

THE EFFECT OF HYDROPONIC GARDENING ACTIVITIES AND PARENT INVOLVEMENT ON CHILDREN'S NATURALISTIC INTELLIGENCE

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ABSTRACT

Living in a big city such as Jakarta that is densely populated and crowded is challenging. The limited open land is an obstacle for schools in urban areas, especially in the Central Jakarta region, to stimulate children's naturalistic intelligence and sometimes become a forgotten thing. The rapid progress of technology and information makes children become electronic addiction and nature deficit disorder. The teacher feels it is difficult to carry out activities related to nature. The results of preliminary observations show that the naturalistic intelligence of early childhood still has not received attention to be developed. The lack of teacher creativity to create and design activities to improve children's naturalistic intelligence is also another obstacle. Likewise, parent involvement in children's learning activities is still not optimal. The aims of this study was to look at the effect of hydroponic gardening activities and parents involvement on the naturalistic intelligence of early childhood. This study included an ex post facto study using a quantitative survey research approach to TK B children. The results of the study showed that there were hydroponic gardening activities and parental involvement had a significant influence on naturalistic intelligence in early childhood. Urban farming activities such as hydroponic gardening need to be introduced to kindergarten teachers to get around the limited land in schools. Hydroponic gardening activities can be designed so parents can be involved in learning with children and teachers with a pleasant atmosphere.

Keywords: *naturalistic intelligence, hydroponic gardening, parent involvement.*

INTRODUCTION

Living in a big city like Jakarta that is densely populated and crowded is challenging. The limitations of open land are an obstacle for schools in urban areas, especially in Central Jakarta region, to stimulate children's naturalistic intelligence and sometimes become a forgotten thing.

The results of preliminary observations show that early childhood naturalistic intelligence still has not received attention to be developed. Learning activities in kindergarten still tend to be done in the classroom rather than outside the classroom. And they have not provided the wide opportunity for children to get to know and explore natural surroundings. The lack of teacher creativity to create and design learning activities while playing which can improve children's naturalistic intelligence is also an obstacle. The teacher feels it is difficult to carry out activities related to nature. Likewise, the parents involvement in children's learning activities is also not optimal.

Naturalistic intelligence as one of the earliest forms of human ability, helps humans to adapt and survive. Gardner, based on the results of his studies, defines multiple intelligence or multiple intelligence in humans, (Wilson: 2016), "Gardner described the seven aspects of human intelligence as being verbal / linguistic; mathematical / logical; spatial; musical; kinesthetic; interpersonal; and intrapersonal, in 1994 he began to herald, describe, and publicize the eighth

intelligence, "naturalistic intelligence" (or "nature smarts"). Naturalistic intelligence is an ability that helps humans to recognize patterns and changes in their environment so they are able to adapt to their surroundings. For this reason, stimulation of naturalistic intelligence is as important as other multiple intelligence stimulation.

According to Gardner, naturalistic intelligence is undoubtedly the thing that helped our ancestors as hunters in identifying which plants and animals were edible and which were not, this natural intelligence has also helped ancient humans to observe patterns and changes around and the environment so that they are able to survive and breed (Kowald: 2014). In line with this,

Gardner said (Wilson: 2016), "these intelligences, or strengths, are not fixed like a standard IQ. Each intelligence can grow and develop throughout a person's life. One way to develop nature smarts is to explore and learn about the world outside the schoolroom windows."

Children can develop nature smart by exploring the world around them. They need to explore, see, feel, taste, touch, smell, from many things around them. But sometimes, learning in schools is still mostly done in classrooms. For children who have naturalistic intelligence and like outdoor activities, this can reduce meaningful learning resources, namely nature and the surrounding environment. Kindergarten teachers feels it is difficult to carry out activities related to nature. How to bring children in to the wild without risk or how to the get the nature in to the classroom?

There are two solutions to this problem (Armstrong, 2010), "First, more learning needs to take place for these kids outside in natural settings. Second, more of the natural world needs to be brought into the classroom and other areas of the school building, so that naturalistically inclined students might have greater access to developing their naturalistic intelligence while inside of the school building."

The rapid og technology and information also has a negative effect for children. If we are not wise to use technology and communication with children, then children might be electronic addiction or addicted to electronic equipment and nature deficit disorder. (Lou, 2013) states, "The best preparation for the twenty-first century, therefore, may be a combination of natural and virtual experience, the more high-tech we become, the more nature we will need."

Thus, we need to combine a learning resources between natural experience and also tecgnology to provide 'natural balance'. Technological advances, on the one hand, provide ease of life for humans in their daily lives, but on the other hand it also has a negative effect on human survival itself. In view of this, balancing activities need to be pursued so that children, especially those in urban areas, still have the right to study while playing in the natural environment, or by providing opportunities to study the environment and nature. Thus the best thing parents and educators can do for children is to prepare children's abilities about today's technology and love of the universe.

Gardner revealed that in traditional classes, children with naturalistic abilities have not been well accommodated. Whereas according to Stone in his book Smart by Nature, "Nature is our teacher" (Stone, 2009).

Quoting Tirri and Nokelainen (Mumthas & Farooque: 2012) "there are 3 (three) statements to measure naturalistic intelligence based on Environmental Sensitivity Scale (EnSS), love for nature, protection of nature and habits or an

environmentally friendly lifestyle.”

The importance of activities in open space and direct experience that can provide curiosity and arouse curiosity in children. Providing opportunities for children to learn about nature, how to directly learn from nature or bring nature into learning for children this can be obtained through hydroponic gardening activities. In line with this, (Rosenow, 2008) reveals that reading books about insects, watching videos about nature, is not worth the direct experience of picking and tasting directly ripe tomatoes, which are planted on their own. The lack of outdoor activities contributes to a number of problems, such as child obesity, children's dislike of being outdoors and even fear of the outdoors. A childhood that is rich with direct experience with nature to build awareness of the environment. “It is necessary to provide education that can arouse a great sense of pleasure and curiosity towards the nature where they live”(Laird, Shelby Gull, McFarland-Piazza, Laura & Allen, Sydney: 2014)

Honig believes in the importance of efforts to focus on family-oriented programs (Honig: 1982). Some efforts can be made, among others, by increasing the awareness of parents about the involvement of parents in children's education, raising parents' awareness of the importance of children's lives, helping parents obtain the information they need, preparing assistance needed by parents so that they can play an active role in their children's education parents about important resources and communities that parents can use for their children's education.

Epstein stated that researchers, practitioners and decision makers have noted the importance of parental involvement as one of the four effective components of the school namely teaching, curriculum, advisors and parents. (Epstein, 1987). The evidence clearly shows that encouragement from parents, in a variety of activities and interesting things and participation both at home, at school and in the classroom has an impact on children's learning outcomes, attitudes and aspirations. Students get personal and academic development if their families support the school, helping children to know what they are doing and continuously doing during the school year.

Hydroponic is well-known among gardening hobbies and recently it become a favorite activity in gardening, especially in urban areas. (Anderson & Swafford, 2011) said, “hydroponics is the process of growing plants without soil, instead using nutrient rich water. Roots are in direct contact with the nutrient rich solution while also being exposed to oxygen. The plant gets exactly what it needs, when it needs it, and in the right amount that it needs. Since the plants roots don't have to search for nutrients and there's plenty of it, plants get bigger and grow faster”. So, that's what makes people like hydroponic. More specific,(Ernest & Busby, 2009) “Hydroponic is one of the methods used for growing large quantities of vegetables in a significantly smaller areas”.

There are several systems or methods of working in hydroponic gardening, one of which is the wick system or axis. Wick system is the easiest way to do hydroponics, because it does not require electricity at all, without a water pump and without an aerator (air bubble device). The trick is to put the axis made of pieces of flannel cloth that easily absorb water at the bottom of the netpot (small pots with air cavity holes), then put the plants in the hydroponic growing media such as coco fiber or rockwool into the netpot. Thus the axis is able to deliver nutrient fluids from the bottom to the roots of the plant. “Wick hydroponic systems

work well for small plants and herbs. This hydroponic system doesn't work well for plants that need a lot of water or have watery produce such as tomatoes" (Shu et al, 2005).

With various interesting things about hydroponics, unfortunately, very few schools that want to do the hydroponic gardening. Various reasons were found, do not knowing about the method of hydroponic gardening, teachers were not have enough time to prepare the activity, it was too much trouble to take care of it, it was expensive, and so on.

Schellman revealed that school gardens can be started from small things such as spreading seeds, to broad activities such as extracurricular programs that can include parents. Schelman also revealed several obstacles to involving parents in school activities including: from the teacher's side, not knowing any activities that could involve parents, felt overwhelmed with a solid program and there was an inconvenience level when "watched" by parents. While from the parents' side, they are not aware and do not yet know that parental involvement in the school is also needed, besides that it is also busy working, feeling they do not have the skills or teaching skills in the classroom. To eliminate these obstacles, School Gardens can be used as a solution. "Gardening is a universal language". With a garden background, activities will be more comfortable than in a classroom. Parents, teachers and children can take advantage of gardening activities to collaborate. Schools design activities, children ask their parents to be able to participate to help them and enjoy this activity happily

As a golden period, it is a foundations for physical maturation, independence, morality and religious values, stimulation is needed in accordance with the needs of children, so they can grow and develop optimally. The hydroponic gardening activities is one of the activities that should be carried out in kindergarten. Doing hydroponic gardening in kindergarten, can provide opportunities for children to carry out simple experiments and research. Children can observe the growth of seeds, become sprouts, watching the leaves grow, then become a vegetables that are ready to cook and even to serve for a meal together. Because children do themselves and observe directly, they are expected to be able to develop naturalistic intelligence through this activity.

Based on the reasons outlined above and realize how important it is to develop naturalistic intelligence in early childhood, which is indeed rarely done in kindergarten. This is an interesting thing for researcher to conduct research on the influence of hydroponic gardening and the involvement of parents in improving naturalistic intelligence of early childhood.

METHOD

This study generally aims to obtain information about the influence of hydroponic gardening activities and parental involvement in the naturalistic intelligence of Group B children in Menteng Subdistrict, Central Jakarta. This research was conducted in January-December 2018. The method used in this study was ex post facto research. (Handini: 2017) "Ex Post Facto is a comparative quantitative research that is most similar to an experiment, but without treatment, because the variable has occurred or because the variable basically cannot be

manipulated". The research design used in this study uses 2x2 factorial design. The dependent variable in this study is the Naturalistic Intelligence of Children (Y), the independent variables are Hydroponic Gardening Activities (X1) and Parental Involvement (X2).

Tabel 2. Research Design

Manipulative Variable(A) AttributeVariable (B)	Hydroponic Gardening Activities	
	Kindergarten with Hydroponic Gardening Activities (A1)	Kindergarten without Hydroponic Gardening Activities(A2)
High Parent Involvement (B1)	A1 B1	A2 B1
Low Parent Involvement(B2)	A1 B2	A2 B2

The population in this study were all kindergartens in Menteng Subdistrict, Central Jakarta. Determination of the sample in this study using Multistage Stratified Proportional Random Sampling. From 24 kindergartens in Menteng Subdistrict, after data collection, there were only 2 kindergartens that had hydroponic gardening activities. Furthermore, as a control group, 2 TKs were chosen which did not have hydroponic activity. The total number of samples is 60 kindergarten children B. The data in this study will be obtained using a questionnaire sheet with respondents of parents of kindergarten students B to obtain data on naturalistic intelligence of early childhood and parental involvement.

Instrument was conducted at two kindergartens in South Jakarta and in East Jakarta with 40 respondents to test the validity and reliability of the instrument. Measurement of naturalistic intelligence of early childhood is done by using a questionnaire sheet for parents of students consisting of dimensions 1) Love for nature (having love for nature) 2) Nature conservation (having a concern for nature protection), 3) Environmentally-friendly consumer habits (having habits or an environmentally friendly lifestyle. Validity of naturalistic intelligence instruments for early childhood tested using Pearson Product Moment. Based on the results of validation of early childhood naturalistic intelligence instruments, from 38 questions, 21 items are declared valid. Reliability of this naturalistic intelligence instrument for early childhood tested by Alpha Cronbach formula. The reliability result of the naturalistic intelligence with a significance level of $\alpha = 0.05$ are r values of 0.88, when compared with the interpretation table of reliability results, if r value between 0.80 0-1,000, it is interpreted that instrument reliability is high and can be used for research.

The Instruments of parental involvement include dimensions of encouragement (providing support), modeling (being role models for children), reinforcement (providing reinforcement in behavior, and instruction (giving instructions), parental motivation, involvement of parents in schools and things that related to the life of parents.

The validity of the parental involvement instrument used Pearson Product Moment correlation formula. The validation result of naturalistic intelligence instruments for early childhood, from 75 questions, 54 items were declared valid. To test the reliability of parental involvement instruments using the Cronbach

Alpha formula. The results obtained from the reliability test of the parent involvement instrument with a significance level of $\alpha = 0.05$ are r values of 1.00 when compared with the interpretation table of reliability results, if the r value is between 0.800-1.000, then it is interpreted that the instrument reliability is high research.

The research data came from 60 respondents, parents of class B students. Data were analyzed using descriptive analysis, normality test data using the Kolmogorov-Smirnov formula, variance homogeneity test using the Bartlett test. Furthermore, the results of the research data were hypotheses tested by using two-way Anava and followed by the Tukey test.

RESULTS

The research data are grouped into eight data groups summarized in the following table:

Tabel 1. Data Recapitulation of Scores Based on Children's Naturalistic Intelligence
Research Samples for Calculation of Descriptive Statistics

Group Data	N	$(\sum X_i)$	M/x	SD/S	S ²	R	Mode	Median	MinScore	Max Score
A ₁	30	2530	84,33	6,7	44,92	20	78	82	76	96
A ₁ B ₁	15	1301	86,73	7,34	53,92	18	0	86	78	96
A ₁ B ₂	15	1229	81,93	5,18	26,78	16	78	80	76	92
A ₂	30	2344	78,13	4,5	20,26	15	81	81	70	85
A ₂ B ₁	15	1196	79,73	3,49	12,21	11	81	81	74	85
A ₂ B ₂	15	1142	76,13	5,34	28,55	15	81	76	68	83

Then, data made in the form of a frequency distribution table. The data analysis requirements are normality test and homogeneity test. Normality test using Kolmogorov-Smirnov test with degree of freedom (db) = n (the number of subjects is 15) and the real level $\alpha = 0.05$ is obtained $L_t(0.05; 15) = 0.338$. The testing criteria is that if H_0 is accepted it means the sample is normally distributed. The statistical test criteria is to reject H_0 if $L_0 > L_t$ and accept H_0 if $L_0 < L_t$. The results of the calculation and test of the significance of overall normality are summarized in Table 2 below

Tabel 2. Summary of Results Calculation of Normality on

Children's Naturalistic Intelligence and Parent Involvement

No.	Group	N	D-absolute score ₀	L _t Score	Conclusion
1	A ₁ B ₁	15	0,128	0,338	Normal
2	A ₁ B ₂	15	0,11	0,338	Normal
3	A ₂ B ₁	15	0,102	0,338	Normal
4	A ₂ B ₂	15	0,117	0,338	Normal

Based on Table 2, Kolmogorov-Smirnov obtained, the d-absolute value for all groups of data is smaller than the price of Lt (0.05; 15) (at a real level $\alpha = 0.05$ with $n = db = 15$). Thus, it can be concluded that all groups of data in this study came from populations or samples that were normally distributed. Therefore, normal data requirements are met, so that it can be used in the calculation of the research hypothesis.

The testing criteria are accept H_0 if X^2 count is smaller than X^2 table at the real level $\alpha = 0.05$ and $db = 3$ ($X^2(0.05; 3) = 7.815$). The summary of the variance homogeneity test results through the Bartlett test of the four groups of data as presented in Table 3 below:

Tabel 3. Summary of Calculation Results in the Variance Homogeneity Test

Children's Naturalistic Intelligence Data Group						
No.	Group	N	Varians (S ²)	Score (X ² _{hitung})	Score (X ² _{tabel})	Conclusion
1	A ₁ B ₁	15	53,92	7,292	7,82	Homogen
2	A ₁ B ₂	15	26,78			
3	A ₂ B ₁	15	12,21			
4	A ₂ B ₂	15	28,55			

The hypothesis test using a two-way analysis of variance (Anava) and continued with further testing with the Tukey test. The results of calculating the analysis of variance from a score of children's naturalistic intelligence are summarized in Table 4 below:

Tabel 4. Summary of Two-Way Anava Test Results for Calculations Data on Children's Naturalistic Intelligence

Varians	db	JKA	RJK = JKA/db	F _{count} = RJK/RJK _D	F _{tabel} ($\alpha=0,05$)
Interline (B) (Parent Involvement)	1	264,59	264,59	8,712	4,01
Between Columns (K) (Hidroponic Gardening)	1	614,39	614,39	20,23	

Activities)

Interaction (B X K)	1	3005,427	3005,427	98,96	
Between Groups	3	884,407	294,802	9,708	2,72
In Group(D)	56	1700,523	30,367		

Between Columns based on the results of the two-way Anava calculation above, it can be stated that (1) the results of hypotheses testing related to inter-column (K) factors, namely hydroponic gardening activities, obtained the Fcount score greater than the Ftable score at the significance level $\alpha = 0.05$ (Fcount = 20.23 > F table = 4.01), (2) the results of testing hypotheses related to inter-line factors (B), namely parental involvement, obtained the price of Fcount greater than Ftable at a significant level $\alpha = 0.05$ (Fcount = 8.712 > F table = 4.01), and (3) to test the hypothesis which states that there is an influence of interactions between hydroponic gardening activities and parental involvement in children's naturalistic intelligence, proven significantly (Fcount = 98.90 > Ftable = 3.95) at the real level $\alpha = 0.05$.

To prove the results of the Anava test, the analysis of the hypothesis test is continued by the Tukey test to see the effect of differences in the effect of each variable and test the significance through calculating the difference in the mean scores of the two treatment groups paired in the related variables.

1. First hypothesis

The results of the calculation of the mean score of naturalistic intelligence of children in group A1 of 84.33 were significantly higher than the mean score of child discipline in group A2 of 78.13. Through the Tukey test at the significance level ($\alpha = 0.05$) obtained the value of Qcount = 5.964 \geq Qtable (0.05) = 2.89, then the working hypothesis (H1) received through the F test is in line with the Q test results (Tukey numbers) . The results of this test illustrate that naturalistic intelligence of children in kindergarten who have hydroponic gardening activities is better than children in kindergarten who do not have hydroponic gardening activities

2. Second Hypothesis

The results of the calculation of the mean scores of children in group B1 amounted to 183.17 significantly higher than the mean score of the of children in group B2 of 175.43. Through the Tukey test at the significance level ($\alpha = 0.05$) obtained a value of Qcount = 7.261 \geq Qtable (0.05) = 2.89, then the working hypothesis (H1) received through the F test is in line with the Q test results (Tukey numbers) . The results of this test illustrate that naturalistic intelligence of children with high parental involvement is better than naturalistic intelligence of children with low parental involvement.

3. Third Hypothesis

The results of testing the hypothesis, obtained the price of Fcount greater than Ftable at the significance level $\alpha = 0.05$ (Fcount = 98.96 > Ftable = 4.01). This means rejecting the null hypothesis (H0) and accepting the working hypothesis (H1). That is, there is an influence of interaction between the hydroponic gardening activities and parental involvement in children's naturalistic intelligence. Thus, it can be said that children's

naturalistic intelligence. significantly affected by interactions between hydroponic gardening activities and parental involvement.

Then from the further calculation, it was obtained that the value of $Q = 7.449$ and $Q_{table} (0.05) = 3.01$, then rejecting H_0 and accepting H_1 that there was a significant interaction effect between hydroponic gardening activities and parental involvement in children's naturalistic intelligence, so it was decided to reject H_0 and accept H_1 . In other words, this is in accordance with the results of the two-way F Anava test, namely the interaction between hydroponic gardening activities and parental involvement in the naturalistic intelligence of children at a significance level of $\alpha = 0.05$.

4. Fourth Hypothesis

The results of the calculation of the mean score of naturalistic intelligence of children in the A1B1 group were 86.73 which was significantly higher than the mean score of the child discipline in the A2B1 group of 79.73. Through the Tukey test at the significance level ($\alpha = 0.05$) obtained the value of $Q_{count} = 4.919 \leq Q_{table} (0.05) = 3.01$, then the working hypothesis (H_1) received through the F test is in line with the Q test results (Tukey numbers). The results of this test illustrate that groups of children who carry out hydroponic gardening activities with parental involvement influence the child's naturalistic intelligence, proven.

5. Fifth Hypothesis

The calculation of the mean score of naturalistic intelligence of children in kindergarten who have hydroponic gardening activities with low parental involvement (group A1B2) of 81.93 was significantly higher than the mean score of discipline of children in which parents involved passive A2B2 groups of 76.13. Through the Tukey test at the significance level ($\alpha = 0.05$) obtained the value of $Q_{count} = 4.076 > Q_{table} (0.05) = 3.01$ then rejects H_0 and accepts H_1 . The results of this test illustrate that naturalistic intelligence of children in kindergarten who have hydroponic gardening activities with low parental involvement is higher than the naturalistic intelligence of children in kindergarten who do not have hydroponic gardening activities with low parental involvement.

CONCLUSION

The study found that there were significant differences in the level of naturalistic intelligence among children in kindergarten who have hydroponic gardening activities and children in kindergarten who do not have hydroponic gardening activities which mean the children's naturalistic intelligence in kindergarten with hydroponic gardening activities are higher than groups of children in kindergarten that has not hydroponic gardening activities.

Referring to several previous studies, (Rosenow: 2008) revealed that when children explore the environment, at that time they also develop new knowledge and relate it to the knowledge that children have known before. Nature provides a variety of opportunities for children to develop new concepts through direct interaction with teachers and direct interaction with activities carried out by children. Then (McLennan: 2010) the results of his research state that kindergarten

as a place of learning that focuses on the approach to children and material according to the right age (age-appropriate) and to foster self-motivation and discovery, now has begun to shift.

McLennan stated that as educators, they were concerned about the reduction in aesthetic feelings, playing and learning through exploration in activities in kindergarten, displaced by standard-based learning and assessment. Hydroponic gardening activities promote awareness about healthy living and active lifestyles. Children who are directly involved in growing vegetables and fruits in schools, from seeds to being ready to harvest, and learning healthy lifestyles, are surrounded by a variety of interesting activities. It turns out that many children have never had the opportunity to plant crops starting from seeds, and observe their growth. Children are also directed to pay attention to each other and maintain the plants, soon everyone can feel the harvest together. This activity is very interesting for children and provides an opportunity for children to witness the source of food directly. By providing support for children to plant early, it means not only advocating writing and reading, but also teaching to respect life.

In line with the above (Nimmo & Hallet: 2008) in his research explaining the importance of teaching children gardening as a fun adventure. With this activities, children learn their world through stories, playing, learning to take risks, build relationships and deep nature of differences. These things are important to be taught in early childhood. Open nature provides a feeling of freedom and calm. The garden is a playground where children can use their sensory and imagination to create a new world.

Thus, seeing the benefits and importance of activities outside the classroom and natural exploration for children of age, it will greatly benefit the development of intelligence. Thus, the more children are given the opportunity to explore the nature around them in a more structured way such as doing hydroponic gardening activities in schools, the higher the naturalistic intelligence.

The results of this study indicate that the naturalistic intelligence of children whose parents have high involvement is better than the naturalistic intelligence of children whose parent involvement is low. In line with this (DeLoatch et al: 2015) in his research *Increasing Parent Involvement Among Head Start Families* concluded that parents in the Head Start program who implemented parental involvement in learning their children during preschool showed significant results in improving the ability of early childhood. Whereas (Mahmood: 2013) reveals the viewpoints of kindergarten teachers about collaboration with parents, among the lack of reciprocal responses from parents to teachers, difficulties in establishing relationships between teachers and parents, and the influence of social identity on kindergarten teachers. The teacher hopes that a good relationship will not only start with the teacher but also from the active involvement and strong desire of the parents. Collaboration between teachers and parents has a positive influence on children's progress, both at home and in kindergarten.

(Sharma & Dell: 2015) has conducted a pilot project to find out the feasibility and acceptability of gardening-based learning applied to preschoolers in Harris County, Texas, United States. The results of his research show that gardening-based learning has great possibilities and strong acceptance to be used as a curriculum in kindergarten learning and is a promising program. The results of

the study shows that gardening activities have a positive effect on improving children's knowledge and can increase children's desire to consume fruits and vegetables in preschool.

Based on the results of testing of the hypothesis this study shows the influence of interactions between hydroponic gardening activities and parental involvement in children's naturalistic intelligence. According to (Rosenow: 2008) A deep bond will be established between fellow children or between children and adults, when they share experiences with nature. When children have the opportunity to look after plants, plants, animals and insects, they practice caring behavior that can lead to kindness and gentleness to others. Therefore it is necessary to think together with learning activities in kindergarten by involving parents and these activities can be carried out outdoors in the form of fun playing chili learning activities.

Conclusions from the results of this study:

1. Hydroponic activities in kindergarten have an impact on naturalistic intelligence of early childhood. Nature provides a variety of opportunities for children to develop new concepts through direct interaction with teachers and direct interaction with activities carried out by children. Schools that only have concrete yards can also provide outdoor activities that bring children closer to nature, one of which is hydroponic gardening. Kindergarten as a place to learn sambal play, should not only focus on the approach to children and material according to the right age (age-appropriate) but also should be accompanied by activities that can foster self-motivation and simple discoveries.
2. The involvement of parents in activities in kindergarten has a positive impact on improving the results of children's learning achievements, especially children's naturalistic intelligence. Kindergarten teachers can work together and establish good relationships between teachers and parents. The teacher hopes that this good relationship will not only start with the teacher but also from the active involvement and strong desire of the parents. Collaboration between teachers and parents has a positive influence on the progress of children in kindergarten.
3. Hydroponic activities in kindergarten and parental involvement have interactions with naturalistic intelligence in early childhood. Open nature provides a feeling of freedom and calm. Hydroponic gardening activities can be used as children's playgrounds and also as a place for children to recognize risks but within safe limits. With hydroponic gardening children can learn to recognize risks, for example if the garden is not treated, the risk is that the plant will die, while the teacher also learns to give trust to the child. So this hydroponic gardening activity can also be considered to be included as one of the learning activities in schools, especially in kindergarten.
4. Hydroponic activities in kindergartens and high parental involvement have a better impact on early childhood naturalistic intelligence, meaning that hydroponic gardening activities are applied to early childhood with high involvement from parents in supporting learning activities for children to increase the children's naturalistic intelligence. A deep bond will be

established between children and children, between children and adults, when they share experiences with nature. Therefore it is necessary to think together with learning activities in kindergarten by involving more parents and those activities can be done outdoors in the form of learning activities while playing fun.

5. Low parental involvement in hydroponic gardening activities in kindergarten has an influence on naturalistic intelligence of early childhood, meaning that low parental involvement and hydroponic gardening activities will affect the low naturalistic intelligence of early childhood.

Thus hydroponic gardening activities and parental involvement have a positive effect on increasing naturalistic intelligence in early childhood. Besides that, this hydroponic gardening-based learning has the possibility to be used as a learning program in kindergarten and is a promising program, especially to introduce nature and improve natural intelligence of early childhood. However, further research is needed with a larger sample and design of learning about gardening-based activities in kindergartens that can increase the involvement of higher parents in early childhood learning activities as well as further research to test the effectiveness of hydroponic gardening activities in kindergarten and test the method used to identify weaknesses in the program.

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