

The Impact of Matching Activities on Fine Motor Skill Development in Young Children

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Abstract

This study aims to explore how to improve children's fine motor skills through matching activities. This study employed a classroom action research method conducted in two cycles, consisting of the following stages: planning, implementation, observation, and reflection. The research subjects consisted of 15 children, namely 6 girls and 9 boys. The results showed an improvement in the children's fine motor skills from Cycle I to Cycle II. In Cycle I, the percentages were BB 7.14%, MB 35.71%, BSH 21.42%, and BSB 35.71%. In Cycle II, these percentages increased to 0.0% for BB, 26.66% for MB, 26.66% for BSH, and 46.66% for BSB. Thus, it can be concluded that the picture-matching activity proved effective in improving children's fine motor skills.

Keywords: Fine Motor Skills, Picture Matching, Classroom Action Research.

INTRODUCTION

Children's motor development is divided into two categories: gross motor skills and fine motor skills. Gross motor skills involve large muscle activity, including locomotor, non-locomotor, and manipulative movements (Widayati et al., 2019). Fine motor skills involve movements involving small muscles or specific body parts, influenced by opportunities for learning and practice. For example, the ability to move objects from one hand to another, scribble, stack blocks, cut, write, and so on (Damayanti et al., 2020). Fine motor skills involve physical skills involving small muscles and hand-eye coordination (Pura, Nomi & Asnawati, 2019). Therefore, these movements do not require much energy, but they do require careful hand-eye coordination. Fine motor skills typically involve activities such as buttoning clothes, cutting, writing, coloring, and other hand movements. Fine motor

development is the improvement in body movement coordination involving much smaller or more detailed muscles and nerves (Fauziddin, 2019). These muscle and nerve groups are then able to develop fine motor skills such as crumpling paper, tearing, drawing, sticking, sewing, and so on (Rohmah & Gading, 2021). However, not all children experience perfect motor development. According to their age, there are many things that become problems in a child's motor development, especially fine motor skills. Low physical abilities in children's fine motor skills are characterized by several problems that arise, namely a lack of care for children such as squeezing, tearing, or scribbling (Budiarti et al., 2025a). Good fine motor development will affect other developments such as the development of eye-hand coordination. If fine motor development does not develop properly, children will have difficulty controlling their hands, resulting in stiffness and inflexibility (Qomariah et al., 2024).

Based on the results of observations conducted (preliminary study) it is known that, children at RA Raudhatul Jannah consisting of 15 children in their fine motor development seems less than optimal. Children cannot play well. In addition, facilities and infrastructure in learning activities are not maximized by teachers and are less varied. Teachers tend to be monotonous in carrying out learning process activities. In addition, it is also known that in the ongoing learning, the problem of most children is not being able to understand the teacher's instructions or commands in addition, some children have not been able to cut paper simply, children have not been able to tear paper and stick it simply because the children's hands are still stiff and less flexible. Seeing that, researchers tried to stimulate fine motor skills in children at RA Raudhatul Jannah through picture matching activities with a classroom research approach. The purpose of this classroom action research is not only to stimulate fine motor skills but also to introduce flowers and fruits to children.

METHODS

The research method used in this study is classroom action research. Classroom action research aims to identify classroom problems and provide solutions. According to Hopkins, classroom action research combines research procedures with substantive action, an action undertaken within the discipline of inquiry, or an individual's attempt to understand what is happening while engaging in a process of improvement and change (Azizah & Fatamorgana, Fayakunia, 2023).

The researcher directly participated in the research, from the beginning to the end. Classroom action research was conducted in two cycles, each with four stages: planning, actuating, observing, and reflecting (S. Wahyuni et al., 2018). The researcher was also directly involved in the learning process. The researcher was able to observe and identify emerging problems in the learning process, and then identify appropriate actions to address them. Thus, the objective of classroom action research, to improve children's fine motor skills through matching activities, was achieved.

The observational data collection technique is a method of collecting data through direct observation or careful and direct review in the field or research location. Documentation is the process of searching, investigating, collecting, preserving, mastering, using, and providing documents. This documentation is used to obtain information and enlighten knowledge, and documentation can be done (taking pictures). The subjects of this study were 15 children, consisting of 9 boys and 6 girls. This research was conducted from February to April 2026.

RESULTS AND DISCUSSION

Results

This classroom action research consisted of two cycles, each with planning, action, observation, and reflection. The researcher's findings are as follows:

1. Planning. During the planning stage of this research, several steps were taken, including: developing a daily lesson plan (RPPH) for the theme "plants" and the sub-theme "my garden," preparing the tools and media to be used in accordance with the RPPH, and creating observation instruments to measure children's fine motor skills.
2. Implementation. The implementation stage, which is responsible for implementing the plan, involves carrying out classroom actions, including opening activities, core activities, and closing activities.
 - a) Initial Activities. Before entering the classroom, the teacher directs all students to line up while singing the song "Lonceng Rang" (The Bell Rings). Then, the students participate in circle time. Circle time involves children praying before learning, singing together, and counting according to the roll call. The activity is done by sitting in a circle. Afterward, the teacher shows a lily and its parts, such as the stigma, pistil, corolla, calyx, and flower stalk, explaining them simply. And sing along to the song "Learning to Recognize Flower Parts." Before starting the main activity, the teacher guides the children to clap enthusiastically.
 - b) Main Activity. The teacher invites the children to identify the parts of a lily, such as the stigma, pistil, corolla, calyx, and flower stalk, and explains them simply. The teacher invites the children to observe the tools and materials that will be used. The teacher explains the steps for matching: coloring the material first and then starting to poke the picture using a matching mat. Afterward, the children are asked to paste the results in the provided sticky note book.
 - c) Closing Activity. This closing activity is carried out after students have rested and played together in the schoolyard, and provides information about tomorrow's activities.
3. Observation. During the observation, the researcher observed the child's matching process. The researcher was also assisted by observers (colleagues) to conduct observations conducted by the researcher to observe aspects of the child's fine motor skills. The observation instrument was prepared in advance by the researcher to make it easier for the observer to observe the aspects observed with indicators of BB, MB, BSH, BSB. This activity was carried out to collect data that would be processed to determine the actions to be implemented next.
4. Reflection. This reflection activity is intended to serve as input for planning the next cycle. The results of the reflection in cycle I are expected to lead to positive changes in the learning process and research results in cycle II. The fine motor skills in children based on cycle I can be seen in table 1 below:

Table 1. Fine Motor Skills in Cycle 1

BB	MB	BSH	BSB
7,14%	35,71%	21,42 %	35,71%

(Source: Research Data, 2026)

Based on the data obtained and collected during cycle I, the researcher also compared it with the data on children's abilities before the study was conducted. The results of these observations and comparisons showed an increase in the percentage of children who improved in fine motor skills through picture matching activities, but the researcher wanted to further optimize the improvement of children who had fine motor

skills at the expected target. Based on this reflection, the researcher re-planned the learning actions for fine motor skills through simple pattern matching activities in cycle II.

In the cycle II is implemented based on the reflections from Cycle I. Therefore, the observations from Cycle I serve as material for reflection and as a reference for improving learning in Cycle II. The theme for Cycle 2 is plants with a subtheme of fruits. If the learning process in Cycle I is unsatisfactory, Cycle II must be implemented to improve the previous cycle. The results of the analysis of children's fine motor skills in Cycle II can be seen in Table 2 below:

Table 2. Fine Motor Skills in Cycle II

BB	MB	BSH	BSB
0,0%	26,66%	26,66 %	46,66%

(Source: Research Data, 2026)

Based on Table 1 and Table 2 above, it can be said that the results of the classroom action research show a significant increase from cycle I to cycle II. In cycle I, the percentage of children's development was in the Not Yet Developing (BB) category at 7.14%, Starting to Develop (MB) at 35.71%, Developing as Expected (BSH) at 21.42%, and Developing Very Well (BSB) at 35.71%. This data shows that the majority of children are still in the Starting to Develop (MB) category, so that children's gross motor skills have not developed optimally. This is because the picture matching activity is an activity that has never been implemented before in school, so it is possible that children are still in the adjustment stage, both in understanding instructions and in coordinating the necessary movements. Because in essence, fine motor movements are movements resulting from coordination between the brain, muscles, and hands, resulting in expected behavior. This is one reason why, in the context of research on the relationship between motor development and cognitive development, these two developments can mutually support a balanced approach to early childhood education that maintains the importance of physical activity and fine motor development in relation to cognitive abilities. The comparison table and graph of child assessments obtained from cycle I and cycle II are as follows:

Table 3. Comparison of Cycle I and Cycle II

No	Rating Scale	Cycle I	Cycle II
1	BB	7,14%	0,0%
2	MB	35,71%	26,66%
3	BSH	21,42 %	26,66 %
4	BSB	35,71%	46,66%

(Source: Research Data, 2026).

Based on Table 3 above, it can be seen that in Cycle I, 35.71% of children were categorized as developing very well, while in Cycle II, this increased to 46.66%. This indicates that after improvements in Cycle II, there was a more optimal increase in development. The percentage of the Not Developing (BB) category decreased to 0.0%, the Starting to Develop (MB) category decreased to 26.66%, while the Developing as Expected (BSH) category increased to 26.66%, and the Developing Very Well (BSB) category increased to 46.66%. This improvement indicates that most children were able to participate in the picture matching activity well, even showing very satisfactory results.

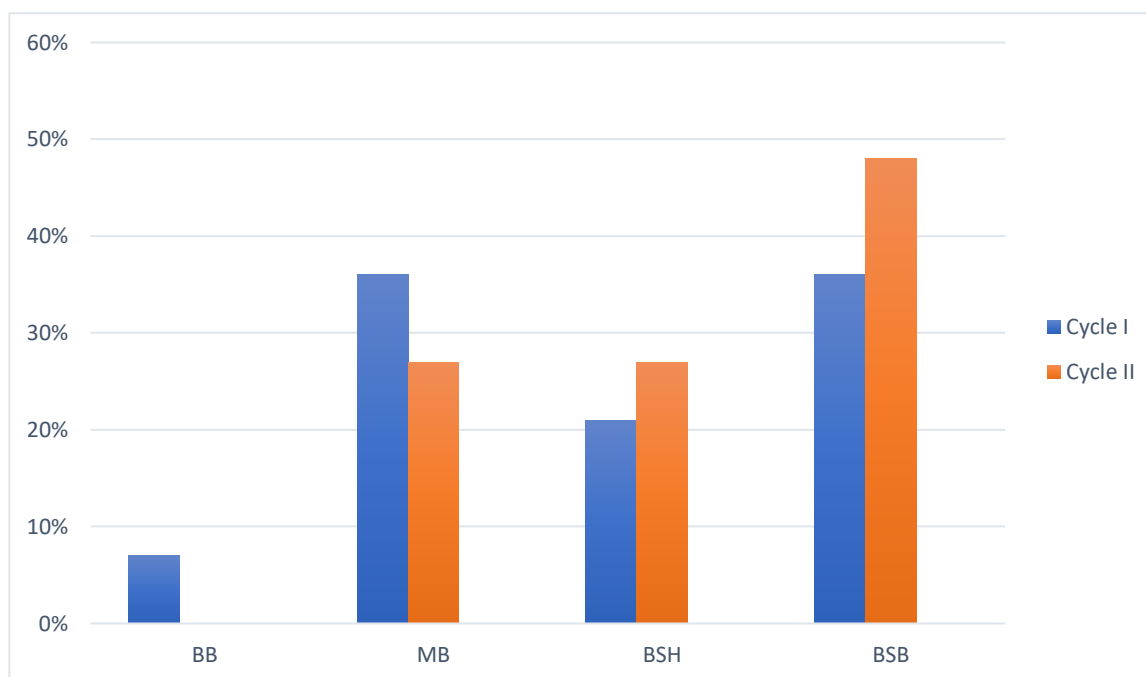


Figure 1. Child Assessment Graph
(Source: Research Data, 2026)

The success of Cycle II was influenced by improvements in the implementation of the picture matching activity. The teacher provided clearer and simpler instructions and provided direct examples before the activity began. Furthermore, the teaching media used real fruit, cut in front of the children, thereby increasing their attention and interest in learning. Children were also given the opportunity to experiment gradually with more intensive guidance, so they became more confident in completing their assignments.

Furthermore, the learning environment in Cycle II was made more enjoyable and interactive, enabling students to be more active and engaged in the activities. Teachers also provided motivation and appreciation for student work, which resulted in increased enthusiasm for learning. Through the picture-matching activity, students not only improved their fine motor skills but also practiced their concentration, accuracy, and cognitive abilities. This is further supported by observation data that used eight aspects as a guide for observations in Cycles I and II. This can be more clearly seen in Tables 4, 5, and 6 below:

Table 4. Aspects observed in Cycle I and Cycle II

Category	Indicator
A	Children Can Pay Attention to Instructions From Teachers
B	Children Can Color Well
C	Children Can Hold Matching Tools Correctly
D	Children Can Coordinate Eye and Hand Movements
E	Children can match according to the specified dots or patterns
F	Children Demonstrate Accuracy When Matching Without Excessive Tearing
G	Children Can Complete Activities Completely
H	Children Demonstrate Neatness in Matching Activity Results

(Source: Research Data, 2026).

Table 5. Observation Results in Cycle 1

No	Name	Observed Aspects								Result*
		A	B	C	D	E	F	G	H	

1	MY	✓	✓	✓	✓	✗	✗	✗	✗	BSH
2	UPS	✓	✓	✓	✓	✓	✓	✓	✓	BSB
3	GPF	✗	✗	✓	✓	✓	✓	✓	✓	BSB
4	ARA	✓	✓	✓	✓	✓	✓	✓	✓	BSB
5	AN	✓	✓	✓	✓	✓	✓	✓	✓	BSB
6	RGN	✗	✗	✓	✓	✓	✓	✓	✗	BSH
7	MH	✗	✗	✓	✗	✗	✗	✓	✗	MB
8	AR	✓	✗	✓	✗	✗	✗	✓	✗	MB
9	EK	✗	✗	✓	✗	✗	✗	✗	✗	BB
10	DA	✓	✓	✓	✓	✓	✓	✓	✓	BSB
11	GA	✓	✗	✓	✗	✗	✗	✗	✗	MB
12	RNA	✓	✗	✓	✗	✗	✗	✗	✗	MB
13	SK	✓	✗	✓	✓	✓	✗	✓	✗	BSH
14	AP	✗	✓	✓	✗	✗	✗	✗	✗	MB

(Source: Research Data, 2026).

Table 6. Observation Results for Cycle 2

No	Name	Observed Aspects								Result*
		A	B	C	D	E	F	G	H	
1	MY	✓	✓	✓	✓	✓	✗	✓	✗	BSB
2	UPS	✓	✓	✓	✓	✓	✓	✓	✓	BSB
3	GPF	✗	✗	✓	✓	✓	✓	✓	✓	BSB
4	ARA	✓	✓	✓	✓	✓	✓	✓	✓	BSB
5	AN	✓	✓	✓	✓	✓	✓	✓	✓	BSB
6	RGN	✗	✗	✓	✓	✓	✓	✓	✗	BSH
7	MH	✓	✗	✓	✗	✗	✗	✓	✗	MB
8	AR	✓	✗	✓	✓	✓	✗	✓	✗	BSH
9	EK	✗	✗	✓	✗	✓	✗	✓	✗	MB
10	DA	✓	✓	✓	✓	✓	✓	✓	✓	BSB
11	GA	✓	✗	✓	✗	✗	✗	✗	✗	MB
12	RNA	✓	✗	✓	✓	✓	✓	✓	✗	BSH
13	SK	✓	✓	✓	✓	✓	✓	✓	✓	BSB
14	AP	✗	✗	✓	✗	✓	✗	✓	✗	BSH

*Result = BB : Not Yet Developed (from ✓ 1)
MB : Starting to Grow (from ✓ 2-3)
BSH : Developing as Expected (from ✓ 4-5)
BSB : Growing Very Big (from ✓ 6-8)

Discussion

Based on tables 4, 5, 6 above, it also shows that there is a visible increase in the percentage change in child development, where in cycle I there are still children in the Not Yet Developing category (7.14%) and Starting to Develop (35.71%), while in cycle II the Not Yet Developing category decreased to 0.0% and the Very Well Developing category increased to 46.66%. This means that the picture matching activity has proven effective in improving children's fine motor skills at RA Raudhatul Jannah. According to (Dinehart & Manfra, 2013) fine motor skills are defined as the movement of small muscles, namely the movement of the fingers. Fine motor skills involve eye-hand coordination and control of the body's small muscles that enable functions such as writing, cutting, grasping small objects, and fastening clothes. The importance of developing fine motor skills in early childhood is evident. Weaknesses in this area can hinder a child's ability to: eat with utensils, write legibly, use a computer, or turn pages.

It can lead to teasing from peers and make it difficult to meet the demands of schoolwork (Losse et al., 1991).

Fine motor skills involve dexterity and coordination of the hands and fingers, and serve as an important indicator for children aged 3–6 years. Fine motor skills consist of three main components: grip strength, movement speed, and motor coordination (Aliyah et al., 2026). These components play a crucial role in development. Thus, it can be said that fine motor skills are closely related to neurological maturity in children and serve as an important indicator of developmental status (Nai Hsuan, 2025). These skills can also predict preschool children's social, cognitive, and reasoning abilities (Burr & Choudhury, 2020). Studies have linked fine motor development to reading difficulties, learning disabilities, and academic challenges (Capellini et al., 2010).

Numerous previous studies have reported the importance of motor skill-building activities in preschool education, given the importance of fine motor skills for later academic achievement. Evidence is mounting that fine motor skills significantly influence later academic achievement (Grissmer et al., 2010) and Son, (2006). Over the past few years, numerous studies have reported the significant impact of fine motor skills on later academic achievement. Therefore, it is appropriate that the development of children's motor skills, particularly fine motor skills, should be included in universal and standard early childhood education curricula (Dinehart & Manfra, 2013).

One activity in preschool education that can develop fine motor skills is matching. Referring to the complete Indonesian dictionary, *menpasang* means to stab by stabbing a sharp object such as a needle or thorn. So matching is the activity of cutting paper by piercing the edges of the image (on the paper) to form a certain image. By matching images, it can optimize all aspects of development, both physical and psychological (intellectual, language, motor and socio-emotional). Thus, various types of learning activities should be carried out through a needs analysis that is tailored to the various aspects of development and abilities of each child. In matching images, the tools that need to be prepared are needles or small nails, a base (pad), glue and colored pencils (Astuti, 2019). Matching activities are one of the activities that can support motor skills, because they involve focus and precise control of the hands. This is in line with the opinions of Alston & Taylor (1987) and Thomassen & Teulings (1983) who state that fine motor skills are very important for implementing strength and precise control of the arms, hands, and fingers.

This is supported by a recent study reporting that fine motor skills at age 5.5 years are associated with later cognitive performance. This means that early assessment of a child's motor skills can be beneficial for early diagnosis and targeted interventions to support optimal cognitive development (Meijer & et.al, 2025). This reinforces the findings of (Vermeulen, 2022), who investigated motor performance at age 2 and cognitive outcomes at age 8, their findings concluded that toddlers' fine motor skills are associated with performance IQ (PIQ) at school age. In line with previous findings that reported a general relationship between cognitive and motor skills, where higher levels of fine motor skills were associated with higher intelligence scores (Klupp et al., 2021).

This study consisted of two cycles. In the initial conditions before conducting classroom action research, fine motor skills at RA Raudhatul Jannah were still low, as seen from the results of the daily assessments conducted by the researcher. Children often complained of being unenthusiastic or tired when given fine motor tasks and asked the teacher for help to complete them. If the children worked alone, the results were less than satisfactory. Therefore, the researcher conducted a classroom action research with two cycles to stimulate and encourage the improvement of fine motor skills through matching

activities. The researcher chose matching activities, in accordance with the results of the identification of needs in the field, and this matching activity is said to provide benefits as one of the efforts to improve fine motor skills. In fact, early childhood classes provide children with various opportunities to engage in fine motor activities because it is believed that having these skills is important for further learning Bhatia et al., (2015) reported that longitudinal studies provide stronger evidence of the importance of early fine motor development. Thus, it can be said that the implementation of picture matching activities carried out with improved learning strategies in cycle II proved effective in improving student development. This is evident in the shift in developmental categories from lower to higher, thus optimally achieving the research objectives. In other words, matching activities can improve children's fine motor skills at RA Raudhatul Jannah. This suggests that early childhood classes provide children with opportunities to engage in a variety of fine motor tasks. This supports (McHale & Cermak, 1992) finding that school-age children spend 30-60% of their time engaged in fine motor activities. Therefore, matching activities are appropriate for implementation in preschool settings.

Matching activities are among the recommended activities for young children, as they help develop hand dominance in coordination with the brain. Hand dominance is an aspect of fine motor development that is directly related to left-right awareness in young children (Kaufman et al., 1978) and spatial orientation (Bryden & Steenhuis, 1997) Established hand dominance supports efficient and smooth bilateral fine motor coordination and begins to develop in the first year of life (Gesell & Ilg, 1974). This process begins with the dominant use of one hand, then the other, followed by alternating hands, and finally both hands simultaneously, with most children showing a preference by age 3. Supported by various studies reporting that matching pictures can improve fine motor skills in children (Saraswati et al., 2017); (Faida, 2019); (E. Wahyuni, 2018); (Pratama, 2025); (Saroh, 2023); (Susiana, 2023); (Tumbel, 2023); (Tworedoo Ervina & Aprianti, 2024); (Ariyanti & Hasibuan, 2025); (Cortes et al., n.d.); (Budiarti et al., 2025b); (Budiarti et al., 2025).

This structured approach highlights the importance of activities that help develop children's fine motor skills, one of which is matching activities. Through matching activities, children's ability to hold matching tools and tear along the lines on picture materials becomes more flexible, resulting in much neater work as expected; children also enjoy this activity without being forced, are able to complete the activity without the teacher's help, and finish the activity thoroughly (Mulyawati et al., 2023). Thus, it can be said that activities that support fine motor skills must be incorporated into the early childhood education curriculum in a universal and standardized manner.

CONCLUSION

Based on the research results above, it can be concluded that the picture matching activity is effective in improving children's fine motor skills at RA Raudhatul Jannah. This improvement is seen from the change in the percentage of children's development, where in cycle I there were still children in the Not Yet Developing (7.14%) and Starting to Develop (35.71%) categories, while in cycle II the Not Yet Developing category decreased to 0.0% and the Very Well Developing category increased to 46.66%. This improvement occurred due to improvements in the learning process, such as providing clearer instructions, using more interesting and concrete media, and more intensive mentoring for children. In addition, the picture matching activity was also able to improve children's concentration, accuracy, and self-confidence. Thus, the picture matching activity can be used as an alternative learning method to develop fine motor skills in early childhood.

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