a servant of God Almighty. On the indicator Childhood Development early matter This enter the aspect assessment of Religious and Moral Norms (Khairi, 2018).

Formation character in children age early No Can only charged to the teacher or party school only, but role all participating parties contribution in its development, things even then must done in a way sustainable with full patience, things This in accordance opinion from (Hidayat & Nur, 2018). Character Love environment in PAUD is implemented with hope that the environment around visible neat, clean and beautiful, if environment around clean, neat and beautiful will come true cool, comfortable and healthy atmosphere, things This in accordance opinion from Fabiana Meijon Fadul (2019). Character Love environment must keep building as a form of gratitude to God Almighty for a very valuable gift this, can imagined We live in the world with all the facilities that God has given us just asked For take care of it and keep it in order sustainable so that child grandchild We in the future can Keep going enjoy, thing This in accordance opinion from Suparyanto and Rosad (2015, 2020).

Besides that character Love environment must Keep going developed to strengthen foundations goodness of course bring Lots benefit for fellow human beings. Early childhood education teachers should utilise chance This with the best Because his very important role big in educate future generations For realization character noble (Eka Septi Cahyaningrum, 2019).

Nature is grace from Allah SWT for man. In the world of education nature is very possible For made into as a rich learning medium experience so that need child educate For explore with various experiment as well as exploration can facilitated, things This in accordance with opinion Naryoso & Febriyani (2020).

Researchers has do observation as well as interviews at 4 PAUDs in Surakarta on August 2, 2023 in particular Kindergarten A group (ages 4-5 years). Namely, Alam Miftahul Jannah Kindergarten, Aisyiyah Al Amin Kindergarten, Aisyiyah Kindergarten Punggawan and KB-TK Sains Qur'an Insan Scholar.

Findings temporary that child educate group A ages 4-5 years at the beginning observation Not yet used to throw away trash in its place, child educate Still tend put even throw rubbish plastic the snack wrappers they food, goods equipment personal also not yet organized with okay, son educate Still excessive water use moment doing activities everyday at school. Plants or grass decoration around school Still often stepped on and pulled out as well as picked without useful needs. Besides that child educate Not yet interested when the teacher invites nurse plant like watering and pull out weeds / grass. Awareness children educate related cleanliness, tidiness and greenery still very low.

Interview results with head school and teachers group A can concluded that the teachers have not maximum in create learning programs For increase character Love environment in their respective classes. Efforts to grow character Love environment done with just habituation without There is timetable or special hours. Activities Study Teaching / KBM not yet each other related and comprehensive like Not yet make material natural as a learning medium with experiments and exploration.

Referring to research previously done by Putri, Camelia Ekaoleh Suryani, Lely Tute, Kristianus Jaje, Ariswan Usman in 2019 " Development of Environmental Love Character through activities in the environmental love children's organization in Ende Regency, NTT " stated that ACIL is an educational organization for children about environmental awareness through several activities in the area. Lestari, Putri Winda Septaria, Bella Charisca in 2020 with title "Minim Plastik" education as a form of environmental love at SDN Pejaten Timur 20 Pagi state that " Based on an initial survey at SDN Pejaten Timur 20 Pagi South Jakarta, there are still Lots students who do not bring a tumbler or box food. Students tend consume food or snacks offered in the canteen or trader around school. This is cause amount rubbish plastic produced Enough high. So that considered need done education about subtraction use plastic as form Love environment ". Another research conducted by Siti Baro'ah and Siti Mazidatul Qonita in 2020 " Instilling CiLi (Love for the Environment ) in Students Through Environmental Programs School Without Plastic Waste ” stated that implementation planting character Love environment in children through environmental programs school without rubbish plastic done with method activity exercise garbage, mandatory student For bring a tumbler, provide water filling station recycle, and create a trash bank plastic. The goal of the environmental program without rubbish plastic for students as early as Possible used to For love environment and behavior life healthy. Research conducted by Lidia Oktamarina in 2021 stated that that activity green school can increase character care environment since age early in children group B PAUD Uswatunn Hasanah Palembang with increasing presentation success by 80%. Activities green school can become solution in increase character care environment in children since age early. Research other conducted by Masithoh, Dewi Anintyawati, Riska in 2022 with title Instilling "Love for the Environment" Character Education in Elementary Schools state that " The Importance of guard environment live for the earth still sustainable, necessary done effort develop education “Love the Environment ” character for inhabitant school basic and training participant educate For form caring person to environment natural around through the greening program.”

Based on various previous studies, research will be conducted by raising the issue of increasing environmental character with the title "Development of Learning Models Nature Based for Increase Environmental Love Characteristics of Early Childhood in Surakarta City.

## 2. Research Methods

The type of research used is applied research with the Research and Development (R&D) method or research and development method, this method is used to produce certain products and test their effectiveness. the product.

Research and development regarding with development product through the planning, production and evaluation process validity products that have been produced. Research and development methods can interpreted in a way scientific For research, design, produce, and test validity products that have been produced. Furthermore, Borg and Gall (1989) put forward ten step in R & D put forward by the staff of the Teacher Education Program at Far West Laboratory for educational Research and development, in minicourses that aim increase teacher skills in the classroom specific (Sugiyono, 2020).

## 3. Results

### 3.1 Problem-Based Learning Model Natural

Analysis of the needs of a problem -based learning model natural The aim was to determine the actual conditions in the field and formulate an appropriate learning model. The initial step was observation at four kindergartens. The observations focused on character. Love environment for children. After the observations, the researchers also conducted interviews with teachers. This stage was intended to gain deeper information about the learning processes currently implemented in each kindergarten. The research was conducted in four kindergartens: Alam Miftahul Jannah Kindergarten, Aisyiyah Al Amin Kindergarten, and Aisyiyah Kindergarten. Punggawan and KB/TK Qur'an science Insan Scholar. The research subjects were 10 students from Kindergarten A from each school. Data collection at four kindergartens was aimed at validating the existing data. To obtain information regarding the learning model needs, observations and interviews were conducted at the four kindergartens. The following are the results of the researcher's observations and interviews to obtain initial data.

#### Observation

Observations were conducted to obtain an overview of the environmental character of students at Miftahul Jannah Nature Kindergarten, Aisyiyah Al Amin Kindergarten, Aisyiyah Punggawan Kindergarten, and Insan Cendekia Qur'an Science Kindergarten/KB/TK. The data obtained will be used as a reference in developing a nature-based learning model. The objects of observation were children, where each child's character development was observed, especially the aspect of environmental love. There are 15 indicators in assessing this aspect. The assessment used in this case uses 4 categories, namely: BB (not yet developed), MB (starting to develop), BSH (developing as expected), BSB (developing very well). The results of observations in the four kindergartens are presented in Table 1:

Table 1. Student Score

No	Kelas	Nama	Jml	Max
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1	Eksperimen 1	Arfan	36	58
2	Eksperimen 1	Arina	37	58
3	Eksperimen 1	Arjuna	36	58
4	Eksperimen 1	Arsyila	31	58
5	Eksperimen 1	Rania	31	58
6	Eksperimen 1	Danish	37	58
7	Eksperimen 1	Ezra	31	58
8	Eksperimen 1	Fathan	38	58
9	Eksperimen 1	Fitria	35	58
10	Eksperimen 1	Hanif	39	58
11	Eksperimen 2	Nadira	31	58
12	Eksperimen 2	April	32	58
13	Eksperimen 2	Safira	40	58
14	Eksperimen 2	Zia	37	58
15	Eksperimen 2	Adreena	39	58
16	Eksperimen 2	Ranum	32	58
17	Eksperimen 2	Ibnu	40	58
18	Eksperimen 2	Abby	37	58
19	Eksperimen 2	Vita	38	58
20	Eksperimen 2	Elvan	40	58
21	Eksperimen 3	Abdullah	37	58
22	Eksperimen 3	Ahmad	35	58
23	Eksperimen 3	Asyifa	40	58
24	Eksperimen 3	Hanindya	35	58
25	Eksperimen 3	Jennaira	38	58
26	Eksperimen 3	Lintang	37	58
27	Eksperimen 3	Mpasha	36	58
28	Eksperimen 3	Saif	36	58
29	Eksperimen 3	M Umar	38	58
30	Eksperimen 3	S Ghazi	36	58
31	Kontrol	Alesya	39	58
32	Kontrol	Adzkia	40	58
33	Kontrol	Hanindya	39	58
34	Kontrol	Abi	37	58
35	Kontrol	Arina	39	58
36	Kontrol	Binar	40	58
37	Kontrol	Vikan	39	58
38	Kontrol	Kallaendra	41	58
39	Kontrol	Kian	40	58
40	Kontrol	Kenzo	39	58

b. Interview

Researchers also conducted interview with teachers to improve character Love environment. Interview results from Miftahul Jannah Nature Kindergarten, Aisyiyah Al Amin Kindergarten and Aisyiyah Kindergarten retainer and KB/TK Sains Qur'an Insan Scholar can seen in table 4.2 below This.

Question	MJ Nature Kindergarten	Aisiyah Al Amin Kindergarten	Aisiyah Kindergarten retainer	Insan Science Kindergarten Scholar Quran
Whether child can show gratitude on gift of God?	Yes, but still a little	No	No	No
Whether child can nurse cleanliness self?	Yes, sometimes	Yes, sometimes	Yes, some small	Yes, some small
Whether child can value environment around?	Most of the the child is not yet	Most of the the child is not yet	Most of the child Not yet	Most of the child Not yet
Can children return items in place?	No	No	Yes, some small	Yes, some small
Whether child can show attitude Like plant?	Yes, part small	No	Yes, some small	No
Whether child Already can nurse plants and processing results garden:	Not yet	Not yet	Not yet	Not yet
Whether child can guard cleanliness environment class?	Yes, not yet all child	Not yet	Not yet	Not yet
Whether child Already can throw away trash in its place?	Not yet	Not yet	Not yet	Not yet
Whether child already can mention and show function objects natural around?	Yes, some of it small	Yes, some of it small	Not yet	Not yet
Whether child Already can tell results related works with nature?	Not yet	Not yet	Not yet	Not yet
Whether child already can mention the process of reproduction plants / animals?	Yes, some small	Yes, some small	Yes, some small	Yes, some small
Whether child Already can tidy up toy to place again?	Most of the Not yet	Most of the Not yet	Most of the Not yet	Not yet
Whether child Already can behave save on things (water, toys etc. }	Not yet	Not yet	Not yet	Not yet
Whether child already can guard neatness and beauty environment?	Not yet	Not yet	Not yet	Not yet

From the results interviews conducted at Alam Miftahul Jannah Kindergarten, Aisiyah Al Amin Kindergarten, Aisiyah Kindergarten Punggawan and KB/TK Qur'an Science Insan Scholar can concluded that character Love environment in Sowa Still low. Most of the child educate Not yet guard cleanliness and beauty environment, not yet Like guard environment around, not yet interested planting and caring for plant as well as Not yet explore and experiment to what is available in the environment around.

After do observation and interviews from fourth school the so can concluded that is very necessary method learning based natural For increase character Love environment child age early in the city of Surakarta.

### 3.2 Nature- Based Learning Model Design

The stages of developing the Nature- Based Learning Model design consist of 10 stages. These ten stages can be briefly grouped into 3 stages, namely: planning, development of draft learning models (hypothetical models), and design for developing learning models.

### 3.2.1 Planning

Initial stages in developing a problem-based learning model nature is planning. The purpose of planning is so that the learning model based natural can formulated with maximum. In planning, the following steps are taken: determining objectives, curriculum analysis, material analysis, compiling learning tools, and finally creating a media plan and assessment instruments, all of which can be described as follows:

#### 3.2.1.1 Curriculum Analysis

the RPPH of early childhood education, including Core Competency (KI) and Basic Competency (KD) standards. In developing learning models based natural can enter to learning theme whatever Because entered to in the flagship program once a week at PAUD institutions through the green lab program.

#### 3.2.1.2 Determine goals

Research purposes This is to formulate a nature- based learning model design to improve character. Love environment child age early. Analysis material aim to find out the materials that will be used in nature -based learning to make it easier for teachers to carry out learning activities. From the results analysis material found a number of activity For increase character Love environment child age early. This analysis aims to determine the suitability of the material with basic competencies. The relationship between Core Competencies (KI), Basic Competencies (KD) and indicators become reference for summarizing learning models based natural For increase character Love environment child age early.

#### 3.2.1.3 Preparing a Learning Implementation Plan

At the stage This researchers prepare Plan Implementation Learning and syllabus before carry out learning.

#### 3.2.1.4 Developing a Learning Model Design

Learning media design use materials in the environment around school Because natural highway Already opened by the Almighty as a complete learning medium meaning, as event exploration child educate, place do experimental and rich in experience Because method Learning with Nature (BBA) is do in a way practice directly. Example activity make compost, planting, caring for plants, observing the growth process plant as well as process results garden.

### 3.2.2 Development of Draft Learning Model

Before developing learning models based natural researchers make draft planning moreover formerly. The draft plan can be seen at the following image.

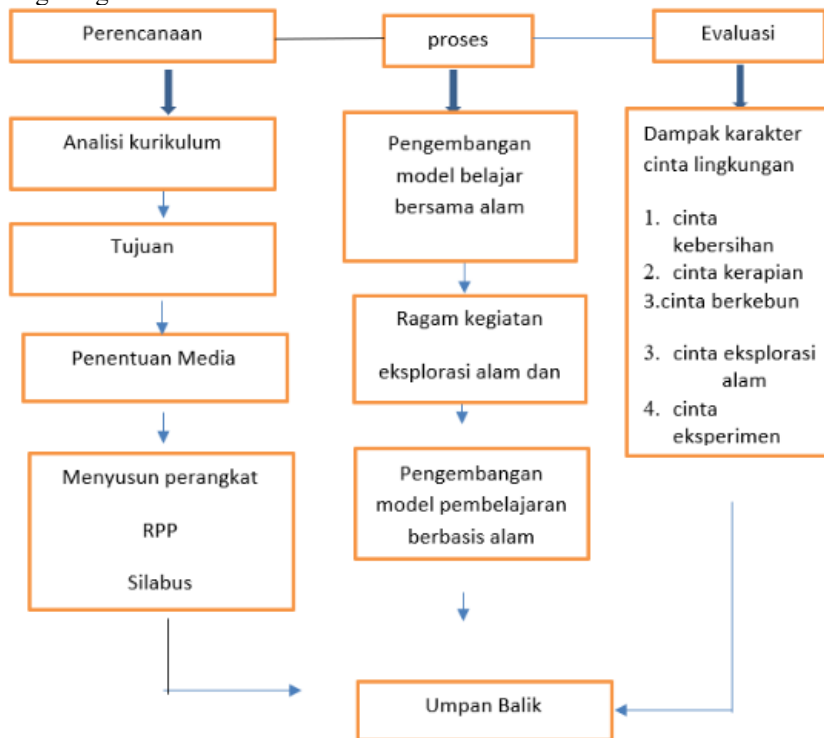


Figure 1. draft learning model

The hypothetical model consists of three main stages, namely planning, process, and evaluation. The planning process is carried out to prepare the main activities in the form of problem-based learning. nature. Before implementing nature-based learning natural The teacher determines the media to be used and prepares supporting materials such as lesson plans and syllabuses. The next stage is the process. At this stage the main activity is carried out, namely learning, to furthermore observed impact on character Love environment in children educate. The final stage is evaluation to see the impact of learning based natural in increase character Love environment pda child age early.

**4.2.3 Learning Model Development Design**

Based on need in increase character Love environment in children educated at Miftahul Jannah Nature Kindergarten, Aisyiyah Al Amin Kindergarten, Aisyiyah Kindergarten Punggawan and KB/TK Qur'an Science Insan Scholar so learning model is needed based natural with learning media from nature / environment around school use method Learning with Nature (BBA) via practice directly that brings up experience with Lots exploration and experimentation.

The product in this research is a guidebook on learning. based nature. The size of the book used in this study is B5, which is 25 cm x 17.6 cm. The letters used have a shape and size that are easy to read and appropriate to the characteristics of students. This guidebook uses Times New Roman font, size 12. The guidebook was created using Canva software. The guidebook is made attractively to make it easier teachers in understanding the book's contents. Therefore, the language used is also easy and simple. The following is an image of the guidebook's design, from cover to closing.

In carrying out learning based natural it's very easy Because all necessary media No difficult available, available in the environment around school, sparking students' curiosity, involving gross and fine motor skills and rich in experience.

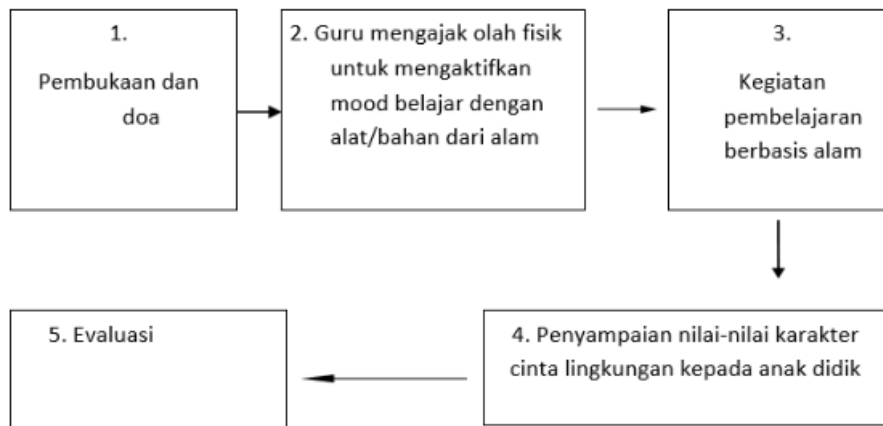


Figure 2. guidebook's design

**3.3 Feasibility Test of the Problem-Based Learning Model Natural**

Validation or feasibility of nature- based learning models For increase character Love environment child age Early validation was conducted by experts as validators. There are two validators: validation for media experts and validation for material experts. In addition to expert validation, feasibility testing was obtained from student and teacher responses to the implementation of the nature -based learning model.. The following is a feasibility test of each validation.

1. Media Validation

Media validation was conducted by media experts to determine the feasibility of the media developed by the researchers. In this study, the media validator was Mr. Oka Irmade. S,Pd, M.Pd who are professionals as a Technology Lecturer in the PG-PAUD UNISRI Study Program for Assessing the quality of the developed display or media. Media expert testing is conducted by someone who understands learning media, particularly for early childhood education. The media assessment sheet consists of seven main aspects: overall value, usability, accuracy, appropriateness, relevance, objectivity, and feedback. The results of the media expert validation are presented in the following table.

Table 2. Table 4.3 Media Expert Validation Results

No	Observed Aspects	Scale				
		1	2	3	4	5
1	Attractive cover display					v
2	The cover display stimulates curiosity year					v
3	Content / material design organized with Good				v	

4	Illustrations / images presented proportional					v
5	Illustration / image Already reflect purpose and objectives writing					v
6	Composition color in appearance					v
7	Appearance picture stimulate improvement character Love environment				v	
8	Illustration / image stimulate creativity child					v
9	Illustration / image in accordance with stages age child					v
10	Illustration / image stimulate creativity child					v
11	Illustration / image stimulate interest research					
12	Font and letter choices Already in accordance				v	
13	Relatedness between picture with material					
14	Stimulate development of moral religious norms in gratitude on God's gift					v
15	Stimulate think critical					v
	Amount score				72	
	Maximum amount				75	
	(Final value = sum score / score maximum x 100)				72:75x100=96	

The media expert validation table shows that the results of the media expert assessment for the development of the learning model The nature -based learning model has a score of 96 with very valid criteria. This means that the development of a nature -based learning model is very suitable for use in early childhood learning. media aspect.

#### 2. Material Validation

Material validation is used to determine the suitability of the learning guide book. based natural related to the material contained in the media. Does the material presented in the guidebook align with the curriculum, objectives, and needs? In this study, the validator of the material was Dr. Feri Faila Suha, S.Pd, M.Pd. Head of the PG PAUD UNISRI Study Program and Dina Pertiwi Aji, S.Pd, M.Pd PAUD lecturer. The results of the validation by material experts after averaging were 65 with good criteria with A little revision. From input media experts and experts material so researchers do repair product according to the advice of experts / validators so product worthy use For learning child age early.

### 3.4 Testing the Effectiveness of Learning Models based Natural

Effectiveness testing is conducted to determine the effectiveness of a learning model. Effectiveness testing is determined through pretest and posttest scores. The test was conducted at Alam Miftahul Jannah Kindergarten, Aisyiyah Al Amin Kindergarten, and Aisyiyah Kindergarten. Punggawan and KB/TK Qur'an Science Insan Scholar. Data collection in four kindergartens was intended to validate the data obtained. The research sample used was 10 students from each kindergarten. Of the 40 children, 10 students from the Alam Miftahul Jannah Kindergarten as control class that does not get treatment from products made by researchers. Total 30 students from Aisyiyah Al Amin Kindergarten, Aisyiyah Kindergarten Punggawan and KB/TK Science Qur'an as class experiment For get treatment from products created by researchers.. The pretest scores were taken before the activity, along with the initial observations. While the posttest scores were taken before the activity, along with the initial observations. the test was taken during the meeting after the activity learning is complete. Pretest and posttest scores test at Alam Miftahul Jannah Kindergarten, Aisyiyah Al Amin Kindergarten, Aisyiyah Kindergarten Punggawan and KB/TK Qur'an Science Insan Scholar attached.

From the value pre test and post test obtained so effectiveness test was conducted For know whether There is improvement character Love environment after given treatment. Effectiveness test use spss 22.0 with results as following :

**Table 3.** Pretest and Posttest Scores

	Pretest		Posttest	
	Control	Experiment	Control	Experiment
Average	38.90	36.77	56.00	57.03
Median	39.00	37.00	56.00	57.00
Mode	38.00	37.00	56.00	57.00
Standard Deviation	0.88	1.92	0.82	1.24
Lowest Value	38.00	34.00	55.00	55.00
highest score	40.00	40.00	57.00	59.00

Average pretest score in class control is 38.90 while class experiment obtained an average of 36.77. This is show that pretest results in class control more tall than class experiment.

- The average score on the posttest in the control class was 56.00 and in the control class was 56.00. experiment amounting to 57.03. This is show existence significant improvement in class control and class experiment.
- Lowest and highest values experience improvement in class control and experiment.

After effectiveness tests were carried out, then normality test was performed. Normality test used For know whether the data is normally distributed or no. Normality Test using the Kolmogorov test because sample amount to not enough from 50. If mark significant > 0.05 then the data is said to be distributed normal. Table normality test results as follows :

**Table 4.** Normality

	Kolmogorov-Smirnov		
	Statistics	df	Sig.
Experimental Pretest	0.122	30	0.200
Pretest Control	0.248	10	0.082
Experimental Posttest	0.156	30	0.060
Posttest Control	0.200	10	0.200

From the table normality test calculation with using the Kolmogorov Smirnov test, it was obtained results as following :

- The sig. value in the control pretest is 0.082, experimental pretest of 0.200, experimental posttest of 0.060, and the posttest control of 0.200 with level significance of 0.05.
- Based on sig results, obtained results sig. value > level significant (0.05) which means fail reject H 0. This is can concluded that All pretest and posttest observation data were normally distributed. So the data in the class experimental and control both in pretest and posttest observations can used For subject study.

Homogeneity test done after the normality test. Homogeneity test or similarity test variance intended For know whether pretest and posttest scores in sample own same variant or No. If research data Already normally distributed then homogeneity test was carried out.

**Table 5.** Homogeneity

		Levene Statistics	Df1	Df2	Sig.
Mark	Based on Mean	5,440	3	76	0.002
	Based on Median	4,972	3	76	0.003
	Based on Median and with adjusted df	4,972	3	59,608	0.004
	Based on trimmed mean	5,474	3	76	0.002

Based on the test table above, it is known that testing homogeneity in pretest and posttest observations with level significance of 0.05. From the sig. results, it was obtained sig. count result < level significance (0.05). This is produce reject H 0. This is can concluded that in the pretest and posttest observations in class control and class experiment have different variants or No homogeneous.

Effectiveness test done For test how much effective treatment on the sample. In the effectiveness test, the independent sample t test was used. Following is effectiveness test results.

**Table 6.** Effectiveness Test

	Levene's Test for Equality of Variances			t-test for Equality of Means				
	F		Sig.	t	df	Sig (2-tailed)	Mean Difference	Standard Error Difference
Value	Equal variances assumed	11,104	0.001	-53,415	78	.000	-19,475	,365
	Equal variances not assumed			-53,415	65,770	.000	-19,475	,365

Due to results homogeneity No varies, then at the time effectiveness testing use equal variances not assumed. Based on test results in the table above, can known that, obtained mark significance of 0.000. With level significance of 0.05 was obtained results reject H 0. This is means development of learning models based natural have an impact on increasing character Love environment child age early.

**Table 7. Descriptive statistics**

Class		Statistics	Std. Error		
nGain_percent	Experimental	Mean	87.2792	.92955	
		95% Confidence Interval for Mean	Lower Bound	85.3780	
			Upper Bound	89.1803	
		5% Trimmed Mean	87.2727		
		Median	86.6601		
		Variance	25,922		
		Standard Deviation	5.09138		
		Minimum	78.26		
		Maximum	95.83		
		Range	17.57		
		Interquartile Range	8.33		
		Skewness	.124	.427	
		Kurtosis	-1.009	.833	
		Control	Control	Mean	81.0346
95% Confidence Interval for Mean	Lower Bound			78.2905	
	Upper Bound			83.7788	
5% Trimmed Mean	81.0738				
Median	80.9524				
Variance	14,716				
Standard Deviation	3.83609				
Minimum	75.00				
Maximum	86.36				
Range	11.36				
Interquartile Range	7.91				
Skewness	-.026			.687	
Kurtosis	-1,052			1,334	

**Table 8. N-Gain**

	Control Class		Experimental Class	
	Mark	Information	Mark	Information
N-Gain	0.8103	Tall	0.8728	Tall
N-Gain %	81.03	Effective	87.28	Effective
Minimum	75.00		78.26	
Maximum	86.36		95.83	

#### 1. Control class

The N-Gain value in the control class was 0.8103, which is in the high category. This indicates that the improvement in environmental character was high. Furthermore, the N-Gain % value in the control class was also 81.03, which is in the effective category. This means that nature-based learning is effective in developing character. Love environment.

#### 2. Experimental class

The N-Gain value in the experimental class was 0.8728, which is in the high category. This indicates that the improvement in environmental character is high. Furthermore, the N-Gain % value in the experimental class has also reached 87.28, which is in the effective category. This means that problem-based learning is effective. natural has been effective in developing character Love environment.

## 4 Discussion

### 4.1 Learning Model Needs Analysis based natural For develop character Love environment

To find out the problems that occur in the field, especially those related to the character development process. Love environment in Miftahul Jannah Nature Kindergarten, Aisyiyah Al Amin Kindergarten, Aisyiyah Kindergarten Punggawan and KB/TK Qur'an Science Insan Scholar To identify and solve these problems, a needs analysis is necessary. This activity involves analyzing the actual learning process in the field, conducting learning observations, and conducting a literature review.

Based on the results of observations that have been carried out at Miftahul Jannah Nature Kindergarten, Aisyiyah Kindergarten Punggawan, Aisyiyah Al Amin Kindergarten, KB-TK Sains Qur'an Insan Scholars obtained several points regarding the learning process that has been taking place so far. Planting character Love environment Still done with simple way without using a special program with regular and monitored schedule. Conditions like This make student do No formed in a way maximum values the character that will built.

During the interview it was also found A condition child educate still very used to it throw away rubbish random and the same very Not yet know sorting rubbish organic and inorganic, but in nature kindergarten Miftahul Jannah has arrived start do habituation guard environment with scheduling activities that have started directed, a new, fun, non-monotonous learning model is needed, and it involves children. One of them is the Learning Model based nature. Researchers expect products produced can form character Love environment.

A needs analysis broadly consists of two activities: literature and curriculum studies, and field studies. The following explains each stage:

a. Literature and Curriculum Study

learning guide book based nature which is the product in this research can be presented well according to Based on the established criteria, the creation of learning guidebooks must be carried out systematically. The steps used in designing a guidebook for developing natural learning models to improve character Love The environment is adapted to the Brog and Gall model development procedures. In this study, literature and curriculum analysis were obtained by analyzing learning devices, assisted by lecturers who are experts in learning devices. Observations and interviews were conducted to identify the potential and problems at Miftahul Jannah Nature Kindergarten and Aisyiyah Kindergarten. Punggawan, Aisyiyah Al Amin Kindergarten and Insan Quran Science Kindergarten Scholars. Results of interviews at the four kindergartens show that method Learning with Nature (BBA) is used in the development model learning based natural almost Not yet Once carried out. From the existing potential and problems, researchers want to develop learning based natural For increase character Love environment child age early.

b. Field Study

In collecting field study data, the author conducted observations in the form of interviews and questionnaires with teachers at TK Alam Miftahul Jannah, TK Aisyiyah Punggawan, Aisyiyah Al Amin Kindergarten and Insan Quran Science Kindergarten Scholar by using interview guides and collecting theories about the development of learning models based natural For increase character Love environment child age early. In this study, the researcher conducted observations in class A at Alam Miftahul Jannah Kindergarten, Aisyiyah Kindergarten Punggawan, Aisyiyah Al Amin Kindergarten and Insan Quran Science Kindergarten Scholar. In conducting observations, researchers collected data that the formation of character Love environment only just implemented without schedule and method as well as without using a special program.

## 4.2 Development of Nature- Based Learning Models

At this stage, researchers design and develop products in the form of learning guidebooks based on natural For increase character Love environment child age Early. The contents of this module aim to introduce children to the feeling of gratitude. to God above gift natural universe, training not quite enough answer as well as practice creativity.. The compiled guidebook will introduce students to about importance guard environment around as well as provide room exploration and experimentation through natural media.

Book guide development of learning models based natural only just a trigger so that teachers can more creative combine learning with exploration natural as well as designing learning in a way complete with correct cycle.

After using a learning model based natural known that character Love environment increase, child educate aware importance guard natural as gift from God.

## 4.3 Learning Models Nature Based

Feasibility of the Learning Model based natural through evaluation from expert materials and media experts, where they are obtained mark from questionnaire given to the validators. from media experts get score 96 with very good category so it is very worthy used. Assessment from expert material get score 65 with category Good so that worthy For used.

## 4.4 Effectiveness of Learning Models Nature Based

Based on the data obtained visible existence significance in class control before given treatment (pre test ) and after given Treatment (post test ). The effectiveness test used the nGain test, which obtained high criteria and was quite effective in improving character. Love environment in children age early.

This shows that the learning model is based on natural effective for improving character Love environment. Therefore it is very possible if learning based natural This used in Early Childhood Education in the city of Surakarta in particular and throughout Indonesia in general.

## 5. Conclusion

Based on the results of the development research and discussion that have been described in the previous chapter, it can be concluded that:

1. A learning model based on natural in accordance with the analysis of learning model needs. Based on the results of interviews and observations, it is known that the current learning is still not nature practice direct through experiments and exploration.
2. nature- based learning model is realized in the form of a guidebook. The guidebook, which contains activity instructions, can make it easier for teachers and students to implement nature-based learning. nature.
3. Learning model based on natural declared suitable for use in Miftahul Jannah Nature Kindergarten, Aisyiyah Kindergarten Punggawan, Aisyiyah Al Amin Kindergarten and Insan Quran Science Kindergarten Scholars in terms of methods, media and materials.
4. Learning model based on natural effectively used to improve character Love environment at Miftahul Jannah Nature Kindergarten, Aisyiyah Kindergarten Punggawan, Aisyiyah Al Amin Kindergarten and Insan Quran Science Kindergarten Scholar. The effectiveness of problem-based learning models natural Based on the hypothesis test with the results of thitung > t tabel. Based on the results of the n-gain test, the results obtained show that the learning model is in the quite effective category.

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## Conflict of Interest

The authors declare there is no conflict of interest.

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