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APPLICATION OF CROPPING ACTIVITIES TOWARDS SCIENCE KNOWLEDGE OF CHILDREN AGED 5-6 YEARS IN TK IT NADA ASHOBAH

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Abstract

This introduction discusses the importance of early childhood education in shaping the growth and development of children, especially in cognitive development. The golden period of childhood, particularly at the age of 5-6 years old, is a crucial time in forming personality and understanding of the surrounding environment. One important aspect to develop during this period is cognition, which involves various abilities such as attention, memory, and logical thinking. Science learning activities, especially through gardening methods, are an interesting approach to enhance the scientific understanding of young children. Through these activities, children can learn in a fun and contextual way while developing science process skills and understanding of the environment. The subjects of this research are 3 children aged 5-6 years old. The research method used is qualitative, involving observation, interviews, and literature studies to gain a deep understanding of the influence of gardening activities on the scientific knowledge of young children. Data analysis techniques use data reduction, data presentation, and drawing conclusions. The results show that gardening activities have a significant impact on the development of children, both in terms of knowledge, skills, and attitudes. This indicates the importance of introducing scientific concepts to young children through fun and relevant approaches to their daily lives.

Keywords: *Science, Gardening, Early Childhood.*

INTRODUCTION

Early childhood education is an effort to provide and foster the physical and mental growth and development of children from birth to 6 years of age so that they are ready to enter the next level of education (Karisma et al., 2022). Early childhood is a very valuable period in human life. Early childhood is a child who is in a period of development and growth. It is during this period that a person's personality begins to be formed. Experiences that occur at this age tend to persist and influence the child's attitude in the future, whether the child's character is good or bad (Fransiska & Yenita, 2021). To achieve optimal development in all aspects, a child needs a continuous process. Even though this golden period is limited, it doesn't mean that children have to be stuffed with various

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things. Forcing too many things on children can actually hinder their motivation to learn at school.

Children are in the golden age, meaning children experience very rapid growth and development. At this stage, they have great curiosity in learning new things. Children often ask questions and find out about everything around them. This period is known as a sensitive period and full of potential for children, where they easily receive stimulation from the environment through stimulation and educational efforts (Prameswari, 2020).

Science learning for early childhood emphasizes the development of process skills rather than the end result. These process skills must be developed in children as a meaningful experience. Introduction to science for kindergarten children should focus more on processes rather than products. These science process skills should be done simply and while playing, through exploring various objects around them (Amalia et al., 2018). In this golden period, one aspect that is important to develop from an early age is cognitive.

Cognitive is one of the domains in the educational taxonomy, which is generally defined as intellectual potential which includes the stages of knowledge, understanding, application, analysis, synthesis and evaluation. The cognitive domain includes mental/brain activities. Cognitive is related to the ability to develop rational aspects (reason). Cognitive theory places greater emphasis on processes or efforts to optimize a person's rational aspect abilities. Children's cognitive development involves progressive learning processes such as attention, memory, and logical thinking. Developing these skills is important so that children can process information, learn to evaluate, analyze, remember, compare and understand cause and effect relationships. Therefore, children's thinking and learning abilities can be improved through appropriate practice and training (Zega, 2021).

The cognitive world of preschool children is creative, free, and full of imagination. In their art, the sun could be green and the sky yellow. Their imaginations continue to develop, and their understanding of the world increases. There are seven factors that influence the cognitive development of the first child, heredity factors. Humans are born with certain potentials that are not influenced by the environment. 75 – 80% of intelligence is inherited or hereditary. Both environmental factors. Humans are born like clean white paper, with intelligence that is largely determined by experience and knowledge of their environment.

Third, Maturity. Fourth, organ factors (physical and psychological). Physical and psychological maturity, which is closely related to chronological age, determines the ability to carry out each function. Fifth, growth factors. Growth includes all external circumstances that influence the development of intelligence, either through deliberate formation (formal school) or unintentionally (influence of the natural environment). Sixth, interest and talent factors. This factor refers to innate abilities that need to be developed and trained to be realized. Talent influences a person's level of intelligence, where someone with a certain talent will learn it more easily and quickly. Seventh, the freedom factor. Freedom allows

humans to think divergently, choose certain methods in solving problems, and choose problems according to their needs (Ardiyanto, 2017).

Most young children have difficulty sitting still and learning calmly. Apart from that, the limited media to stimulate cognitive development causes children to learn passively using uninteresting and monotonous methods, making children bored when participating in class learning. So far, most of the activities provided by teachers to improve children's cognitive development are using children's magazines or worksheets for children to work on and sometimes using mazes. This is what makes children often careless and become bored in carrying out the tasks given by the teacher. So it is feared that this will result in a failure of understanding by young children which will have an impact on the child's subsequent development (Putri et al., 2021). One of the fun ways of learning for young children is through science learning.

Science for early childhood is science whose target is aimed at early childhood and how to understand science from a child's perspective. Currently, it is important to introduce science to young children. This is because science can encourage children to think critically, and with science, children do not simply accept or reject something. Educating children to have scientific abilities can help parents and children to actively build self-defense against information attacks from around them (Izzuddin, 2019).

Science that is introduced from an early age will encourage them to become children who are rich in inspiration, have a creative attitude and are rich in initiative and can foster logical thinking patterns in children. Science education emphasizes providing direct experience so that children need to be helped to develop a number of science process skills so they are able to explore and understand the natural surroundings. By providing science learning from an early age, children can be trained to use their minds, strength and honesty so that children are ready to move towards a higher level of education. Science is still considered a subject or material that is complicated and difficult to learn, especially for young children. Material that is difficult to understand and teach is what makes PAUD teachers lazy and neglect science learning. In fact, science learning can be taught through various fun and enjoyable activities in accordance with the objectives of PAUD learning, namely playing while learning.

Through various play activities, children can learn science in a fun and enjoyable manner according to their age characteristics. (Syaodih et al., 2020).

According to Winarni's research, teachers experience difficulties in teaching science to young children because their understanding of science concepts is rigid and limited to reference books, as well as limited tools, materials and time. The application of scientific concepts is also often not appropriate to the early childhood environment. Different regional conditions make it difficult for teachers to apply scientific concepts, so that teaching science to young children is often similar to teaching to elementary school children. Therefore, teacher competence needs to be improved in accordance with the objectives of science learning for early childhood. Science learning does not have to look very scientific, but simply be related to children's daily activities so that it is easier for their

logic and imagination to understand. In this way, scientific concepts can be embedded and become an incentive for children to be more explorative of their surrounding environment (Winarni, 2017).

Early childhood science learning aims to enable children to behave, think, act and be responsible for problems in everyday life, have an understanding of science and technology and fulfill aspects of personal needs, societal issues, career education awareness and academic preparation (Lestari , 2019). Science education emphasizes providing direct experience, so children need to be helped to develop science process skills to explore and understand the environment around them. By providing science learning from an early age, children can be trained to use their thinking, strength and honesty, so that they are better prepared to continue to a higher level of education.

Based on the explanation above, the researcher wants to develop the cognitive abilities of children aged 5-6 years at TK IT Nada Ashobah Wiyung Surabaya by applying farming activities to the science knowledge of children aged 5-6 years at TK IT Nada Ashobah Wiyung Surabaya. The aim of this research is that researchers want to develop scientific knowledge through enjoyable activities, namely farming. Through this activity, researchers hope that early childhood science knowledge will increase and children will be interested in participating in each lesson.

RESEARCH METHODS

This research uses a qualitative approach to describe the problems and research focus. Qualitative methods are a series of social research steps that aim to obtain descriptive data in the form of words and images. The data collected in qualitative research consists of words, images, and not numbers. The qualitative research approach does not rely on statistical analysis, but is based on qualitative evidence. This approach is based on field realities and experiences experienced by respondents, which are then connected to theoretical references (Sujdarwo, 2011). The subjects in this research were 3 children aged 5-6 years at the IT Nada Ashobah Kindergarten.

Qualitative research features assessment procedures that produce descriptive data in the form of written or spoken words from people and observed behavior.

The data collection techniques used were observation, interviews and literature study/documentation.

According to Sugiyono (2016:317), interviews are used as a data collection technique to find problems that must be researched and to obtain in-depth information from informants. In this research, researchers conducted in-depth interviews with three informants aged 5-6 years at IT Nada Ashobah Kindergarten named FA, CA and Br. Through this interview, the researcher aims to find out more about the science knowledge of children aged 4-5 years at the Nada Ashobah Wiyung IT Kindergarten in Surabaya (Sugiyono, 2015). Interviews allow researchers to know more deeply how participants interpret situations and phenomena, which cannot be obtained through observation.

Through observation, researchers learn about behavior and the meaning attached to that behavior. In this observation, the researcher observed teaching and learning activities at the IT Nada Ashobah Kindergarten. Educators use farming activities to stimulate cognitive development in terms of science knowledge in children aged 5-6 years (Sugiyono, 2015).

Literature study is a data collection technique that involves reviewing books, literature, notes and reports related to the problem being studied. This technique is used to obtain the basics and written opinions by studying various literature related to the problem being researched. This technique also helps in obtaining secondary data which is used as a basis for comparison between theory and practice in the field. Secondary data using this method is obtained by browsing the internet, reading various literature, study results from previous researchers, lecture notes, and other relevant sources (Sugiyono, 2015).

In this context, researchers interpret and explain data obtained from interviews, observations and documentation, to obtain detailed and clear answers to problems. The qualitative approach was chosen because of the specifics of the research subject and to obtain in-depth information that covers social reality. Data analysis in qualitative research is carried out simultaneously with the data collection process. Data analysis techniques include three main steps: (1) data reduction, (2) data presentation, and (3) drawing conclusions. In this data analysis process, researchers collect data through observation, interviews and documentation.

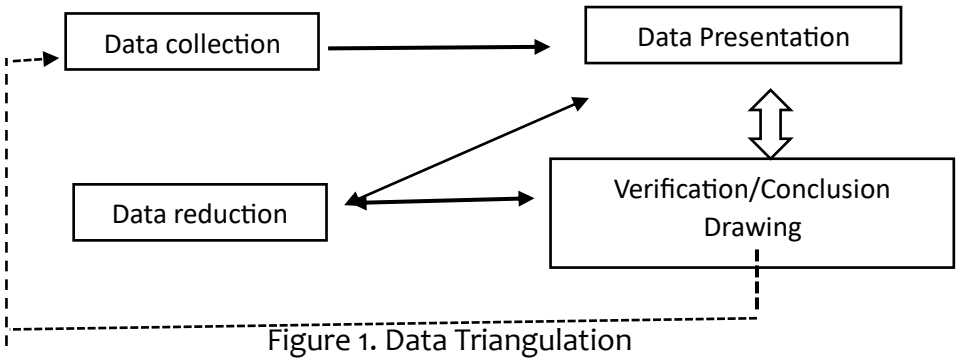

Figure 1. Data Triangulation

RESULTS AND DISCUSSION

Based on research conducted by researchers on 6-31 May 2024, observations were made on three children aged 5-6 years at the Nada Ashobah Wiyung IT Kindergarten, namely FA, CA, and BR. The three children showed enthusiasm and happiness when taking part in farming activities. The children looked very interested and actively involved during the activity. FA showed high interest from the start of the activity. He often asked teachers about different types of plants and expressed a desire to try growing his own. FA also seems to enjoy every step in the farming process, from digging the soil to watering the plants.

CA was a little hesitant at first but soon became enthusiastic after seeing her friends actively involved. CA shows special attention to plant parts and often compares one plant with another. He was also very excited when he saw the plants grow and bear fruit. BR shows a tendency to work independently. He often took the initiative to check the plants being planted and report progress to the teacher. BR seems very proud of the results of his hard work and often shows his plants to his friends.

After the farming activity, the researcher conducted interviews with the three children to evaluate their understanding. The results of the interviews showed that the three children not only enjoyed farming activities but also gained a good understanding of several basic science concepts. The three children were able to name several types of plants that they planted and encountered during the activity. For example, FA confidently mentions plants such as carrots, spinach and sunflowers. CA can recognize and mention the differences between vegetable plants and ornamental plants, while BR shows an understanding of plants that produce fruit such as tomatoes and chilies.

Children are also able to associate plants with the environment in which they grow. For example, they understand that some plants need more sunlight, while others prefer shady places. This shows that farming activities have helped them develop contextual knowledge about plants.

The results of the interviews also revealed that children could name and explain the main parts of plants such as roots, stems, leaves, flowers and fruit. FA, for example, was able to explain that plant roots function to absorb water and nutrients from the soil. CA shows a good understanding of the function of leaves in photosynthesis, while BR is able to explain the role of flowers in the plant reproduction process.

An understanding of these plant parts shows that children not only learn through practical experience but also internalize the scientific concepts taught during the activity. They are able to connect theory with practice and demonstrate a deep understanding of plant structure and function. All three children also demonstrated a good understanding of the plant growth process.

Children can name the main stages in a plant's life cycle, from planting seeds to mature plants that produce flowers and fruit. FA, for example, can explain that once seeds are planted, they will grow into sprouts which then develop into young plants with leaves and stems. CA demonstrated an understanding of the importance of sunlight and water in plant growth, while BR enthusiastically explained the flowering and fruiting processes.

This understanding shows that farming activities have provided rich and meaningful learning experiences for children. They not only learn about the plant growth process theoretically but also observe and participate in the process directly. This helps them to more easily remember and understand the concepts taught.

This knowledge is important because it helps children understand biodiversity and the importance of plants in human life. Apart from that, introduction to various types of plants can also enrich children's vocabulary and improve their cognitive abilities in identifying and classifying objects based on certain characteristics.

Knowledge about plant parts is very important in early childhood science education because it helps them understand the basic structure and function of living things. By understanding the parts of plants, children can learn about how plants grow and develop, and how each part functions to support plant life. For example, they can understand that roots absorb water and nutrients from the soil, stems support plant structure, leaves carry out photosynthesis, and flowers and fruit play a role in plant reproduction.

Understanding the plant growth process helps children develop basic concepts in biology, such as life cycles and the growth of living things. This also helps them understand the importance of environmental factors such as water, sunlight, and fertile soil in supporting plant growth. Thus, farming activities not only increase children's knowledge about science but also teach them about responsibility and concern for the environment.

This is supported by the findings from Rizka & Nazarullail, (2020). which states that outing class activities in the backyard by planting can increase children's knowledge about the surrounding environment and help improve aspects of children's development, which is the main goal in the learning process at PAUD institutions. This developmental aspect is very important and must be achieved in every lesson. Appropriate learning strategies also make it easier for teachers in the process of teaching children. With a clear strategy, the teacher will not be confused in presenting the material or determining the activities to be taught during the lesson.

The farming learning method provides contextual and meaningful learning experiences for children. Through this activity, children can see firsthand how the theories they learn in class are applied in real life. This contextual learning helps children understand abstract concepts better and makes learning more relevant and interesting.

In line with the findings of Salam & Nurhaeda, (2021) said that thematic learning using the farming method carried out in kindergarten is one way or strategy in the learning process, where in the process of delivering the material it is adjusted to the interests and needs of children so that developmental aspects can be achieved. child. In this research, the aspect assessed is the aspect of cognitive development.

Farming activities also help develop science process skills in children, such as observation, classification, prediction and experimentation. During this activity, children learn to observe changes that occur in plants, classify various types of plants, predict future outcomes, and carry out simple experiments such as planting seeds and caring for plants.

Learning about farming encourages children to learn actively and interactively. They not only listen to explanations from teachers but also participate in practical activities that allow them to learn through direct experience. This active learning helps improve information retention and makes learning more fun and meaningful.

One of the challenges in implementing farming learning methods is limited resources, such as land, tools and materials. Not all schools have access to sufficient land for farming activities, and not all teachers have sufficient knowledge and skills to teach

these activities. Therefore, cooperation between schools, parents and the community is needed to provide the necessary resources.

Another challenge is limited time and teacher readiness in integrating farming activities into the curriculum. This activity requires quite a long time and is sustainable to provide optimal results. In addition, teachers need to prepare themselves with adequate knowledge and skills to be able to teach this activity well.

Every child has individual differences in interests, abilities and learning styles. Therefore, teachers need to pay attention to these differences and adapt learning methods to meet the needs of each child. For example, some children may be more interested in the practical aspects of farming, while others may be more interested in the theoretical aspects.

Involving parents and the community in farming activities can hold a collaboration program with parents to provide the necessary land, tools and materials. Apart from that, the community can also be involved in this activity, for example by inviting farmers or agricultural experts to provide practical knowledge and skills to children.

Farming activities have been proven to increase children's science knowledge. Through this activity, children learn about plant life cycles, photosynthesis, and the importance of environmental factors in plant growth. This knowledge not only helps them in science subjects but also provides a strong foundation for future learning.

Farming activities also help develop children's social skills. Through group work and collaboration, children learn to work together, share tasks, and communicate with their friends. These social skills are important for children's emotional and social development and help them build positive relationships with others.

Farming activities involve a variety of physical activities that help develop children's gross and fine motor skills. For example, planting seeds, watering plants, and harvesting crops are activities that require hand-eye coordination and physical strength. These motor skills are important for children's physical development and help them in carrying out daily activities.

Through farming, children can build awareness of the environment. Concern for the environment in children is needed because this nation is facing problems regarding the love of plants or farming methods (Rahmi et al., 2021). Many living environments are not maintained and even damaged due to the actions of irresponsible people in society. Farming activities can attract children's attention to love plants more, know what parts of plants are, and care for plants (Yuniarti & Cahaya, 2021). The following is documentation of farming activities at TK IT Nada Ashobah Wiyung Surabaya.

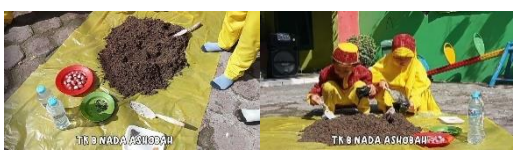

Figure 2. Activity Documentation

CONCLUSION

Based on this research, it can be concluded that farming activities have a significant impact on children's development, both in terms of knowledge, skills and attitudes. Children showed high enthusiasm and engagement throughout the activity, which helped them gain a good understanding of basic science concepts, such as plant types, plant parts, and plant growth processes.

Apart from that, farming activities also help develop children's science process skills, social skills and motor skills. They learn through hands-on and interactive experiences, which makes learning more relevant and meaningful for them. Through this activity, children can build awareness of the environment and understand the importance of protecting and caring for plants.

However, there are several challenges in implementing farming learning methods, such as limited resources and time, as well as individual differences in children that teachers need to pay attention to. Therefore, collaboration between schools, parents, and the community is essential in providing the necessary resources and ensuring the success of these activities.

Overall, farming activities not only improve children's science knowledge, but also help in the development of skills and attitudes that are important for their development. Therefore, this activity deserves to continue to be supported and integrated into the early childhood education curriculum.

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