



Enhancing Fine Motor Skills Through Collage Activities Using Natural Materials in Kindergarten

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Received: May 19, 2025	Revised: May 09, 2025	Accepted: May 11, 2025	Online: May 25, 2025
ABSTRACT Fine motor skills are essential for children's developmental readiness, supporting their ability to perform daily tasks and foundational academic activities. This study aims to improve fine motor skills in early childhood through collage activities using diverse natural materials. Adopting a classroom action research design with the John Elliot model, the research was conducted in two cycles, each comprising three meetings. Eleven children aged 5–6 years participated, with data collected via interviews, observations, and documentation, analyzed both descriptively and quantitatively. The findings showed a gradual increase in fine motor skill achievement: 38% of indicators were unmet in the pre-action phase, rising to 62% in the first cycle, and reaching 92% in the second cycle, indicating significant improvement. Activities such as squeezing, tearing, cutting, and pasting natural materials fostered sensory and motor engagement. In conclusion, collage activities with natural materials are effective in enhancing fine motor skills. It is recommended that educators integrate such creative, nature-based approaches to support children's motor development.			
Keywords: Fine Motor Skills, Collage Activities, Natural Materials			

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INTRODUCTION

Education is an activity that encompasses educational practices, which fundamentally reside within the learning process, and at its core lies the child's capacity to think (Gatot, 2023; Innes et al., 2023; Yuningsih et al., 2024). Education serves as an effort to train and develop students' thinking abilities through structured learning activities (Alfurqan et al., 2020; Sa'diah et al., 2022; Wulandari et al., 2024). The primary aim of education is to create a learning environment that supports the holistic development of individuals, encompassing cognitive, social, emotional, and physical aspects (Julita & Juwita, 2024; Konomi, 2013). These objectives include knowledge transmission, skill cultivation, moral formation, and preparation for societal contributions (Raizada & Kishiyama, 2010). Furthermore, education seeks to nurture individuals into critical, adaptable citizens who are responsive to the dynamics of societal change. Education is a conscious and deliberate endeavor to facilitate a learning process wherein students actively develop their potential to possess spiritual strength,

self-discipline, noble character, intelligence, moral integrity, and the necessary competencies for life (Juliharti et al., 2023).

The education imparted to children not only equips them for academic progression but also serves as a foundation for imparting religious knowledge (Prapitasari et al., 2019). The science of interpretation among scholars underscores the significance of tawhid (the belief in the oneness of Allah) and cautions humanity against shirk (associating others with Allah). Luqman, mentioned in the Qur'anic verses, is portrayed as a wise figure known for his prudence and insight. His admonition to his son serves as a critical reminder for humankind regarding the principles of tawhid in Islamic teachings (Liriwati & Armizi, 2021). This interpretation highlights the essential role of religious education in cultivating children's understanding of monotheism and imparting religious teachings that establish a robust moral and spiritual foundation.

According to the Minister of Education and Culture of the Republic of Indonesia Regulation Number 146 of 2014, Article 5 Paragraph 1, the developmental aspects in Early Childhood Education (PAUD) include religious and moral values, physical-motor skills, cognitive development, language proficiency, socio-emotional growth, and artistic expression (Rachman, 2018). It is imperative to holistically and proportionately nurture these developmental facets to optimize the latent talents in children. One developmental domain with significant potential to stimulate early childhood development is the motoric aspect (Hayati & Tawati, 2021).

Perwira, (2022) assert that childhood is a phase marked by accelerated brain growth, during which children develop fine and gross motor skills as integral components of their developmental trajectory. Gross motor skills encompass activities requiring large muscle coordination, such as jumping, climbing, running, and cycling (Setyawan et al., 2018). In contrast, fine motor skills involve tasks demanding eye-hand coordination, including drawing, writing, cutting, and manipulating objects (Hengki Primayana, 2020). Childhood thus represents a pivotal period for motoric maturation, whereby both gross and fine motor competencies evolve through experiential learning and practice.

According to Meilati et al., (2021) fine motor skills refer to the capacity to regulate movements through coordination among the nervous system, muscle fibers, and musculature, particularly within the fingers. Each fine motor action performed by a child necessitates collaboration among diverse organs and body components. The hands and fingers function as the primary agents of fine motor activity, while the fine muscles and muscle fibers act as physiological drivers enabling manipulative movements (Tanto & Sufyana, 2020). Fine motor skills entail movements executed by specific body parts utilizing small muscles, exemplified by proficient finger use. Bambang Sujiono emphasizes the criticality of fine motor development as a precursor to writing and drawing readiness. Children require adequate preparatory experiences prior to formal schooling to master the motoric abilities essential for academic tasks. Maimunah reinforces that fine motor skills necessitate continuous, systematic, and targeted practice (Nugrahaeni & Ami, 2023).

The Indonesian Ministry of Education and Culture Regulation Number 146 of 2014 regarding the Early Childhood Education Curriculum stipulates that optimal child development necessitates attention to key developmental aspects, including religious and

moral values, physical-motor abilities, social-emotional maturity, cognitive growth, linguistic competence, and artistic appreciation (Putri et al., 2024). To foster these dimensions, pedagogical approaches must align with the distinctive characteristics and developmental stages of early childhood.

Fine motor activities such as writing represent fundamental learning practices routinely integrated into early childhood educational settings and warrant deliberate cultivation (Isnaeni et al., 2020; Nugrahaeni & Ami, 2023). Writing extends beyond mere replication, offering a medium for creative expression (Kusumaningtyas & Febriana, 2018; Partriani et al., 2020). Other fine motor activities encompass cutting, pasting, grasping, picking up, throwing, catching, rolling, and wrist rotation—all of which are critical for facilitating progressive motoric development in children (Hutami, 2020).

Fine motor skills, as articulated by Rohali & Sitorus, (2025), embody the ability to alter body positions in various modalities. The term “motoric” connotes biological and mechanical processes underlying bodily movements. Movement, in this sense, reflects a tangible alteration observable in bodily functions (najamuddin & Ashari, 2021). Consequently, motoric aptitude represents an inherent capacity enabling diverse bodily postures. Samsudin further explicates that “motor” refers to the biological or mechanical mechanisms prompting movement, positioning movement as the resultant action of motoric processes foundational to behavior (Hengki Primayana, 2020). Bambang Sujiono reiterates the necessity of fine motor development as a foundational phase preceding writing and drawing proficiency. Accordingly, Maimunah affirms that regular, structured, and targeted practice is indispensable for fine motor advancement. Complementarily, the Indonesian Ministry of Health delineates fine motor skills as children’s ability to engage in movements involving specific body parts, utilizing small muscles, and requiring precise coordination—manifested through activities like observing, pinching, and writing (Ringan, 2023).

Based on observations conducted on June 4, 2024, at Al Hikmah Integrated Islamic Kindergarten Palopo, it was evident that the learning process incorporated collage-making activities using natural materials such as dry leaves. In these sessions, children were guided to create patterns resembling trees by cutting and arranging leaves, twigs, and branches in alignment with provided templates. Despite this facilitation, the fine motor skills of the children at Al Hikmah Integrated Islamic Kindergarten Palopo had not yet developed optimally. Among the 11 students taught by a single educator, only two children demonstrated independent and neat completion of the collage activity without teacher assistance, whereas the remaining nine children required substantial support. This discrepancy was particularly noticeable during tasks such as cutting and affixing dry leaves, wherein most children exhibited challenges in executing the activities autonomously.

Isnaeni et al., (2020) defines motor skills as the capability to coordinate small muscle utilization, particularly in the fingers and hands, necessitating precision and synergy between visual and manual faculties. Such skills encompass the adept manipulation of tools, fine object control, and regulated finger movements. The aspiration in fostering fine motor development is for children to gradually comprehend and employ scissors and other media to strengthen hand muscles in alignment with designated patterns. This developmental process also cultivates concentration, precision, and patience within learning contexts.

Effective learning activities are contingent upon the availability of adequate facilities, infrastructure, and pedagogical methods emphasizing experiential, hands-on learning. Practical activities such as collage creation utilizing various media serve as exemplary strategies to support fine motor development (Kurniati, 2022). Accordingly, the researcher opted to employ collage-making activities with natural materials as instructional aids. Collage refers to an artistic endeavor involving the assembly or attachment of materials like dry or fresh leaves. Natural elements such as leaves, wood, twigs, seeds, and stones can be harnessed within collage work. This artistic activity aims to enhance hand muscle strength and eye-hand coordination (Aprillia et al., 2023). Through this medium, it is anticipated that children's fine motor skills—particularly finger dexterity, bilateral hand use, and capacities for concentration, precision, and perseverance—can be effectively nurtured.

This study adopts a behaviorist theoretical framework, which conceptualizes learning as a behavioral transformation arising from stimulus-response interactions. In behaviorist theory, learning is construed as an associative process wherein external stimuli elicit corresponding responses from learners (Pratama, 2019). This theoretical lens was selected due to its emphasis on establishing explicit stimulus-response connections and facilitating behavioral adaptation through experiential reinforcement. The research endeavor aims to enhance children's fine motor skills through creative collage activities utilizing natural materials like leaves and twigs. Such activities are instrumental in cultivating skills in cutting, pasting, and arranging, thereby contributing to comprehensive motoric development.

Although previous studies have examined fine motor development through collage activities, research focusing specifically on natural materials within integrated Islamic kindergarten settings in Indonesia remains limited. Most prior research emphasizes synthetic materials or general educational settings without addressing religious-based learning environments. Therefore, this study fills a research gap by integrating natural materials into collage activities at Al Hikmah Integrated Islamic Kindergarten Palopo, combining fine motor development with ecological and religious values. The novelty of this research lies in its contextual approach, merging behaviorist pedagogy with environmental and religious education to foster not only motoric competence but also environmental awareness and spiritual growth. Consequently, this study aims to provide both theoretical contributions and practical insights for early childhood education, addressing the urgent need for innovative, contextual, and sustainable interventions to improve fine motor skills.

RESEARCH METHODOLOGY

The research conducted at Al Hikmah Integrated Islamic Kindergarten Palopo, located in Wara Utara District, Palopo City, employed a Classroom Action Research (CAR) design. Classroom Action Research is a research approach implemented directly within the classroom setting through specific interventions aimed at improving the learning process and enhancing learning outcomes compared to prior methods.

The subjects of this study comprised the teacher and children in Group B at Al Hikmah Integrated Islamic Kindergarten Palopo, consisting of 1 teacher and 11 children. Meanwhile, the object of this research focused on improving fine motor skills through collage

activities using various natural materials at Al Hikmah Integrated Islamic Kindergarten Palopo, Wara Utara District, Palopo City.

The research was carried out from September to November 2024 during the Odd Semester of the 2024/2025 academic year at Al Hikmah Integrated Islamic Kindergarten Palopo. The research design adopted was based on the action research model developed by John Elliot. The implementation of this action research followed a cyclic process, with each cycle comprising four sequential stages: (1) planning, (2) implementation/action, (3) observation, and (4) reflection.

This study was conducted across two cycles, with each cycle designed and implemented to address the findings and reflections from the preceding cycle. The action plan for both Cycle I and Cycle II was formulated based on the principles of continuous improvement and iterative evaluation. The action research model developed by John Elliot is illustrated in the following figure::

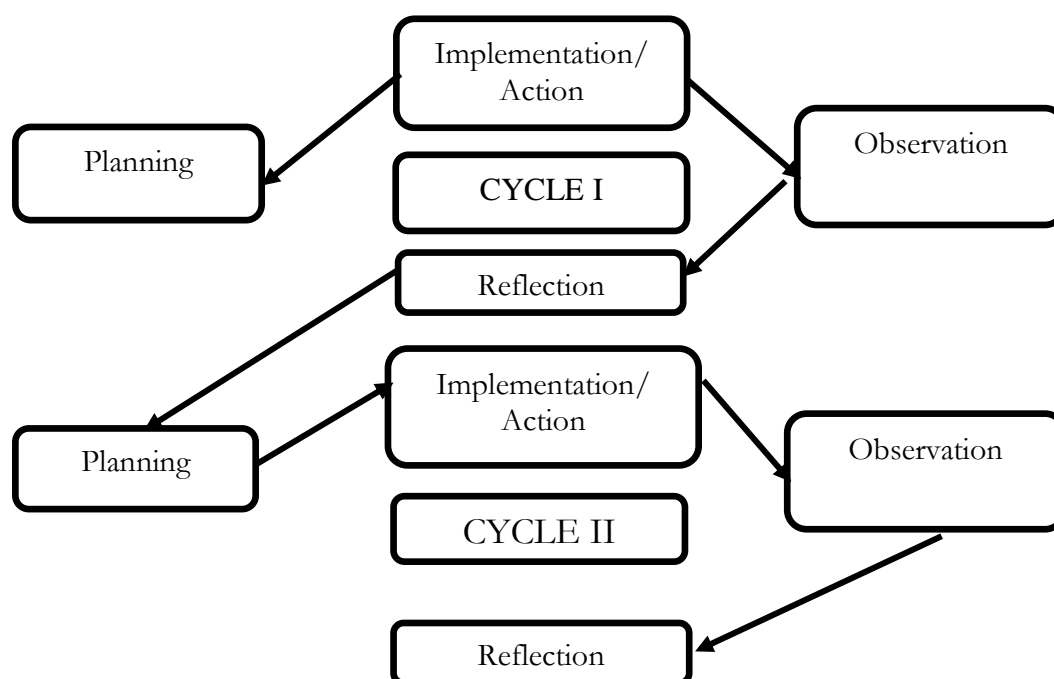


Figure 1. CAR Procedures of John Elliot Model

RESULTS AND DISCUSSION

Results

Pre-Skill (Pre-Action)

The results of initial observations carried out before classroom action obtained from pre-action observations can be seen in the following table:

Table 1. Pre-action of Fine Motor Skills in Initial Conditions

Name	Fine Motor Skills					Total score	%	Ket
	1	2	3	4	5			
ASY	2	2	2	2	1	9	60%	MM
AZH	1	1	1	1	1	5	33%	BM

A. AYD	1	1	1	1	1	5	33%	BM
A. AYMN	1	1	1	1	1	5	33%	BM
AHMD	1	1	1	1	1	5	33%	BM
DFN	1	1	1	1	1	5	33%	BM
M ATR	1	1	1	1	1	5	33%	BM
M. IBRHM	2	2	2	2	1	9	60%	MM
RAYY	1	1	1	1	1	5	33%	BM
RUQQ	1	1	1	1	1	5	33%	BM
TTA	2	1	1	1	1	6	40%	BM
						64	38%	BM

Source: Processed from data on calculations of children's development achievement levels in pre-action fine motor skills.

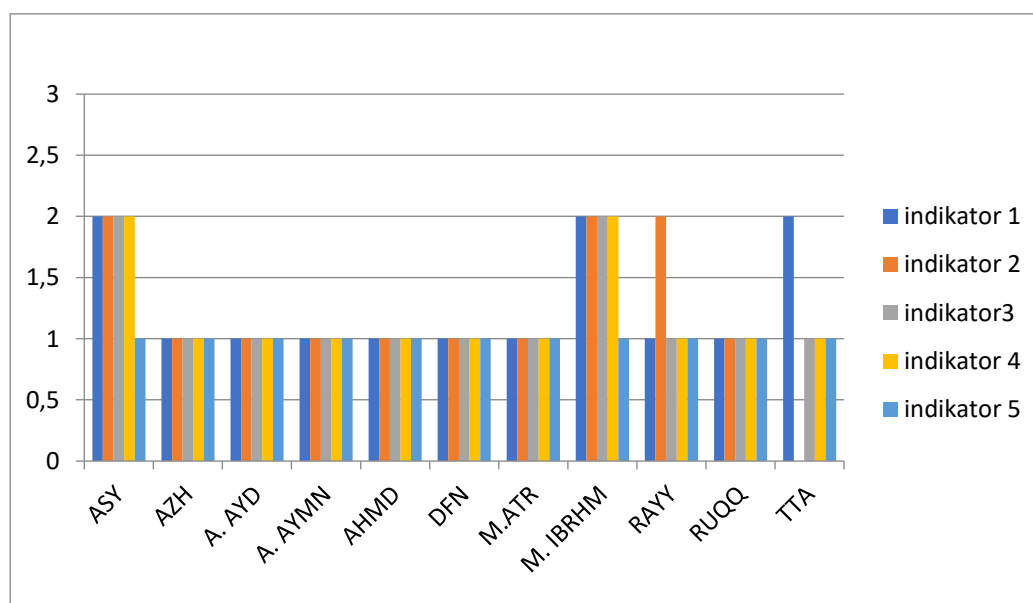


Figure 1. Bar chart of calculation of improvement in students' fine motor skills
Class B pre-action

Table 2. Percentage of Initial Observation Results of Achievement of Fine Motor Indicators

No	Category	Number of Children	Percentage
1	Not Yet Observed (BM)	9	85%
2	Beginning to Emerge (MM)	2	15%
3	Demonstrated (SM)	0	0
		11	100%

Source: Processed from initial observation data on children's fine motor skills.

Based on the table above, it can be concluded that the results of initial observations of children's fine motor skills show that 2 children are starting to show development (starting to appear) and 9 children have not shown development (not yet appearing). Therefore, the author plans improvements in the learning situation and chooses classroom action research as

an effort to improve children's fine motor skills through collage activities with various natural materials. If the first cycle has not shown the desired improvement, it is necessary to continue with the second cycle, where collage activities with natural materials are expected to improve children's fine motor skills in group B at Al Hikmah Integrated Islamic Kindergarten Palopo according to the established success indicators, namely the emergence of development (starting to appear) that is in accordance with expectations.

Cycle I

The Cycle I meeting was conducted with the Theme I Love the Earth, Topic I Love Indonesia, Sub Topic Flag and Flag Symbol. The cycle I meeting included three activities, namely opening activities, core activities, and closing activities.

Opening Activities

The opening activity began when the children arrived at school and one by one shook hands with the teacher who was waiting at the gate. The children were then directed to perform the dhuha prayer in their respective classes. After praying, they recited prayers and hadiths as preparation before starting the lesson. Next, the researcher asked the children for information about the day, date, month, and year. Then, the researcher sang a song related to the topic of the lesson that day, and gave appreciation in accordance with the material that the children would learn.

Core activities

In the core activity, the researcher explained the materials and activities that would be carried out at this time. Children were asked to complete the practice activities in the thematic textbook “My Country” on pages 1, 2, and 5. After completing the thematic textbook, children worked on worksheets cutting leaves/twigs, and attaching dry leaves to complete the Pancasila picture pattern. This activity was carried out to determine the extent of children's fine motor skills through collage activities from natural materials.



Figure 2. Collage Activity with Natural Materials to Complete Pancasila Picture

Closing

Before ending today's learning, students reflect on learning guided by the researcher/teacher. The researcher asks about what activities were done today, and what they liked most about today's learning. Furthermore, the researcher/teacher conveys Islamic values related to the flag and national symbols to the children and the researcher concludes today's learning and gives appreciation to students who have followed the learning well.

Cycle I Observation

At the observation stage of cycle I, it was done by observing the improvement of children's fine motor skills in learning. The results of observations in cycle I are presented in the following table:

Table 3. Percentage of Improvement in Children's Fine Motor Skills in Cycle I

Name	Fine Motor Skills					Score	%	Notes
	1	2	3	4	5			
ASY	3	2	2	2	2	11	73%	MM
AZH	2	2	2	2	1	9	60%	MM
A. AYD	3	2	2	1	1	9	60%	MM
A. AYMN	3	2	2	2	2	11	73%	MM
AHMD	2	2	2	2	1	9	60%	MM
DFN	2	2	2	2	1	9	60%	MM
M. ATR	2	2	2	2	1	9	60%	BM
M. IBRHM	2	2	2	2	2	10	66%	MM
RAYY	3	2	2	1	1	9	60%	MM
RUQQ	2	2	1	1	1	7	46%	BM
TTA	3	1	2	2	2	10	66%	MM
						103	62%	MM

Source: Cycle I data processing

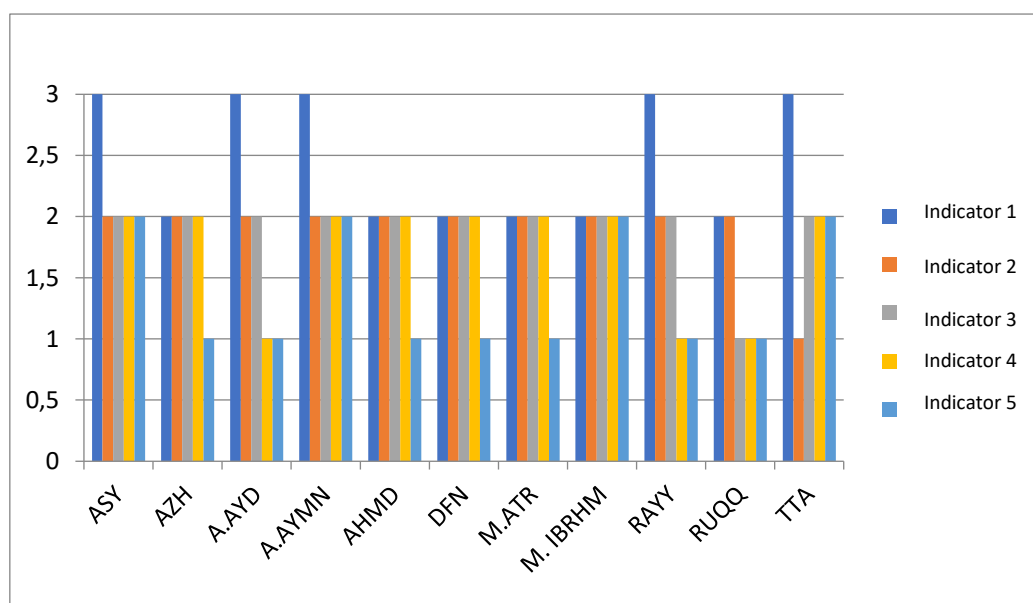


Figure 3. Bar chart of calculation of improvement in students' fine motor skills Class B cycle I

Table 4. Percentage of Observation Results of Cycle I Indicators of Achievement of Fine Motor Skills Improvement at Al Hikmah Integrated Islamic Kindergarten Palopo

No	Category	Number of Children	Percentage
1	Not Yet Observed (BM)	1	8%
2	Beginning to Emerge (MM)	10	92%
3	Demonstrated (SM)	0	0
		11	100%

Source: Processed from initial observation data on children's fine motor skills.

Based on the table above, it can be concluded that from the results of the observation cycle I, there is still 1 child who has not appeared (BM), and there are 10 children who have started to appear (MM). This indicates that the results of cycle I have not increased optimally.

Table 5. Percentage of Results of Comparison of Initial Conditions and Cycle I

	Pra Cycle	Cycle I
Percentage (%)	38%	62%

Cycle I Reflection

The reflection stage of cycle I is carried out to evaluate the results of the actions that have been carried out in the first cycle. The results of the evaluation obtained will be used to make improvements in the next cycle. If the results of the first cycle do not achieve the desired results, the second cycle will be carried out to achieve more optimal results related to what will be studied.

The results of cycle I of the study showed that the fine motor skills of children at Al Hikmah Integrated Islamic Kindergarten Palopo had not developed, but they still had not met the target because all aspects of development had not reached 80%.

Based on the findings above, the researcher decided to continue the research and continue the action in cycle II. This was done to maximize the improvement of children's fine motor skills to achieve the desired goals.

Cycle II

Cycle II Meeting with Theme I Love Indonesia Topic Cultural Diversity Subtopic Various Traditional Clothes. The implementation of cycle II includes opening activities, core activities, closing activities.

Opening Activities

The opening activity began when the children arrived at school and one by one shook hands with the teacher who was waiting at the gate. The children were then directed to perform the dhuha prayer in their respective classes. After praying, they recited prayers and hadiths as preparation before starting the lesson. Next, they read the study prayer and then the researcher asked the children for information about the day, date, month, and year. Then, the researcher did ice breaking, and gave appreciation according to the material that the children would learn.

Core Activities

In the core activities, the children sat in a circle with the researcher, then the researcher explained the activities that would be carried out and the children watched an animated video about the introduction of traditional clothing from Indonesia, then the researcher asked "try to mention an example of a traditional house that we just learned". After finishing explaining the material, the children completed the traditional clothing collage worksheet by cutting leaves/twigs and arranging them then sticking them on the worksheet to form a picture of traditional clothing. This activity was carried out to determine the extent of children's fine motor skills through collage activities from natural materials.



Figure 4. Children Making a Traditional Clothing Collage from Natural Materials

Closing Activities

Before ending today's learning, students conducted a learning reflection guided by the researcher/teacher. The researcher asked about what activities were done today, and what they liked most about today's learning. Furthermore, the researcher/teacher conveyed Islamic values related to the diversity of traditional clothing to the children and the researcher concluded today's learning and gave appreciation to students who had followed the learning well.

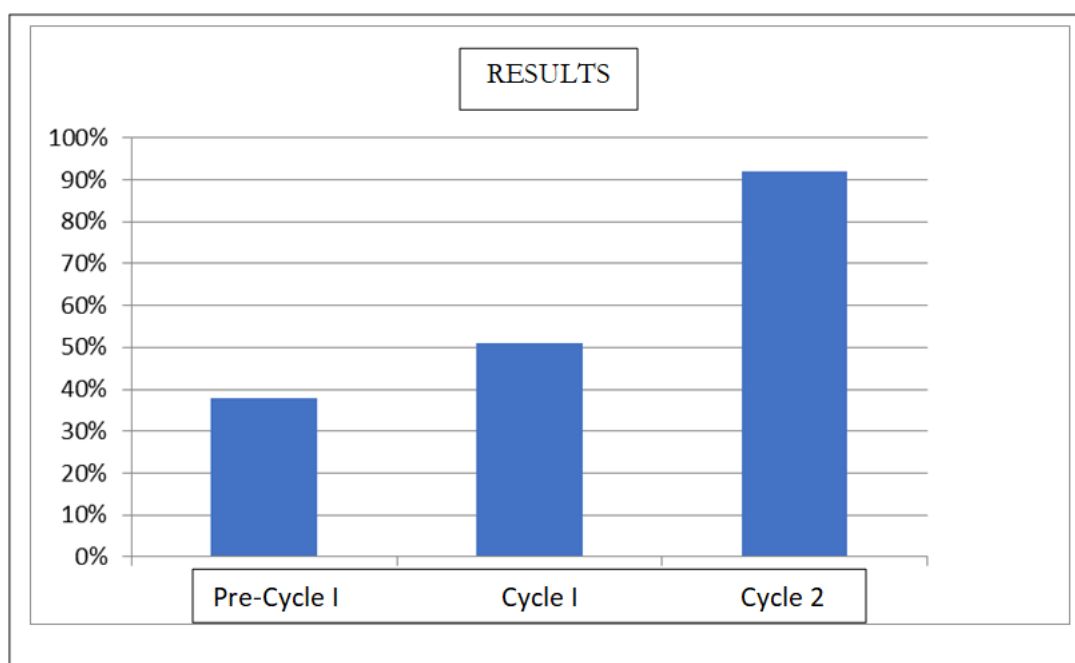
Cycle II Observation

Observation of cycle II was conducted by observing the improvement of children's fine motor skills in learning. The results of observations in cycle II are presented in the following table:

Table 6. Presentation of Improvement in Children's Fine Motor Skills in Cycle II

Name	Fine Motor Skills					Total score	%	Ket
	1	2	3	4	5			
ASY	3	3	3	3	3	15	100%	SM
AZH	3	3	3	2	3	14	93%	SM

A. AYD	3	3	2	2	3	13	86%	SM
A. AYMN	3	3	3	3	3	15	100%	SM
AHMD	3	3	3	3	3	15	100%	SM
DFN	3	3	3	3	3	15	100%	SM
M ATR	3	2	2	2	2	11	73%	MM
M. IBRHM	3	3	3	3	3	15	100%	SM
RAYY	3	3	3	3	3	15	100%	SM
RUQQ	3	2	2	2	2	11	73%	MM
T'TA	3	3	3	2	2	13	86%	SM
						152	92%	SM



Source: Cycle II data processing

Figure 5. Bar Chart of Pre-Cycle, Cycle I, Cycle II Results

Table 7. Percentage of Results of Comparison of Initial Conditions and Cycle I

	Pre-Cycle	Cycle I	Cycle II
Percentage (%)	38%	51%	92%

Cycle II Reflection

This reflection stage is carried out to evaluate the results of the cycle II actions. The results will be used to determine whether the research has achieved its objectives or not. If not, the next cycle will make improvements.

Based on the data that has been obtained, the researcher reached the following conclusions: 1). The results of cycle I which have been carried out for 3 meetings on all indicators can be seen that the increase in children's fine motor skills has increased. Where there is still 1 child who has not yet emerged (BM), while there are 10 children who have

started to emerge (MM) and there are no children who have emerged (SM). So, it can be concluded that the increase in children's fine motor skills at Al Hikmah Integrated Islamic Kindergarten Palopo in cycle I, children's learning fine motor skills reached 62%. 2). From the research conducted by researchers at Al Hikmah Integrated Islamic Kindergarten Palopo, children's fine motor skills increased during cycle II because they had met the targets that had been determined in all aspects which reached 92% so that the research was stopped in cycle II so, increasing fine motor skills through collage activities using natural materials makes learning more active, fun and more creative.

Discussion

The findings of this study demonstrate that collage activities using various natural materials significantly improve children's fine motor skills in group B of Al Hikmah Integrated Islamic Kindergarten Palopo. The classroom action research, which was carried out in two cycles, showed a consistent increase in children's fine motor abilities across each cycle. The initial pre-action percentage was 38%, followed by 62% in the first cycle, and culminating at 92% in the second cycle, indicating progressive improvement through the interventions implemented.

This improvement aligns with Piaget's theory of cognitive development, which emphasizes the importance of manipulative and hands-on activities in fostering psychomotor skills among early childhood learners (Ariasih & Ujianti, 2024). Collage activities inherently engage children's fine motor coordination through actions such as holding, cutting, and pasting natural materials. These motoric practices stimulate hand-eye coordination and dexterity, essential components of early childhood physical development.

The structured collage activities, beginning with explanation, demonstration, and guided practice, provided an environment conducive to skill acquisition. Similar findings were reported who found that fine motor skills in early childhood can be significantly enhanced through creative manipulative activities, including collage-making, which encourage precision and control in hand movements.

Furthermore, the increasing percentages across research cycles reflect the effectiveness of repetitive practice and structured intervention in improving children's fine motor skills. This is supported by research from (Fitriani, 2016). which concluded that repeated exposure to fine motor activities led to measurable improvement in children's ability to perform tasks requiring precision and control.

The use of natural materials in collage activities also contributed to children's sensory exploration and creative expression. According to a study, natural materials not only enhance children's environmental awareness but also provide varied textures and shapes that stimulate sensory and motor integration, facilitating better engagement and motor coordination.

In addition, the collaborative nature of the activity, conducted in a group setting with children sitting in a circle, may have contributed to positive peer modeling and social learning. Research by (Pratiwi et al., 2023). emphasized that learning activities designed in a social context can enhance motivation and participation, indirectly influencing the development of fine motor skills through observation and imitation.

Overall, this study corroborates previous findings that collage activities using natural materials are an effective pedagogical strategy to enhance fine motor skills in early childhood education. The implementation of structured, repetitive, and engaging activities plays a crucial role in stimulating children's psychomotor development. Future research may explore the long-term impacts of such interventions and compare the efficacy of different material types on motor skill development.

CONCLUSION

The findings of this study demonstrate that collage activities utilizing natural materials are effective in enhancing fine motor skills in early childhood. The progressive increase in achievement across intervention cycles indicates significant improvement, meeting the targeted success criteria. This improvement was facilitated through engaging children in activities such as squeezing, tearing, cutting, and pasting, which stimulated their sensory and motor abilities. Therefore, incorporating natural-material-based collage activities can serve as an effective strategy for educators to support the development of fine motor skills in early learning settings.

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