

Implementation Of Smart Board Media (Digital Whiteboard) To Improve Fine Motor Skills In Early Childhood Grade B At Darul Bayan Islamic Kindergarten

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Abstract

This study aimed to improve the fine motor skills of children in Group B at TK Islam Darul Bayan through the use of Smart Board (digital whiteboard) media. The children's fine motor skills were initially low, as seen in their difficulty tracing lines, drawing simple shapes, writing, and following patterns during conventional, less varied learning. This Classroom Action Research (CAR) involved nine children and was conducted in two cycles, each following the planning, action-observation, and reflection stages. Data were collected through observation, performance tests, field notes, and documentation, then analysed descriptively by comparing the percentage of classical mastery before and after the intervention. Classical mastery rose from 33.33% at the pre-cycle stage to 55.55% after Cycle I and 88.88% after Cycle II, exceeding the 80% success indicator and reaching the Very Well Developed (BSB) category. These findings indicate that Smart Board media can be used as a learning alternative to support the fine motor development of children in Group B at TK Islam Darul Bayan.

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1. INTRODUCTION

Early childhood education is a crucial stage in supporting optimal child growth and development. During this period, children experience rapid development, including cognitive, language, social-emotional, and physical motor skills. One aspect of development that requires special attention is fine motor skills. Fine motor skills relate to the coordination of small muscles, particularly in the hands and fingers, involving hand-eye coordination, such as activities such as writing, drawing, coloring, cutting, and arranging objects. These skills form an essential foundation for children's readiness to participate in learning at the next level of education (Hendraningrat & Fauziah, 2021: 4).

Fine motor skills in early childhood need to be stimulated through engaging, enjoyable, and child-centered learning activities. However, many early childhood education institutions still use conventional learning methods, which can easily lead to boredom and a lack of active participation in learning. The lack of varied learning media results in suboptimal stimulation of children's fine motor development. This is evident in the difficulty some children still have with holding writing tools, thickening lines, drawing, or coordinating hand movements (Hasna, 2021: 12).

Technological advancements in education provide opportunities for teachers to use more innovative and interactive learning media. One such medium for early childhood learning is the Smart Board, or digital whiteboard. Smart Boards are digital technology-based learning media that can display images, videos, and animations, and allow children to interact directly through touch.

The use of digital media in learning has been proven to increase children's interest and motivation in learning by providing a more engaging and interactive learning experience (Hendraningrat & Fauziah, 2021).

According to Apriani, Saparahayuningsih, and Daryati (2021: 21), learning media are tools used by teachers in the learning process to help stimulate children's development, including fine motor skills in early childhood. Furthermore, Syawalia, Rahman, and Giyartini (2022: 63) state that learning media are tools used to increase learning effectiveness, enabling children to be more active and understand the activities provided by teachers more easily.

Based on initial observations at Darul Bayan Islamic Kindergarten, it was found that the fine motor skills of early childhood children have not yet developed optimally. This is evident when children experience difficulties in activities such as writing, coloring, thickening lines, cutting, and drawing. Some children still appear stiff in moving their fingers and are unable to coordinate eye and hand movements well. Furthermore, the learning process, which still uses conventional media such as Children's Worksheets (LKA), makes children easily bored and less interested in participating in learning activities. Therefore, more engaging and interactive learning media are needed, one of which is the use of Smart Boards (digital whiteboards), to help improve the fine motor skills of early childhood (Sari & Putri, 2022: 51).

Research by Anugrah, Chairilsyah, and Puspitasari (2021: 34) shows that the use of interactive media can improve fine motor skills in early childhood through engaging and enjoyable activities. Furthermore, research by Azizah, Kusna, and Puspitasari (2022: 37) explains that Smart Board media can help train children's hand-eye coordination, thereby optimally improving their fine motor development. Khasanah and Ramdani (2026: 52) similarly expressed that the use of interactive media can significantly improve children's fine motor skills through manipulative activities involving hand movements.

Based on the background description, this study focuses on the application of Smart Board media (digital whiteboard) to improve fine motor skills in early childhood grade B at Darul Bayan Islamic Kindergarten. The main objective of this study is to describe the process of implementing and improving classical mastery of fine motor skills of students before and after being given treatment using Smart Board media.

2. RESEARCH METHOD

The type of research used in this study is Classroom Action Research (CAR). Classroom Action Research is research conducted by teachers or researchers in the classroom with the aim of continuously improving and enhancing the quality of the learning process. According to Putri et al. (2023: 29), CAR is research conducted systematically to improve learning practices through specific actions to improve students' learning outcomes.

This research was conducted in class B of Darul Bayan Islamic Kindergarten, located in Embar-Embar Hamlet, Andalan Village, Bayan District, North Lombok Regency, with nine children (five boys and four girls) as subjects. The classroom action research was conducted through a series of continuous cycles. The model used refers to the Kemmis and McTaggart model, which consists of four stages in each cycle: planning, acting, observing, and reflecting (Nashrullah & Muhammad, 2023).

The data collection techniques used in this study included observation, documentation, and tests (performance). Observation was used to directly observe the learning process (Aimah, 2023: 22). Documentation was used to collect written data, photos of activities, and children's work (Zahara et al., 2024: 18). Meanwhile, a performance test was used to determine the development of children's fine motor skills through direct practice using a Smart Board (Iqbal & Elisa, 2026: 33).

The fine motor assessment instrument used in the performance test was a rubric developed from indicators of fine motor development for children aged 5–6 years, covering four aspects: (1) the ability to hold and control a writing or drawing tool, including pencil grip and pressure; (2) the accuracy of tracing dotted lines and simple shapes; (3) hand-eye coordination in touching,

dragging, and connecting objects on the Smart Board screen; and (4) the neatness and completeness of the results of thickening lines, matching images, or copying letters. Each aspect was scored on a scale of 1 to 4, corresponding to the four developmental categories used in this study, namely Not Yet Developed (BB), Starting to Grow (MB), Developing as Expected (BSH), and Very Well Developed (BSB); the score for each child was obtained by summing the scores of the four aspects and converting the result to a 0–100 scale. Before use, the rubric was reviewed by the classroom teacher and the school principal to ensure that the indicators were appropriate to the children's age and to the actions carried out with the Smart Board in each cycle.

The data analysis technique in this study used comparative descriptive analysis, namely by comparing the percentage of learning success from the pre-cycle, cycle I, and cycle II. Data analysis was carried out by calculating the individual mastery score and classical mastery score (Sugiyono, 2024: 2). A child is declared to have completed the learning individually if they achieve a minimum score of 70 (BSH or BSB criteria). Classical mastery is achieved if at least 80% of all children have achieved individual mastery.

3. RESULTS AND DISCUSSION

3.1 Research Results

This research was conducted in Class B of Darul Bayan Islamic Kindergarten. The research was divided into a pre-cycle, cycle I, and cycle II. Before administering interventions using the Smart Board, researchers conducted initial observations (pre-cycle) to assess the children's fine motor skills.

In the pre-cycle stage, the learning process is still dominated by the use of conventional media such as Children's Worksheets (LKA) and ordinary whiteboards. Some children have difficulty holding writing tools, thickening lines, and drawing patterns. Initial observation results show that out of 9 students, 3 children (33.33%) have achieved completeness (BSH/BSB category), while 6 other children (66.66%) have not yet completed (BB/MB category). Because the percentage of classical completeness has only reached 33.33%, far from the target of 80%, it will continue to Cycle I.

Table 1. Distribution of Pre-Cycle Classical Completion

Category	Value Range	Number of children	Percentage (%)
Not Yet Developed (BB)	0-25	1	11.11%
Starting to Grow (MB)	26-50	5	55.56%
Developing as Expected (BSH)	51-75	2	22.22%
Very Well Developed (BSB)	80-100	1	11.11%

Cycle I was implemented in three meetings with the theme "Vehicles." The core activity focused on using a Smart Board to introduce air, land, and sea vehicles. Children were encouraged to thicken dotted lines, match images, and draw simple pictures on the Smart Board. The use of this medium directly stimulates the coordination of small muscles in children's fingers and eyes (Juliani, 2021: 23).

Observations at the end of Cycle I showed improvement. Five children (55.55%) had reached the completion category (BSH/BSB), while four others (44.44%) were still at the Beginning to Develop (MB) stage. This improvement indicates that the interactive digital media stimulus is beginning to have a positive impact, although it has not yet reached the classical completion target of 80%. Children are becoming accustomed to holding digital pens and accurately touching screens.

Table 2. Distribution of Classical Completeness of Cycle I

Category	Value Range	Number of children	Percentage (%)
Not Yet Developed (BB)	0-25	0	0%
Starting to Grow (MB)	26-50	4	44.44%
Developing as Expected (BSH)	51-75	2	22.22%
Very Well Developed (BSB)	80-100	3	33.33%

Reflections from Cycle I concluded that more intensive guidance was needed for children who were still unsure about using digital pens. Therefore, in Cycle II, the theme was changed to "Literacy" and "Myself," where children were asked to alternately bold letters, connect dots, and copy the first letter of their name on the Smart Board. These actions required greater finger precision.

After implementing Cycle II, significant changes were observed. Of the nine students, eight (88.88%) achieved completion, with the majority achieving the Very Well Developed (BSB) criteria. Only one student still required additional guidance. This 88.88% classical completion rate demonstrates that the research success indicator (at least 80%) has been achieved, and the research can be discontinued.

Table 3. Distribution of Classical Completeness of Cycle II

Category	Value Range	Number of children	Percentage (%)
Not Yet Developed (BB)	0-25	0	0%
Starting to Grow (MB)	26-50	1	11.11%
Developing as Expected (BSH)	51-75	1	11.11%
Very Well Developed (BSB)	80-100	7	77.78%

3.2 Discussion

The comparison of the increase in children's fine motor skills in the Pre-Cycle, Cycle I, and Cycle II can be seen clearly through the following classical completion graph:

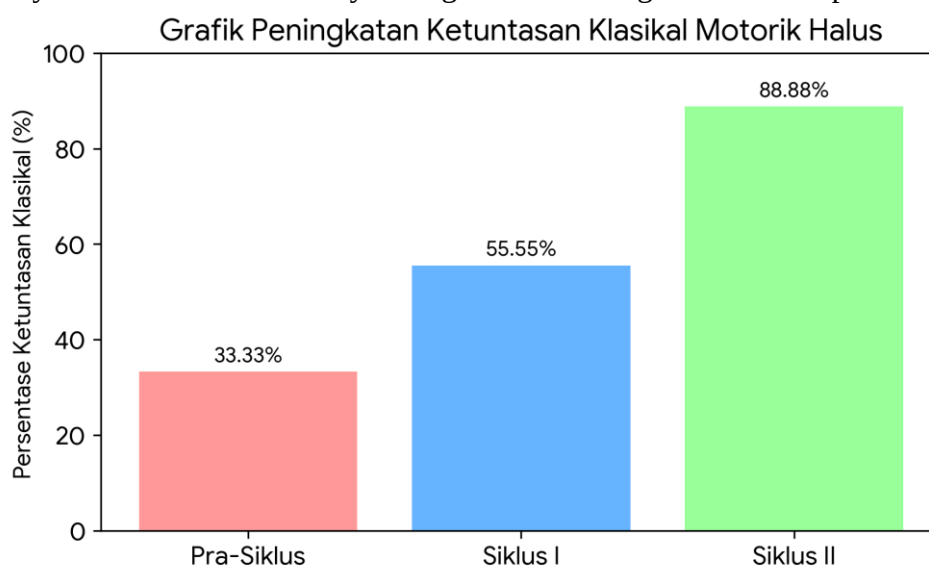


Figure 1. Graph of Classical Completion Improvement of Fine Motor Skills

Based on the analysis, there was a significant increase in fine motor skills. Using a Smart Board stimulates children's sensory skills through visual, auditory, and kinesthetic approaches. Direct touch on the digital board provides immediate feedback to children, boosting their confidence and enthusiasm for learning. This aligns with the findings of Hendraningrat & Fauziah (2021), who stated that digital media can create an interactive learning environment and accelerate fine motor development.

Furthermore, the shift from conventional LKA methods to digital boards solves the problem of boredom. Early childhood, aged 5-6, requires a variety of media to focus their attention. Repetitive exercises like thickening lines and copying letters become more engaging when packaged as games on a screen (Sari, Sukendro, & Ismiatun, 2025: 27). Manipulative skills, hand-eye coordination, and the ability to use small muscles are maximally stimulated.

The ability to use Smart Board media also requires active interaction. When children touch, drag-and-drop, and draw, synapses in their motor neurons are strengthened. This is supported by Wati's (2021) theory of physical motor development, which emphasizes the importance of directed and enjoyable activities in early childhood learning. Overall, the implementation of this media effectively achieved 88.88% classical mastery.

Nevertheless, this finding needs to be read critically rather than simply as a confirmation of previous studies. The classical completion achieved in this study (88.88%) is higher than that reported by Azizah, Kusna, & Puspitasari (2022), who examined the effectiveness of Smart Board on cognitive and motor development; however, this difference cannot be interpreted as evidence that the medium used here is superior, because the number of subjects, the duration of the intervention, and the fine motor indicators measured in each study are not identical, so the results are not directly comparable. Likewise, the improvement pattern found in this study is broadly in line with Sari & Putri (2022) and Liani, Ambarwati, & Tristya (2023), who reported that interactive digital media improve the fine motor skills of early childhood; yet, as a classroom action research conducted in a single class of nine children without a comparison group, this study cannot rule out other explanations for the increase, such as children's growing familiarity with the tasks after being exposed to three different themes, the teacher's increasing skill in guiding children following the Cycle I reflection, and the researcher's dual role as both practitioner and observer. Furthermore, although eight of nine children reached the completion criterion by the end of Cycle II, one child remained in the Beginning to Grow (MB) category despite receiving the same intervention; this is in line with Hasna's (2021) observation that conventional and modern methods do not affect all children uniformly, and it indicates that individual factors, such as each child's initial fine motor maturity and attendance, need to be taken into account when Smart Board media is applied in other classes.

4. CONCLUSION

Based on the results of the implementation of actions and data analysis in this Classroom Action Research (CAR), it can be concluded that the application of Smart Board media (digital whiteboard) is associated with an improvement in the fine motor skills of early childhood Group B at Darul Bayan Islamic Kindergarten, as reflected in the classical completion, which rose from 33.33% at the pre-cycle stage to 55.55% in Cycle I and 88.88% in Cycle II. Because this study is a classroom action research conducted in a single class without a comparison group or inferential statistical testing, this improvement is described descriptively and is not stated as a statistically proven effect. The increase is presumed to be driven by the interactive, visual, and innovative characteristics of the Smart Board media, which trained children's eye-and-finger coordination in an engaging way, reduced boredom, and encouraged children's active participation during learning; further research with a comparison group is needed to test this relationship more rigorously.

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