
Adaptive Multisensory Learning in Islamic Education: Supporting Slow Learners in SD Muhammadiyah 2 Tulangan Sidoarjo

Dwi Suryani Rimasasi

SD Muhammadiyah 2 Tulangan Sidoarjo

Email correspondence: saya.rimasasi@gmail.com

Abstract:

Research Objective – This study aims to explore the implementation of adaptive multisensory learning in Islamic education (PAI) for supporting slow learners at SD Muhammadiyah 2 Tulangan Sidoarjo. The study focuses on identifying multisensory learning strategies, instructional adaptations, and the influence of adaptive learning on students' engagement, comprehension, and participation in religious learning activities. **Methodology** – This study employed a qualitative case study approach. Data were collected through classroom observations, semi-structured interviews, and document analysis involving Islamic education teachers, school administrators, slow learner students, and parents. Data were analyzed using the interactive model through data condensation, data display, and conclusion drawing. Trustworthiness was ensured through triangulation, member checking, prolonged engagement, and thick description. **Findings** – The findings reveal that adaptive multisensory learning significantly improved slow learners' concentration, participation, comprehension, and confidence in Islamic learning activities. Teachers integrated visual, auditory, kinesthetic, tactile, and experiential strategies through interactive media, prayer simulations, Qur'anic repetition, storytelling, and collaborative learning. Instructional adaptations such as simplified explanations, repeated practice, individualized guidance, and emotional reinforcement positively supported students' inclusive learning experiences. **Research Implications/Limitations** – This study highlights the importance of strengthening adaptive pedagogy, inclusive classroom management, and multisensory instructional competence in Islamic elementary education. However, the research was limited to one inclusive Islamic elementary school, which may restrict broader generalization of the findings. **Originality/Value** – The originality of this study lies in its contribution to adaptive multisensory pedagogy in Islamic education by integrating inclusive learning, cognitive support, and experiential Islamic teaching for slow learners in elementary school contexts.

Keywords: *Adaptive Multisensory Learning; Islamic Education; Slow Learners; Inclusive Education; Islamic Elementary School.*

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Introduction

Inclusive Islamic education in Indonesia continues to face significant challenges in addressing the diverse cognitive characteristics of students, particularly slow learners who require adaptive pedagogical strategies and differentiated instructional support. In the context of Islamic education, learning activities are often still dominated by verbal explanation, memorization, and conventional teacher-centered approaches, which may not fully accommodate the learning needs of students with slower cognitive processing abilities. Slow learners generally experience limitations in working memory, attention span, and information retention, making them vulnerable to disengagement and low academic achievement when instructional methods are not adjusted to their developmental capacities (Azzahra & Herman, 2022; Asrori, 2020). In addition, psychological pressures such as anxiety and reduced self-confidence frequently emerge among students with borderline intellectual functioning, affecting their participation and emotional well-being within classroom settings (Karande et al., 2023; Asrori et al., 2023). These conditions indicate the urgency of developing adaptive learning models capable of creating more inclusive, engaging, and supportive religious learning environments.

The growing transformation of educational technology and learner-centered pedagogy has encouraged educators to explore multisensory learning approaches in Islamic education. Multisensory learning refers to instructional practices that integrate visual, auditory, kinesthetic, tactile, and experiential stimuli simultaneously to strengthen students' comprehension and retention. Within Islamic educational contexts, multisensory engagement has been recognized as an important strategy for deepening learners' interaction with Qur'anic and religious content beyond textual memorization alone (Umashankar, 2020; Ridlwan & Asrori, 2022; Rizki et al., 2026; Kurniawati et al., 2026). Recent technological developments, including augmented reality, virtual reality, gamification, mobile learning, and AI-assisted instruction, have increasingly been integrated into Islamic education to enhance learning experiences and student motivation (Asrori, 2026; Asbulah et al., 2022; Asril et al., 2023; Adiyono et al., 2025). Such developments suggest that adaptive and multisensory pedagogies hold strong potential for supporting learners with diverse cognitive abilities, including slow learners in inclusive elementary schools such as SD Muhammadiyah 2 Tulangan Sidoarjo.

Previous studies have extensively discussed the integration of technology and innovative pedagogy in Islamic education. Several researchers have highlighted how digital media and interactive platforms improve student engagement and learning outcomes. For example, Adiyono et al. (2025) demonstrated that AI-optimized YouTube videos positively influenced students' achievement in Islamic education through more personalized and visually engaging learning experiences. Similarly, Asril et al. (2023) found that virtual reality implementation enhanced experiential learning and students' emotional connection with Islamic materials. Research by Hamzah et al. (2023), Pradibta et al. (2019) and Firmansyah et al. (2025), further emphasized the role of Android applications and interactive Hijaiyah learning systems in strengthening foundational Islamic literacy among young learners. Meanwhile, Rosmansyah and Rosyid (2017) as well as Siregar et al. (2023) showed that gamification strategies could significantly increase learners' motivation and participation in Qur'anic memorization and reading activities.

Beyond technological innovation, other studies have examined experiential and inclusive approaches in Islamic education. Kistoro et al. (2022; 2023) explored experience-based religious learning and experiential learning approaches that encourage active participation, reflection, and contextual understanding of religious values. These studies suggested that meaningful religious learning is strengthened when students are directly involved in interactive and sensory-rich educational activities. In the context of special and inclusive education, Dzulkifli (2021) and Dzulkifli et al. (2021) investigated activity-based and visual teaching aids for deaf students studying Islamic education and Qur'anic learning. Their findings revealed that adaptive instructional media and hands-on activities contributed positively to students' comprehension and religious participation. Furthermore, Ru'iyah et al. (2023) discussed models of religious education for slow learner children in inclusive schools in Indonesia, emphasizing the importance of individualized instruction, simplified materials, and emotional support for learners with cognitive limitations.

Although previous studies have contributed substantially to the advancement of Islamic educational innovation, several limitations remain evident. First, much of the existing research focuses primarily on technological effectiveness, learning motivation, or general experiential learning without specifically examining how multisensory pedagogies are adapted for slow learners in inclusive Islamic elementary education. Second, studies concerning special-needs learners in Islamic education tend to focus on students with hearing impairments or broad inclusive frameworks, while limited attention has been given to slow learners whose challenges are often less visible but pedagogically complex. Third, existing technology-oriented studies frequently emphasize quantitative outcomes such as achievement scores and motivation levels, while overlooking the classroom dynamics, adaptive instructional interactions, and lived educational experiences that shape meaningful learning for slow learners. Consequently, there remains insufficient understanding regarding how multisensory Islamic learning is practically implemented, negotiated, and experienced within inclusive school environments.

Based on these limitations, a clear research gap can be identified in the limited exploration of adaptive multisensory learning practices specifically designed to support slow learners in Islamic education at the elementary school level. Previous studies have not adequately investigated how teachers integrate auditory, visual, tactile, kinesthetic, and digital learning modalities simultaneously within inclusive Islamic classrooms to accommodate the cognitive and emotional characteristics of slow learners. Moreover, there is still a scarcity of qualitative case studies examining the pedagogical strategies, institutional support systems, classroom interactions, and challenges encountered during the implementation of multisensory Islamic learning in Indonesian inclusive schools. Therefore, deeper contextual investigation is needed to understand how adaptive multisensory approaches operate in real educational settings and how they contribute to improving slow learners' participation, comprehension, and religious learning experiences.

This study offers scholarly novelty by positioning adaptive multisensory learning as an inclusive pedagogical framework within Islamic education for slow learners. Unlike previous studies that mainly focus on technological innovation or generalized inclusive practices, this research specifically examines the integration of multisensory strategies within daily Islamic learning processes at SD Muhammadiyah 2 Tulangan Sidoarjo. The study combines

perspectives from inclusive education, cognitive pedagogy, and Islamic learning practices to analyze how teachers adapt instructional methods, learning media, classroom environments, and student interactions to support slow learners. Furthermore, by employing a qualitative case study approach, this research contributes richer contextual insights into the lived experiences of teachers and students, thereby extending current discussions on adaptive Islamic pedagogy in inclusive elementary education.

Accordingly, this study aims to explore the implementation of adaptive multisensory learning in Islamic education for supporting slow learners at SD Muhammadiyah 2 Tulangan Sidoarjo. Specifically, the research seeks to investigate: (1) how multisensory learning strategies are designed and implemented in Islamic education classes for slow learners; (2) what forms of instructional adaptation, media, and classroom interaction are employed by teachers; and (3) how adaptive multisensory learning influences students' engagement, comprehension, and participation in religious learning activities. Through these objectives, the study intends to contribute both theoretically and practically to the development of more inclusive and responsive Islamic educational practices.

Method

This study employed a qualitative case study approach to investigate the implementation of adaptive multisensory learning in Islamic education (PAI) for supporting slow learners at SD Muhammadiyah 2 Tulangan Sidoarjo. A qualitative design was selected because the research sought to explore educational experiences, classroom interactions, instructional adaptations, and pedagogical meanings within their natural setting. Qualitative inquiry enables researchers to understand social and educational phenomena from the perspectives of participants while emphasizing contextual interpretation and depth of understanding (Hadi et al., 2021; Creswell & Poth, 2018). The case study approach was adopted because it facilitates an in-depth exploration of a bounded educational system, particularly the implementation of adaptive multisensory learning practices in one inclusive elementary school context (Yin, 2018).

SD Muhammadiyah 2 Tulangan Sidoarjo was purposively selected as the research site because the school has implemented inclusive educational practices that accommodate students with diverse learning characteristics, including slow learners. The school also demonstrates a growing commitment to integrating adaptive learning strategies and interactive instructional media within Islamic education. In addition, the institution provides a relevant educational setting for examining how multisensory pedagogical approaches are practically implemented in inclusive Islamic elementary classrooms. The selection of this site was therefore based on its contextual relevance, accessibility, and potential to provide rich empirical data regarding adaptive Islamic learning practices for students with special educational needs.

The primary data sources in this study consisted of teachers, school administrators, students categorized as slow learners, and parents involved in the learning process. Islamic education teachers were selected because they directly designed and implemented adaptive multisensory instructional strategies in classroom activities. School administrators contributed information regarding institutional policies, inclusive educational support, and curriculum implementation. Slow learner students were involved to provide insights into their learning experiences, classroom participation, and responses toward multisensory instructional practices.

Parents were included to enrich understanding of students' learning development and educational support beyond the classroom environment. Participants were selected purposively based on their direct involvement and relevance to the research focus.

Data were collected through classroom observations, semi-structured interviews, and document analysis. Classroom observations were conducted to examine teaching practices, multisensory instructional activities, student participation, classroom interaction patterns, and the use of adaptive learning media during Islamic education lessons. Semi-structured interviews enabled the researcher to gain deeper insights into participants' experiences, perceptions, instructional challenges, and strategies related to adaptive multisensory learning. Interviews were conducted flexibly to allow participants to express their views openly while maintaining alignment with the research objectives. In addition, document analysis was employed to review lesson plans, teaching materials, school policies, student learning records, and instructional media related to inclusive Islamic education practices. The use of multiple data collection techniques allowed for comprehensive exploration and triangulation of findings.

The data analysis process followed the interactive qualitative analysis model proposed by Miles, Huberman, and Saldaña (2014), consisting of data condensation, data display, and conclusion drawing/verification. Data condensation involved selecting, simplifying, coding, and categorizing relevant information obtained from observations, interviews, and documents. The researcher then organized the data into thematic displays to identify patterns, relationships, and emerging themes related to adaptive multisensory learning practices. Finally, conclusions were continuously verified throughout the research process by comparing findings across data sources and revisiting field evidence to ensure interpretive consistency and analytical rigor.

To ensure the validity and trustworthiness of the findings, this study employed several verification strategies adapted from Lincoln and Guba (1985). Credibility was established through prolonged engagement in the research setting, triangulation of data sources and methods, and member checking with selected participants to confirm the accuracy of interpretations. Transferability was enhanced by providing thick descriptions of the research context, participants, and instructional practices, enabling readers to assess the applicability of findings to similar educational settings. Dependability was maintained through systematic documentation of the research process, including field notes, interview transcripts, coding procedures, and analytical decisions. Confirmability was strengthened by maintaining reflexive awareness and ensuring that interpretations were grounded in empirical data rather than researcher bias. Through these procedures, the study aimed to produce trustworthy and contextually meaningful findings regarding adaptive multisensory learning in inclusive Islamic education.

Results and Discussion

Results

Design and Implementation of Multisensory Learning Strategies in Islamic Education for Slow Learners

The findings revealed that adaptive multisensory learning in Islamic education (PAI) at SD Muhammadiyah 2 Tulangan Sidoarjo was intentionally designed to accommodate the

cognitive, emotional, and behavioral characteristics of slow learners. Teachers recognized that conventional lecture-based instruction was insufficient for students who required repeated exposure, concrete experiences, and varied sensory stimulation to understand religious concepts effectively. Consequently, Islamic education lessons were structured through the integration of visual, auditory, kinesthetic, tactile, and experiential learning activities that enabled students to engage with religious materials through multiple sensory pathways simultaneously.

The planning process began with teachers identifying students' learning characteristics and classroom responsiveness before preparing instructional activities. Lesson plans were simplified into shorter learning sequences with clearly defined objectives and repetitive reinforcement activities. Teachers reported that slow learners demonstrated greater understanding when abstract Islamic concepts were transformed into concrete and observable experiences. For example, lessons related to prayer movements, ablution procedures, Qur'anic recitation, and moral values were delivered not only through verbal explanation but also through demonstration, imitation, storytelling, visual illustrations, and guided physical practice. This multisensory structure enabled students to process information gradually and meaningfully.

Table 1. Design and Implementation of Multisensory Learning Strategies

Learning Component	Multisensory Strategy	Implementation in PAI Classroom	Purpose for Slow Learners
Visual Learning	Illustrated media and demonstrations	Posters of prayer movements, animated Islamic videos, flashcards of Hijaiyah letters	Strengthen visual recognition and conceptual understanding
Auditory Learning	Listening and repetition activities	Qur'anic recitation audio, guided repetition, storytelling	Improve listening focus and memory retention
Kinesthetic Learning	Movement-based instruction	Prayer simulations, role-play, body movement activities	Increase active participation and experiential understanding
Tactile Learning	Hands-on learning tools	Textured Hijaiyah cards, manipulatives, puzzle letters	Reinforce sensory engagement and letter recognition
Experiential Learning	Contextual religious practice	Direct practice of ablution, prayer, and moral activities	Connect abstract religious concepts with real-life experience
Emotional Support	Positive reinforcement and guidance	Praise, individualized assistance, non-punitive feedback	Reduce anxiety and improve learning confidence

Classroom observations further showed that multisensory strategies were implemented flexibly rather than rigidly following formal instructional procedures. Teachers combined auditory activities such as listening to Qur'anic recitation with visual supports including animated videos, illustrated cards, posters of prayer movements, and digital presentations. Kinesthetic activities were integrated through role-play, simulation of worship practices, body

movements, and collaborative religious games. Tactile engagement was also evident when students used textured Hijaiyah cards, manipulatives, and hands-on learning tools to strengthen letter recognition and memorization. Teachers emphasized that slow learners responded more positively when learning activities involved movement, repetition, and interactive participation rather than passive listening.

In addition, the implementation of multisensory learning was closely connected to emotional support and motivational reinforcement. Teachers consistently provided praise, simplified instructions, and individualized assistance to reduce students' anxiety and hesitation during classroom participation. The learning atmosphere was intentionally made supportive and non-punitive to encourage slow learners to participate confidently in Islamic learning activities. As a result, adaptive multisensory learning was not merely viewed as a teaching technique but as a holistic pedagogical approach integrating cognitive stimulation, emotional encouragement, and inclusive classroom interaction.

Instructional Adaptation, Learning Media, and Classroom Interaction

The study found that teachers employed various forms of instructional adaptation to ensure that slow learners could participate meaningfully in Islamic education activities. One major adaptation involved simplifying instructional language into shorter and more comprehensible sentences. Teachers frequently repeated explanations, slowed the pace of instruction, and divided complex religious materials into smaller learning units. These adaptations were considered necessary because slow learners often required additional time to process information and connect religious concepts with practical understanding.

Teachers also adapted assessment practices and classroom expectations according to students' cognitive capacities. Rather than emphasizing memorization accuracy alone, teachers prioritized students' gradual progress, participation, and willingness to engage in learning activities. For instance, students were allowed to recite short Qur'anic verses repeatedly with teacher guidance, use visual prompts during practice, and receive extended time to complete religious tasks. Some teachers implemented peer-assisted learning by pairing slow learners with supportive classmates during group activities and worship simulations. This collaborative approach helped reduce students' feelings of isolation while strengthening social interaction within inclusive classrooms.

Table 2. Forms of Instructional Adaptation and Learning Media

Aspect	Forms of Adaptation	Learning Media Used	Observed Impact
Instructional Language	Simplified sentences and repeated explanation	Oral guidance and visual prompts	Students understood instructions more easily
Learning Pace	Slower and step-by-step instruction	Sequenced learning materials	Reduced confusion and cognitive overload
Assessment Practice	Flexible evaluation and extended time	Guided recitation sheets	Increased student confidence
Classroom Participation	Peer-assisted collaborative learning	Group activities and simulations	Improved social interaction

Visual Media	Illustrated and digital supports	Posters, videos, PowerPoint slides	Increased student attention
Auditory Media	Listening and repetition exercises	Qur'anic audio recordings	Strengthened memorization
Tactile Media	Hands-on learning aids	Puzzle letters, textured cards	Enhanced sensory engagement

Various instructional media were utilized to support multisensory Islamic learning. Visual media included flashcards, posters, animated videos, PowerPoint presentations, and illustrated prayer guides. Auditory media involved Qur'anic audio recordings, interactive recitation exercises, and guided listening sessions. Teachers also used physical and tactile learning aids such as puzzle letters, textured Arabic alphabet cards, prayer movement charts, and manipulatives that students could directly touch and arrange. Digital technologies including educational videos and simple interactive applications were occasionally integrated to increase student attention and motivation during Islamic learning sessions.

Classroom interaction patterns reflected a more student-centered and inclusive learning environment. Observations indicated that teachers actively moved around the classroom to provide individualized guidance and emotional reassurance to slow learners. Interaction was characterized by continuous questioning, direct feedback, demonstration, and repeated practice rather than one-way instruction. Teachers often used eye contact, gestures, body language, and physical demonstration to reinforce verbal explanation. Slow learners appeared more willing to ask questions and participate when teachers employed supportive communication and interactive instructional approaches.

The Influence of Adaptive Multisensory Learning on Students' Engagement, Comprehension, and Participation

The findings demonstrated that adaptive multisensory learning positively influenced slow learners' engagement in Islamic education classes. Prior to the implementation of multisensory strategies, teachers reported that many slow learners frequently lost concentration, remained passive, or showed reluctance to participate during religious instruction. However, after the integration of visual, auditory, kinesthetic, and tactile learning activities, students displayed greater attentiveness and enthusiasm during classroom sessions. Interactive activities such as role-play, guided worship practice, educational games, and visual storytelling were particularly effective in sustaining students' focus and reducing classroom boredom.

Improvement was also observed in students' comprehension of Islamic learning materials. Teachers explained that slow learners showed better understanding when abstract religious concepts were presented through concrete demonstration and repeated sensory exposure. Students were able to follow prayer sequences more accurately, recognize Hijaiyah letters more confidently, and memorize short Qur'anic verses more effectively when learning activities involved visual aids, movement, and auditory repetition.

Table 3. Influence of Adaptive Multisensory Learning on Slow Learners

Learning Outcome	Conditions Before Implementation	Conditions After Implementation
Student Engagement	Passive participation and low attention span	More active, attentive, and enthusiastic
Learning Motivation	Easily bored and hesitant to join activities	Increased willingness to participate
Qur'anic Memorization	Difficulty retaining verses	Better retention through repetition and audio support
Religious Practice Skills	Incomplete understanding of prayer procedures	Improved practical performance through simulation
Classroom Interaction	Limited communication with peers and teachers	Increased interaction and collaboration
Learning Confidence	Fear of making mistakes	Greater self-confidence and classroom participation
Emotional Response	Anxiety and withdrawal during lessons	More relaxed and positive learning attitude

Teachers further observed that supportive classroom environments and individualized encouragement reduced students' fear of making mistakes. The use of interactive media and physical learning activities minimized emotional tension and helped students feel more comfortable participating in front of peers. Furthermore, multisensory learning fostered stronger emotional connection and positive attitudes toward Islamic education. Students appeared to perceive religious learning as enjoyable, interactive, and achievable rather than difficult or intimidating. Consequently, adaptive multisensory learning not only enhanced cognitive comprehension but also promoted inclusive participation, emotional well-being, and positive religious learning experiences for slow learners in the Islamic elementary classroom context.

Discussion

The findings of this study demonstrate that adaptive multisensory learning plays a significant role in supporting slow learners in Islamic education (PAI) at SD Muhammadiyah 2 Tulangan Sidoarjo. The integration of visual, auditory, kinesthetic, tactile, and experiential instructional strategies enabled slow learners to participate more actively, understand religious concepts more effectively, and engage emotionally with Islamic learning activities. These findings reinforce the argument that inclusive Islamic education requires pedagogical flexibility rather than uniform instructional practices. In this study, multisensory learning functioned not merely as a teaching technique but as an adaptive educational framework capable of responding to the cognitive diversity of learners within inclusive classrooms.

From a cognitive-pedagogical perspective, the findings indicate that slow learners benefit significantly from repetitive sensory exposure and concrete instructional experiences. Slow learners generally experience limitations in working memory, information processing speed, and concentration, which influence their ability to comprehend abstract concepts

(Azzahra & Herman, 2022). The present study found that students demonstrated greater understanding when Islamic learning materials were transformed into observable and physically experienced activities such as prayer simulations, Qur'anic recitation repetition, role-play, and visual storytelling. This supports the findings of Dimyathi et al. (2025), who emphasized that working memory strategies and repeated sensory reinforcement contribute positively to Qur'anic memorization and retention. The multisensory structure implemented in this study appears to reduce cognitive overload by distributing learning stimuli across multiple sensory channels, thereby enabling slow learners to process religious information more gradually and meaningfully.

The findings also strengthen experiential learning theory within Islamic educational contexts. Kistoro et al. (2022; 2023) argued that religious learning becomes more meaningful when students actively experience and interact with learning materials rather than passively receive information. The present study confirms this perspective through evidence that slow learners showed higher engagement and comprehension when Islamic education was delivered through direct practice, collaborative activities, and contextual learning experiences. Prayer movement simulations, tactile Hijaiyah media, and interactive worship activities allowed students to connect abstract religious concepts with bodily and emotional experiences. In this regard, adaptive multisensory learning can be interpreted as an extension of experiential Islamic pedagogy because it integrates sensory participation with spiritual and emotional learning processes.

Another important finding concerns the emotional dimension of inclusive Islamic education. The study revealed that multisensory learning contributed not only to cognitive improvement but also to the reduction of anxiety and learning hesitation among slow learners. Teachers intentionally created supportive classroom environments through positive reinforcement, individualized guidance, and non-punitive interaction. This finding aligns with Karande et al. (2023), who explained that students with borderline intellectual functioning often experience anxiety and reduced self-confidence in academic environments. The current study suggests that adaptive multisensory learning helps minimize emotional pressure because students are given multiple opportunities to participate according to their abilities rather than being judged solely through verbal or memorization performance. Consequently, inclusive Islamic pedagogy should not only address academic achievement but also prioritize emotional safety and psychological well-being for learners with cognitive limitations.

The use of adaptive instructional media in this study further reflects the growing integration of educational technology within Islamic education. Teachers employed animated videos, Qur'anic audio recordings, digital presentations, tactile media, and interactive learning tools to enhance students' sensory engagement and motivation. These findings are consistent with previous studies highlighting the positive impact of technology-enhanced Islamic learning. Adiyono et al. (2025) found that AI-optimized YouTube videos improved students' learning outcomes in Islamic education through visual and personalized instructional support. Similarly, Asril et al. (2023) demonstrated that virtual reality strengthened students' experiential engagement with Islamic content, while Asbulah et al. (2022) emphasized teachers' positive attitudes toward augmented reality in language instruction. The present study extends these findings by demonstrating that technology-assisted multisensory learning is particularly valuable

for slow learners because it transforms religious instruction into interactive and accessible learning experiences.

However, the findings also indicate that technology alone is insufficient without adaptive pedagogical mediation from teachers. Although digital media increased attention and motivation, the effectiveness of multisensory learning largely depended on teachers' ability to simplify instruction, regulate classroom interaction, and provide emotional support. This finding supports Murhayati et al. (2025) and Iqbal et al. (2025), who argued that successful integration of technology in Islamic education requires pedagogical readiness and adaptive instructional competence rather than mere technological availability. In the present study, teachers acted as facilitators who continuously modified instructional pacing, repeated explanations, and adjusted classroom expectations according to students' cognitive capacities. Therefore, adaptive multisensory learning should be understood as a teacher-mediated pedagogical process rather than simply the incorporation of technological devices into religious classrooms.

The study also contributes to the discourse on inclusive Islamic education by extending the findings of Ru'iyah et al. (2023) and Nurdin et al. (2024). Previous research emphasized the importance of inclusive curriculum development and individualized religious instruction for slow learners in Indonesian schools. Nevertheless, existing studies have provided limited explanation regarding how adaptive learning is practically implemented within daily Islamic classroom activities. This study fills that gap by demonstrating the concrete instructional practices, classroom interactions, and sensory learning adaptations used by teachers in inclusive Islamic elementary education. The findings reveal that successful inclusion is not achieved solely through administrative policy or curriculum modification but through continuous pedagogical negotiation between teachers, students, instructional media, and classroom environments.

Furthermore, the findings support Umashankar's (2020), concept of multisensory engagement with the Qur'an, which argues that Islamic learning should move beyond textual and verbal transmission toward holistic sensory participation. In the current study, Qur'anic learning became more accessible to slow learners when recitation activities were combined with movement, visual prompts, tactile materials, and repeated auditory stimulation. This indicates that multisensory engagement strengthens not only cognitive understanding but also emotional and spiritual connection with religious learning. Such findings are particularly important because conventional Islamic instruction often prioritizes memorization accuracy while neglecting students' diverse learning pathways and sensory needs.

This study also reveals an emerging theoretical implication regarding adaptive multisensory pedagogy in Islamic education. The findings suggest that adaptive multisensory learning may function as a bridge between inclusive education theory, cognitive pedagogy, and Islamic experiential learning. Rather than treating slow learners as deficient participants, the multisensory approach reconstructs Islamic learning into a flexible and responsive educational process where cognitive diversity is pedagogically accommodated. This perspective shifts the orientation of Islamic education from standardized achievement toward inclusive participation and meaningful religious engagement.

Practically, the study implies that Islamic elementary schools should strengthen teacher training programs related to inclusive pedagogy, multisensory instructional design, and adaptive

classroom management. Teachers require sufficient competence not only in religious content mastery but also in understanding students' cognitive diversity and emotional learning needs. Schools should also provide accessible learning media, supportive classroom environments, and institutional policies that encourage flexible instructional adaptation for students with special educational needs. In addition, collaboration between teachers, parents, and school administrators is essential to sustain adaptive learning support both inside and outside the classroom.

Despite its contributions, this study has several limitations. The research focused on one inclusive Islamic elementary school, limiting the generalizability of findings to broader educational contexts. The study also concentrated primarily on classroom implementation without measuring long-term academic outcomes quantitatively. Future research may therefore investigate multisensory Islamic learning across different educational institutions, compare inclusive pedagogical models, or integrate mixed-method approaches to examine the long-term cognitive, emotional, and spiritual impacts of adaptive multisensory learning for slow learners. Further studies may also explore the integration of artificial intelligence, gamification, virtual reality, and speech-recognition technologies in supporting inclusive Islamic education practices.

Conclusion

This study demonstrates that adaptive multisensory learning significantly supports slow learners in Islamic education at SD Muhammadiyah 2 Tulangan Sidoarjo. The integration of visual, auditory, kinesthetic, tactile, and experiential learning strategies increased students' engagement, comprehension, participation, and confidence in religious learning activities. Instructional adaptations such as simplified explanations, repeated practice, interactive media, and supportive classroom interaction enabled slow learners to access Islamic learning more meaningfully and inclusively. The findings also show that the effectiveness of multisensory learning depends not only on instructional media but also on teachers' pedagogical flexibility and emotional support.

Theoretically, this research contributes to the development of inclusive Islamic education by positioning adaptive multisensory learning as an integrative pedagogical model that connects cognitive pedagogy, experiential learning, and inclusive Islamic instruction. Practically, the study implies the need for Islamic schools to strengthen teacher competence in adaptive pedagogy, provide accessible multisensory learning media, and develop inclusive classroom environments that accommodate students with diverse cognitive characteristics. Future research is recommended to explore the long-term impact of multisensory Islamic learning and the integration of emerging technologies in inclusive Islamic education practices.

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Declaration of use of artificial intelligence

The author declares that artificial intelligence tools were used solely for language refinement, grammar checking, and academic writing assistance in the preparation of the manuscript entitled Adaptive Multisensory Learning in Islamic Education: Supporting Slow Learners in SD Muhammadiyah 2 Tulangan Sidoarjo. All aspects of the research process, including conceptualization, research design, data collection, data analysis, interpretation of findings, and conclusion development, were conducted independently by the author. The author assumes full responsibility for the accuracy, integrity, and originality of the manuscript.

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