Improving Early Childhood Fine Motor Skills Through Planting Microgreens Activities in Group A of Hidayatul Islamiyah Kindergarten

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Abstract: *Farming activities can teach the value of cooperation, the beauty of nature or the environment as well as character building in children such as discipline, patience and also hard work to get the expected results. Microgreens are vegetables that are harvested when they are still young. Suitable for use in early childhood learning because the process of planting, caring for and harvesting is not difficult for children to do. The activity of planting microgreens can also stimulate the smooth muscles located in the fingers, such as when holding soil or other planting media, spraying plants, and also when picking or cutting leaves and other plant products. This research is classroom action research with data analysis using quantitative descriptive methods which include the planning stage, action stage, observation stage and also reflection. The aim of this research is to determine whether there is an increase in fine motor skills of young children through the activity of planting microgreens in group A of the Hidayatul Islamiyah Kindergarten, Wanayasa district, Purwakarta with research subjects of 11 children. The data collection techniques used are observation and documentation. The results of this research show that the activity of planting microgreens apart from forming the character of discipline, patience, and also hard work to produce something that is expected to also improve children's fine motor skills in various activities. It is hoped that the results of this research can be a reference for educators in choosing fun learning activities to stimulate children's fine motor development.*

Kata Kunci:
Anak-anak, Menanam, Microgreens, Motorik Halus

Abstrak: Kegiatan bercocok tanam dapat mengajarkan nilai kerjasama, keindahan alam atau lingkungan serta pembentukan karakter pada anak seperti kedisiplinan, kesabaran dan juga kerja keras untuk mendapatkan hasil yang diharapkan. Microgreens adalah sayuran yang dipanen saat masih muda. Cocok digunakan dalam pembelajaran anak usia dini karena proses menanam, merawat dan memanennya tidak sulit untuk dilakukan oleh anak-anak. Kegiatan menanam microgreens juga dapat menstimulasi otot-otot halus yang terdapat pada jari-jari tangan, seperti pada saat memegang tanah atau media tanam lainnya, menyemprot tanaman, dan juga pada saat memetik atau memotong daun dan hasil tanaman lainnya. Penelitian ini merupakan penelitian tindakan kelas dengan analisis data menggunakan metode deskriptif kuantitatif yang meliputi tahap perencanaan, tahap tindakan, tahap observasi dan juga refleksi. Tujuan dari penelitian ini adalah untuk mengetahui apakah terdapat peningkatan kemampuan motorik halus anak usia dini melalui kegiatan menanam microgreens di kelompok A TK Hidayatul Islamiyah Kecamatan Wanayasa, Purwakarta dengan subjek penelitian sebanyak 11 anak. Teknik pengumpulan data yang digunakan adalah observasi dan dokumentasi. Hasil penelitian ini menunjukkan bahwa kegiatan menanam microgreens selain membentuk karakter disiplin, sabar, dan juga kerja keras untuk menghasilkan sesuatu yang diharapkan juga dapat meningkatkan kemampuan motorik halus anak dalam berbagai kegiatan. Diharapkan hasil penelitian ini dapat menjadi referensi bagi para pendidik dalam memilih kegiatan belajar yang menyenangkan untuk menstimulasi perkembangan motorik halus anak.

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INTRODUCTION

Early childhood development can be categorized into 6 aspects, namely religious and moral values, language, cognitive, physical motor, social emotional,

and art. Various aspects of development do not occur separately and independently but rather mutually influence one aspect and another. All aspects of development must be considered equally important and all efforts must be made to develop optimally. In order for individual development to occur as optimally as possible, it is necessary to provide stimulation according to the level of development (Soetjiningsih, 2018).

In early childhood education, all learning refers to the aim that all aspects of a child's development can be stimulated optimally. One of them is the physical motor development aspect which consists of gross motor skills and fine motor skills. Sensory motor activities which include the use of large and small muscles enable children to fulfill perceptual motor development (Sujiono, 2013). Gross motor skills development is the development of body movements which include large/gross muscles in carrying out activities such as running, jumping, throwing, crawling and others. Meanwhile, fine motor skills are a development of movement that includes small muscles, usually the skill of moving one's fingers, for example cutting, coloring, folding and rolling.

Fine motor development is a natural process that follows a certain sequence and is influenced by the maturity of the central nervous system. Each child has his or her own developmental schedule, but in general there is a predictable pattern. Fine motor development is influenced by the social environment, especially through observation and imitation of other people. Interactions with parents, caregivers, and peers are critical in facilitating the development of fine motor skills. Fine motor development is the result of a complex interaction between internal factors (e.g., muscle strength, coordination) and external factors (e.g., physical environment, assigned tasks).

Standards for the development of children's fine motor skills, such as: (1) infant age: grasping, bringing objects to the mouth, moving objects from one hand to another. (2) toddler age: stacking blocks, drawing scribbles, cutting paper. (3) preschool age: writing letters, drawing more complex shapes, using cutlery correctly. (4) school age: writes neatly, performs activities that require finer manual skills. Factors that influence fine motor development include genetics or the child's innate potential for developing fine motor skills. Environmental factors include the stimulation provided, the opportunity to exercise, and the quality of nutrition. Health factors are the child's physical and neurological health

conditions. Experience factor, the more experience a child gets, the better his fine motor skills.

An early childhood educator must be able to facilitate children's needs in optimizing their growth and development using various methods and media. Games are one of the right ways to develop children's various skills, both in terms of cognitive, affective and psychomotor skills according to their age stage. Interesting games can be used as a medium for children to learn many things. Playing is an activity carried out by children spontaneously and with feelings of joy, involving the child's active role, and is an interaction between the child and his environment. Children have ample opportunities to explore to fulfill their curiosity, children are free to express their ideas through imagination, drama, constructive play, and so on (Ardini & Lestariningrum, 2018).

However, in reality, currently many lessons in PAUD do not understand suitable activities so that children can develop their skills optimally, for example by using activities that only use kindergarten magazines whose content is only coloring and writing. Learning that uses magazines cannot maximize student development, because magazines cannot explore aspects of children's development and children feel bored with these activities. It is better if learning activities are carried out with more variety so that children can more easily absorb the learning being taught and if the media taught is in accordance with the theme, then children will explore more with various kinds of activities (Isnaini & Sukmawati, 2021).

Based on observations made in group A (4-5 years) at Hidayatul Islamiyah Kindergarten, Wanayasa District, Purwakarta, children's fine motor skills are not developing optimally, this can be seen from the majority of children when coloring pictures where there are still many out of line lines, Difficulty holding or picking up small objects, and when folding activities are still not symmetrical. Effective stimulation is needed in the development of children's fine motor skills with a variety of fun games. One of them is by planting microgreens.

Teaching children to farm is not only beneficial for the child's body but also has an effect on the child's brain and soul. Farming can be a great way for children to engage in positive prosocial activities. Children's motor development that grows well requires stimulation by carrying out activities of touching, seeing, and even exploring an object directly. Therefore, it is important to introduce farming to children for their motoric development (Nasution et al., 2021). In this

research, the activity of planting microgreens was used as a form of stimulation for the fine motor development of early childhood. The activities can form a positive mindset for children. The activity of introducing vegetables and planting directly will teach many things and form important characters in children ranging from discipline, patience to hard work to produce something that is expected. Microgreens are vegetables that are harvested when they are still young. Suitable for use in early childhood learning because the process of planting, caring for and harvesting is not difficult for children to do. Apart from that, the activity of planting microgreens includes hand movements which will train the fine muscles located in the fingers by determining the planting medium to be used, putting them in pots, spraying the plants, cutting the leaves and so on. All of these activities require good finger skills.

Seeing the facts in the field which show that the fine motor skills of children in group A of the Hidayatul Islamiyah Kindergarten, Wanayasa District, Purwakarta are still low, the researchers will conduct research with the title "Improving the Fine Motor Skills of Early Childhood Through Microgreens Planting Activities in Group A of the Hidayatul Islamiyah Kindergarten, Wanayasa District Purwakarta".

RESEARCH METHODS

This research uses an action research design that focuses on classroom situations. Classroom action research (CAR) is research carried out to solve problems in the classroom. This research aims to improve learning gradually and continuously, as long as research activities are carried out. The research procedure used is in the form of a cycle which refers to Kemmis & Mc Taggart's research models, (Rukminingsih et al., 2020). The subjects in this study were 11 children from group A at Hidayatul Islamiyah Kindergarten, Wanayasa District, Purwakarta, who were still low in fine motor skills. The aim of this research is to determine whether or not there is an increase in fine motor skills in children through the activity of planting microgreens.

Data collection techniques are a way to obtain data in research activities that meet the standards applied. The data collection technique used in this research is an observation sheet. Observations or observations were carried out by researchers assisted by collaborators on children by observing and recording the implementation of learning in the classroom, and the children's participation shown during the teaching and learning process.

The data obtained in this research were collected and analyzed. All data obtained through observation and documentation is summarized in a summary of child development and analyzed by comparing the child's development that should be achieved. Apart from that, the analysis is carried out by looking at the level of developmental progress or changes in behavior that are expected, the extent to which the child's abilities have increased in learning and increased interest in activities. Changes in the development of the child's abilities are given the title not yet developed (BB), starting to develop (MB), developing according to expectations (BSH) and developing very well (BSB).

Data analysis in this research was also carried out using quantitative research. Data collected during each observation activity from each implementation cycle was analyzed descriptively quantitatively using percentage techniques to see trends that occurred in learning activities. The data obtained is described in narrative form so that the data is easy to understand and well structured. Next, make conclusions based on the data description, to what extent the child's fine motor skills have been improved in learning.

One cycle consists of several stages, namely planning, implementation, observation and reflection. The activity stage is planning learning strategies and success criteria (Planning), the stage of implementing learning in accordance with the learning scenario that has been designed (implementing) then the observation stage, namely the stage of observing the level of success (observing) and the reflection stage (reflecting) to evaluate whether it has been achieved in accordance with the standards predetermined success criteria. And if in the first cycle the results of the reflection do not match the success criteria, it means continuing to the second cycle and so on and the cycle will stop when the success criteria are met (Rukminingsih et al., 2020).

Table 1. Criteria for assessing fine motor skills aged 4-5 years

No	Indicator	Activity	Category			
			BB (1)	MB (2)	BSH (3)	BSB (4)
1.	Coordinate eyes and hands to perform complex movements	1. Grasp and feel the texture of the planting medium, namely soil, husks and cocopeat.				
		2. Put the planting medium into the				

		container properly				
		3. Can clean up farming equipment after using it				
2.	Express yourself by creating art using various media	4. Choose the desired planting medium				
		5. Can plant microgreens according to directions properly				
		6. Make a seed pattern in the container as desired				
		7. Take good care of the plants				
3.	Controlling hand movements using smooth muscles	8. Water the plants by spraying water using a sprayer				
		9. Hold scissors well				
		10. Cut microgreens that are ready to harvest				

Data processing :

$$NA = \frac{JS}{ST} \times 100$$

Information :
NA = Final Value
JS = Total Score
ST = Total Score
100 = Research Scale

To find out the percentage of students' success classically, use the formula:

$$\text{Classical success percentage} = \frac{\text{Jumlah anak yang memperoleh nilai "BSB" dan "BSH"}}{\text{Jumlah anak}} \times 100\%$$

Based on the formula above, classical success can be grouped as follows:

Tabel 2. Assessment Result Category

Value Interval	Category
86- 100	Developing Very Well (BSB)
71 - 85	Developing According to Expectations (BSH)
55 – 70	Starting to Develop (MB)
>55	Undeveloped (BB)

RESULTS AND DISCUSSION

In the research, improving the fine motor skills of young children through the activity of planting microgreens with group A samples. Before conducting the research, the researchers made observations first to obtain information about the ongoing learning process. In the data collection process, the first technique used is observation, which is the recommended way to obtain all information about learning. Observations should be focused on when learning activities are taking place by observing any changes that occur in each student. In the initial conditions of learning outcomes and student responses to the activity of planting microgreens, there were still a small number of problems that arose during the process of planting microgreens. Given the problems that occurred in the initial conditions, we reflected on these problems so that they could be corrected in cycle I with the hope that all students would be able to improve their fine motor skills through the activity of planting microgreens. The calculations produced with 11 students still show an average score of 45.45%. It can be said that the success rate for improving fine motor skills through planting microgreens is still in the starting to develop (MB) category.

The next step is to analyze and process the data obtained. The research data that is analyzed is the score for improving children's fine motor skills consisting of cycle 1 and cycle 2. After carrying out the research, the results of calculations and data processing are obtained, so that values are produced that will answer The question in this research is about improving children's fine motor skills through planting microgreens at HIdayatul Islamiyah Kindergarten.

1. **Data Processing Cycle 1**
    a. **Planning**

        The implementation of learning data collection using microgreen planting activities was carried out in three meetings, with 30 minutes allocated for each meeting. Activities are carried out in accordance with the daily learning implementation plan that has been prepared previously. The activity of planting microgreens given to children is carried out in the classroom.

b. Implementation

The first meeting introduces tools and materials for planting microgreens, then children are given directions to be able to experience the planting media provided, namely soil, husks and cocopeat, after that children are directed to choose the planting media that will be used and start planting microgreens by inserting the planting media into in a container (tray) then sprinkle the seeds on top and the child is free to make the desired pattern. After that, children water the microgreens by spraying water over the entire surface of the plant using a sprayer.

The next meeting took care of the microgreens that had been planted plus supporting activities. Microgreens must be watered twice a day, namely morning and evening, stored in a place with room temperature and the microgreens must remain moist.

Once the microgreens plants are ready to harvest, children are instructed to be able to hold scissors well and can also cut the microgreens plants without hurting themselves. Microgreens that have been harvested can be processed into omelet toppings, cooking decorations, vegetable juices and so on.

c. Observation

In cycle 1, the learning outcomes and student responses to the activity of planting microgreens were still a small number of problems that arose during the process of planting microgreens. Given the problems that occurred in cycle 1, we reflect on these problems so that they can be corrected in cycle 2 with the hope that all students will be able to improve their fine motor skills through the activity of planting microgreens. The resulting calculation with a total of 11 students still shows an average score of 63.63%, namely 7 people are in the developing according to expectations (BSH) category and 4 people are still in the Starting to Develop (MB) category. The following are the results of cycle 1 to improve fine motor skills through microgreens activities.

Table 3. Obtaining Results from Cycle 1

No	Name	Final Value	Category
1.	ALF	80	BSH
2.	FDL	75	BSH
3.	FDA	65	MB
4.	HSN	80	BSH
5.	HFZ	75	BSH
6.	ALS	70	MB
7.	FLH	75	BSH
8.	SFN	75	BSH
9.	QR	65	MB
10	ZYN	75	BSH
11.	ADR	70	MB

d. Reflection

The main aim of this research is to determine the increase in fine motor skills through planting microgreens. Therefore, the reflection presented will focus on improving fine motor skills through microgreens activities. In cycle 1 there were deficiencies when students watered the microgreens plants using a sprayer. There are several things that cause this to happen. Firstly, students used the wrong spayer tool not according to the instructions, there were still students who used spayer bottles that had used perfume, they were used to push down instead of pulling them out like normal sprayers. Second, the way he holds the scissors is still stiff and uncomfortable, possibly due to fear because he is not used to holding sharp objects.

From the findings of these deficiencies, the researchers created a new strategy to reduce the causes of deficiencies in the activity of planting microgreens, which will then be implemented in cycle II. For the first problem, the researchers will replace the sprayer used to water the microgreens plants, for the second, the researchers will practice holding scissors first.

2. Data processing Cycle 2

a. Planning

At the planning stage, the researcher creates a design for learning activities. The implementation of learning data collection using microgreen planting activities was carried out in three meetings, with 30 minutes allocated for each meeting. Activities are carried out in accordance with the daily learning implementation plan that has been prepared previously. The activity of planting microgreens given to children is carried out in the classroom.

b. Implementation

The first meeting introduces tools and materials for planting microgreens, then children are given directions to be able to experience the planting media provided, namely soil, husks and cocopeat, after that children are directed to choose the planting media that will be used and start planting microgreens by inserting the planting media into in a container (tray) then sprinkle the seeds on top and the child is free to make the desired pattern. After that, children water the microgreens by spraying water over the entire surface of the plant using the sprayer that has been prepared.

Because in the first cycle the children brought their own sprayers, for the second cycle there was an improvement, namely that the sprayers were made the same by the researchers.

The next meeting took care of the microgreens that had been planted plus supporting activities. Microgreens must be watered twice a day, namely morning and evening, stored in a place with room temperature and the microgreens must remain moist.

Once the microgreens plants are ready to harvest, children are instructed to be able to hold scissors well and can also cut the microgreens plants without hurting themselves. Previously, children had been trained in holding scissors properly and correctly. Microgreens that have been harvested can be processed into omelet toppings, cooking decorations, vegetable juices and so on.

c. **Observation**

In cycle 2 of the learning outcomes and student responses to the activity of planting microgreens, there were still a small number of problems that arose during the process of planting microgreens. However, most students are able to improve their fine motor skills through planting microgreens. The resulting calculations with a total of 11 students still show an average score of 90.90%, namely 3 people are in the very well developing (BSB) category, 7 people are in the developing according to expectations (BSH) category and 1 person is still in the Starting to Develop (MB) category. The following are the results of cycle 2 to improve fine motor skills through microgreens activities.

Table 4. Obtaining Results from Cycle 2

No	Nama	Nilai Akhir	Kategori
1.	ALF	90	BSB
2.	FDL	87	BSB
3.	FDA	75	BSH
4.	HSN	87	BSB
5.	HFZ	80	BSH
6.	ALS	75	BSH
7.	FLH	80	BSH
8.	SFN	80	BSH
9.	QR	70	MB
10	ZYN	80	BSH
11.	ADR	75	BSH

d. Reflection

The main aim of this research is to determine the increase in fine motor skills through planting microgreens. Therefore, the reflection presented will focus on improving fine motor skills through microgreens activities. It can be seen from the results of the scores in the second cycle that most of the children were able to improve their fine motor skills through this activity of planting microgreens. Evaluation of this activity is carried out by looking at the results of

the plants that have grown and the children's progress in learning about the environment and agriculture. Discussions with children are also important at this stage. This can help children understand what they have learned and what can be improved. In the reflection stage, children are given the opportunity to reflect on their experiences in planting microgreens and how this activity can be applied in everyday life.

The activity of planting microgreens involves various activities that directly stimulate children's fine motor development, such as: (1) Children will practice holding a small shovel, tongs, or sprinkler that is the right size for their hands. (2) Touching and feeling the texture, when children touch the soil, seeds, or leaves of microgreens, they will stimulate the sensory nerves in their fingertips, which is very important for fine motor development. (3) Controlling hand and finger movements, sowing seeds, watering plants, or moving seedlings requires good hand and finger coordination. (4) Make precise movements, for example, moving a small seedling into a pot carefully or watering a plant without making the soil splash.

Theories that support child development which can explain why planting microgreens is effective in improving fine motor skills include (1) Learning by Doing Theory: This theory emphasizes that children learn best through direct experience. By growing microgreens, children are actively involved in the learning process and gain valuable sensorimotor experience. (2) Piaget's Theory of Cognitive Development: Piaget argued that children build an understanding of the world through interaction with the environment. The activity of growing microgreens provides an opportunity for children to explore concepts such as growth, life cycles, and cause and effect. (3) Neuroconstructivism Theory: This theory emphasizes that the human brain develops through experience and interaction with the environment. Activities that stimulate multiple senses, such as growing microgreens, can help form new neural connections in the brain that support motor and cognitive development.

Additional benefits of planting microgreens apart from improving fine motor skills, planting microgreens also provide many other benefits for

children, such as increasing their sense of responsibility, children will learn to care for plants and see the results of their efforts. Reinforcing science concepts, children can observe the growth process of plants and learn about life cycles. Increasing interest in nature, gardening activities can foster children's love of nature and the surrounding environment.

Figure 1. microgreens planting activities

Figure 2. Microgreens yield before harvest

Figure 3. Harvest microgreens by cutting

CONCLUSION

In the activity of planting microgreens, children can develop their skills, knowledge and interests in environmental and agricultural matters. Children can learn about how to plant, care for, and harvest crops, as well as how human actions can affect the environment. Apart from that, this activity can also help children to develop their social, emotional, cognitive and motor skills through real and active experiences. The use of planting microgreens as a play activity in PAUD is an innovation that can provide great benefits for early childhood development.

Children must carry out activities such as planting, watering and caring for plants, so that they can help develop children's gross and fine motor skills. Children are taught how to manage the garden and equipment, such as cleaning tools or caring for plants, so that it can help develop children's gross and fine motor skills. In addition, children must take responsibility for the garden and the plants they plant, so that it can help develop social and emotional skills and give children a sense of self-confidence. (Koyimah, 2023)

The increase in children's motor skills through the activity stages in planting microgreens can be seen from the results of children's ability gains from initial conditions of only around 45.45% of children's achievement level in fine motor development, then in cycle 1 there began to be an increase with an average value of 63.63% and in cycle 2 there was a significant increase with an average value of 90.90%. Thus, the activity of planting microgreens can improve the fine motor skills of group A young children at Hidayatul Islamiyah Kindergarten.

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