Improve naturalist intelligence of early childhood through gardening activities in group children a Merauke State Pembina Kindergarten

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Abstract. This study aimed to improve the naturalist intelligence of early childhood in kindergarten children in group A through gardening activities in the Merauke State Pembina Kindergarten. This type of research is collaborative classroom action research. The research model used was Kemmis and Mc. Taggart. The subjects of this study were group A children in the Merauke State Pembina Kindergarten, a total of 25 children. The method of data collection is done through speaking (verbal) tests, observations, and documentation. The research data were analyzed descriptively quantitatively. Naturalist intelligence is said to have succeeded in increasing if 80% of the 25 children have reached the indicator of naturalist intelligence on criteria developed according to expectations. Through gardening activities can improve naturalist intelligence in group A children Merauke State Pembina Kindergarten. This is indicated by the percentage of naturalist intelligence in the first cycle of children who have reached the criteria of developing according to expectations, increasing by 28% from the initial condition of 48%, increasing to 76%. The increase in the percentage of naturalist intelligence in the second cycle was 12% from the first cycle of 76%, increasing to 88%.

1. Introduction

Current environmental problems are quite a dilemma and complex. The economy has been successfully built and continues to grow because it utilizes natural resources but has a negative impact on the environment. Early childhood learns through the surrounding environment. Many things children can learn from their closest environment. Providing experiences to children is the task of the adults around them. When children see adults damaging the environment, children also learn from it, learn how to damage their environment.

Education services in early childhood consist of 3 paths, namely informal, non-formal and formal, these services serve education at the age of birth up to 6 years. Informal learning is an education in the family, non-formal education such as Playgroups and childcare parks and formal education, namely TK / RA. The formal education pathway, namely kindergarten learning, is to encourage children to grow and develop optimally, therefore it is very important to optimize the intelligence of children from an early age because these times are golden ages. Intelligence that involves children to care about their environment is naturalist intelligence. To be able to develop optimally the naturalist intelligence of the child, it is necessary to have stimulation in children. Based on observations in Merauke State Pembina Kindergarten in group A, problems were found in naturalist intelligence. This can be seen from the results of observations on the initial ability that when children are invited to recognize various types of
vegetable and fruit trees the children cannot describe the characteristics of plants (vegetables and fruits), have not been able to classify various types of plants (vegetables and fruits), cannot know the benefits of plants for themselves and have not been able to preserve and cultivate plants (vegetables and fruit). Based on the problems that have been found at the time of observation and stated above, the teacher as a collaborator and researcher conducts a discussion to solve the problem. Teachers and researchers determine ways to improve naturalist intelligence by using an activity that can stimulate children's naturalist intelligence to develop optimally. Teachers and researchers hope that the activities to be given can improve children's naturalist intelligence. Given the enhanced development of naturalist intelligence, in this study gardening activities will be carried out to stimulate children's naturalist intelligence. As research conducted by Yasbiati, G. Rosarina, and A. Lutfiana (2007) [1] with farming activities can improve the naturalist intelligence of children aged 4-5 years.

This research is gardening vegetables and fruits. This gardening activity must be adapted to the needs and development of kindergarten children. It is hoped that it can improve naturalist intelligence in children aged 4-5 years (kindergarten group A) in the Merauke State Pembina Kindergarten.

Naturalist intelligence in children can be seen through its development by distinguishing between living things and inanimate objects. Nature in the city can be said to be very little, so children are not familiar with the natural environment. By being able to distinguish between living things and inanimate objects children living in the city can be said to have naturalist intelligence. Characteristics that can be seen when children have naturalist intelligence include the ability of children to attract natural world, children's ability to mark similarities and differences around them, children's ability to mark patterns and natural objects, and children's interest in stories related to phenomena nature, and children like to pay attention to the nature around them. These characteristics continue to develop in children with increasing age. Aging can make and develop the thinking power and point of view of children in addressing and seeing the surrounding world [2].

This intelligence includes the ability to recognize and classify various types of flora and fauna and enjoy fellowship with nature. This opinion is in line with Armstrong's thinking [3] which states that naturalist intelligence is defined as the ability to recognize and categorize species, both flora and fauna, in the surrounding environment and the ability to process and utilize, and preserve it. Naturalist intelligence involves the ability to recognize natural forms around us: flowers, trees, animals, and other fauna and flora. This also includes sensitivity to other natural forms such as the arrangement of clouds and the geological characteristics of the earth. In everyday life, we use this intelligence when gardening, camping with friends or family, or supporting local ecological projects. Naturalistic intelligence is the ability to categorize and make hierarchies of the state of organisms such as plants, animals, and nature [4].

Armstrong explained that children who have high naturalist intelligence tend to like the outdoors, they have great curiosity about the ins and outs of animals and plants [5]. Children are true naturist beings [3]. Small children can easily make a difference in the world of naturalists [6]. Children love to investigate the lives of small creatures such as worms, ants, and leaf caterpillars. Children love to observe earth mounds, examine animal tracks, scrape the ground, observe hiding animals and then catch and stab them to find out the contents of the animal's entrails. Children who have high naturalist intelligence tend to like the outdoors, are familiar with pets, and even spend their time near the aquarium. They have a great curiosity about the ins and outs of animals and plants [3]. It was concluded that from the opinions above the assessment indicators for naturalist intelligence from gardening activities for 4-5 year old children, namely: Can mention the characteristics of plants (vegetables and fruit), Can classify various types of plants (vegetables and fruit), Children can find out the benefits of plants for themselves and the ability of children to preserve and cultivate plants and crops.

Sutrisno & Harjono (2005) [7] Related to gardening activities is the activity of planting plants which can be obtained directly knowledge about plant life and psychomotor skills in planting plants. Responsibility for caring for plants, watering plants every day, and developing plants is also part of gardening activities. Beetlestone [8] states that gardening has very real benefits for physical development, which in turn affects creative development. When gardening children will have plenty of space to move and train their bodies with large-scale movements such as digging, scratching, running
and bending. Sutrisno & Harjono (2005) [7] Hopefully, gardening can be beneficial for other aspects, namely providing opportunities for children to explore and win the surrounding environment.

2. Methods
The type of research used is classroom action research in collaboration. Kusumah & Dwitigama [9] explain Classroom Action Research (CAR) is the teacher doing action research in the classroom. Action research is essentially a series of "research-actions-research-action ", carried out in a series to solve problems.

This study included the type of classroom action research model Kemmis & Mc. Taggart. The model proposed by Kemmis & Mc. Taggart (2010) [9] which consists of four components, namely: planning, action, observation and reflection, the component is a series in one cycle and the number of cycles depends on the problem to be solved. This research was conducted at the Merauke State Pembina Kindergarten. Performed through 2 cycles, each cycle is carried out following procedures, namely planning, action, observation, and reflection. Through these two cycles, we can observe an increase in naturalist intelligence through gardening activities.

The subjects in this study were children aged 4-5 years (group A) at Merauke State Pembina Kindergarten. The number of children 25, boys 11 children and women 14 children. Methods of data collection in this classroom action research are 1) speaking test, 2) observation, and 3) documentation. The indicators observed are that they can mention the characteristics of plants (vegetables and fruit), can classify various types of plants (vegetables and fruit), children can know the benefits of plants for themselves and the ability of children to preserve and cultivate plants and crops.

The instrument used is a sheet of observation (observation) is a guide in assessing the indicators seen. The form of the observation sheet (collection) that is approved is a checklist with a checkmark (√) in the assessment category. The data analysis technique used is descriptive quantitative data analysis. Quantitative descriptive data analysis is describing and describing the results of research without making generally accepted conclusions or generalizations.

Success criteria in this study were declared successful if the results showed a percentage of 80% (20 children) of the total number of children (25 children) could meet the indicators of naturalist intelligence on criteria developed according to expectations. Natural intelligence indicators used in this study, namely: 1) can describe the characteristics of plants (vegetables and fruit), 2) can classify various types of plants (vegetables and fruit), 3) children can know the benefits of plants for themselves and 4) the child's ability to preserve and cultivate plants and crops.

3. Results and discussion
3.1. Research Results
Cycle I was conducted for 2 meetings. The first meeting of the first cycle of activities was gardening mustard vegetables, meeting II of the first cycle of activities was gardening of spinach plants.

| Class / Group | Initial ability | Cycle I |
|---------------|-----------------|---------|
| TK A          | 48%             | 76%     |

Table 1. Results of the percentage of naturalist intelligence in Cycle I

Based on table 1 above, it can be seen that the results of the percentage of children in the criteria more than developed according to expectations in the first cycle also increased by 28% from the initial condition of 48%, increasing to 76%. For more details, see Table 2 below.

| Class / Group | Criteria          | Initial ability | Cycle I |
|---------------|-------------------|-----------------|---------|
| TK A          | Develop very well | 3 12%           | 7 28%   |

Table 2. Interpretation of naturalist intelligence enhancement in children in Cycle I
Based on Table 2 above, it can be seen that the naturalist intelligence of children in the first cycle is 28% or 7 of 25 children have achieved very good development criteria, 48% or 12 children from 25 children have reached the criteria developed according to expectations and 24% or 6 children still being on criteria began to develop. So it can be concluded that children in cycle II who have achieved more than developed criteria as expected are 88% or 22 children from 25 children.

Seeing from table 1 the percentage of achievement of children's naturalist intelligence still reaches 76% so it can be concluded that children's naturalist intelligence has not reached the success indicator that is 80% and therefore it needs to be continued to cycle II.

Reflection is carried out by the researcher with the class teacher at the end of cycle I. Reflection is done to discuss the things that become obstacles or things that have not been done in the implementation of cycle I. Based on the results of observations in the first cycle the obstacles include.

1) Teachers lack motivation and reinforcement for children.
2) The medium used is less large.
3) Examples of the process of plant growth shown by the teacher are only in the form of pictures.
4) The processed products of teacher plants only show in the form of images.

Seeing these conditions, it is necessary to improve both the learning process, the media, and activities that are more attractive to children. After discussing with the class teacher, improvements can be made for cycle II. The improvements in cycle II are as follows.

5) Seeds that have been grown that have been prepared by the teacher will be transferred by children to a larger pot medium.
6) The teacher gives examples of real plant growth processes such as showing plant seeds that are still in the form of seeds, growing to germinate, grow leafy and bear fruit significantly so that children are more motivated.
7) Children are involved to pick fruit directly from fruit or vegetables that are ready to be picked.
8) Children are involved in processing plant results directly.

Cycle II action planning is compiled based on the results of the reflection cycle I. Meeting I in cycle II activities of gardening tomato plants. Meeting II cycle II eggplant garden gardening activities. Based on the observations there is an increase in the naturalist intelligence of children in the second cycle, to be more clearly seen in table 3 below.

| Class / Group | Percentage |
|---------------|------------|
| TK A          | Initial ability | Cycle I | Cycle II |
|               | 48%          | 76%     | 88%     |

Based on Table 3 above, it can be seen that the results of the percentage of children in the criteria that are more than developed as expected in the second cycle increased by 12%, from the first cycle 76% to 88%. For more details, see Table 4 below.

Table 4. Interpretation of naturalist intelligence enhancement in children in Cycle II

| Class / Group | Criteria | Initial ability | Cycle I | Cycle II |
|---------------|----------|----------------|--------|---------|
|               | Result   | %              | Result | %       |

4
Based on table 4 above, it can be seen that the achievement of the second cycle naturalist intelligence of children is 88% so that it has reached the indicator of success. Based on these data it can be concluded that in the second cycle 88% of children were more than developed according to their naturalist intelligence expectations.

Reflections on cycle II were carried out by researchers and classroom teachers at the end of cycle II. Based on the results of reflection on naturalist intelligence that is approved by the child has reached the indicator of success. So from that, it is the reason for this study to be sufficient in cycle II.

3.2. Discussion
The research conducted was classroom action research conducted in two cycles, namely, cycle I and cycle II. Each cycle was held twice. Each cycle consists of planning, action, observation, and reflection. In cycle II are improvements from cycle I.

Armstrong [3] which states that naturalist intelligence is defined as the ability to recognize and categorize species, both flora and fauna, in the surrounding environment and the ability to process and utilize, and preserve it.

One activity that can develop naturalist intelligence is gardening activities. Beetlestone [8] states that gardening has very real benefits for physical development, which in turn affects creative development. When gardening children will have plenty of space to move and train their bodies with large-scale movements such as digging, scratching, running and bending. The benefits of gardening activities in addition to influencing the physical motor of children, can also increase children's naturalistic intelligence, train patience, foster responsibility, and build emotions and empathy.

This situation proves that gardening activities through games can improve children's naturalist intelligence in the Merauke State Pembina Kindergarten. Thus, classroom action research carried out through gardening activities can be said to be successful and able to improve the naturalist intelligence of children in the Merauke State Pembina Kindergarten.

4. Conclusion
Based on the results of the research and discussion it can be concluded that the use of gardening activities increases the naturalist intelligence of the children group A of the Merauke State Pembina Kindergarten. This is shown by the percentage of achievement of naturalist intelligence of children on criteria more than developed according to expectations in the first cycle increased by 28% from the initial condition of 48% increased to 76%. Children's naturalist intelligence on criteria more than developed as expected in cycle II increased by 12% of the first cycle 76% increased to 88%. Through gardening activities can make children easier to recognize the surrounding nature so that it can improve the naturalist intelligence of early childhood. Judging from the gardening activities during the speaking test by observing the indicators, they can mention the characteristics of plants (vegetables and fruits), can classify various types of plants (vegetables and fruits), children can know the benefits of plants for themselves, children's ability to preserve and cultivate plants and the results of plants shown by children can develop well.
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