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Multisensory Learning Activities in Enhancing Young Children's Learning Readiness: A Qualitative Study in Indonesian Early Childhood Settings

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ABSTRACT

Multisensory learning has been increasingly recognized as an effective pedagogical approach to support young children's holistic development, particularly in enhancing learning readiness. However, empirical qualitative evidence from Indonesian early childhood education contexts remains limited. This study aims to explore the implementation of multisensory learning activities and examine their impact on children's attention, emotional regulation, and task persistence. A qualitative descriptive design was employed to capture the lived experiences of participants in a natural classroom setting. Data were collected through semi-structured interviews with one teacher and one parent, as well as classroom observations involving five children aged five to six years in an early childhood education center in Mustika Jaya, Indonesia. The data were analyzed using thematic analysis to identify recurring patterns and meanings. The findings revealed three main themes: (1) multisensory learning enhances children's attention and sustained focus, (2) multisensory activities improve emotional regulation and self-confidence, and (3) multisensory learning strengthens learning readiness and task persistence. Children demonstrated increased engagement, reduced distraction, greater emotional stability, and improved ability to complete tasks independently. The study highlights the importance of integrating sensory-rich, interactive, and child-centered learning experiences in early childhood education. It also emphasizes the critical role of teachers and parents in facilitating and reinforcing multisensory learning. These findings contribute to the theoretical understanding of learning readiness as a multidimensional construct and provide practical implications for educators and policymakers to design inclusive and developmentally appropriate learning environments. Future research is recommended to explore the long-term impact of multisensory learning across diverse educational contexts.

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1. INTRODUCTION

Early Childhood Education (ECE) plays a fundamental role in shaping children's developmental trajectories, particularly in fostering cognitive readiness, socio-emotional competence, and adaptive learning behaviors. In contemporary educational discourse, there is growing recognition that early learning experiences must go beyond traditional academic instruction and instead emphasize holistic, child-centered approaches that accommodate diverse developmental needs. This shift is particularly important in contexts such as Indonesia, where early childhood classrooms are increasingly characterized by diversity in learning abilities, socio-cultural backgrounds, and developmental readiness. As a result, educators are challenged to implement innovative pedagogical strategies that are inclusive, engaging, and developmentally appropriate.

One of the central challenges in ECE is ensuring children's **learning readiness**, which encompasses their ability to focus attention, regulate emotions, follow instructions, and persist in completing tasks. Learning readiness is not merely a cognitive construct but a multidimensional process influenced by emotional, behavioral, and environmental factors. Previous studies have highlighted that children's readiness to learn is closely linked to their emotional well-being, self-regulation, and supportive learning environments (Maisyaroh, 2026; Ni, 2026). In this regard, pedagogical approaches that integrate sensory, emotional, and social dimensions of learning are increasingly considered essential.

Multisensory learning has emerged as a promising approach to address these needs. This approach involves engaging multiple sensory modalities—such as visual, auditory, tactile, and kinesthetic inputs—to facilitate deeper learning experiences. Multisensory activities allow children to actively explore their environment, construct meaning through direct interaction, and develop stronger connections between perception and cognition. Such experiences are particularly beneficial in early childhood, where learning is inherently experiential and grounded in sensory exploration. Research indicates that sensory-rich environments can enhance children's attention, motivation, and engagement, while also supporting emotional regulation and behavioral control.

In the Indonesian context, however, empirical qualitative research on multisensory learning remains limited. While international studies have demonstrated the effectiveness of sensory-based learning approaches, there is a need to understand how these practices are implemented and experienced within local educational settings. Qualitative inquiry is particularly valuable in this regard, as it allows researchers to explore the lived experiences of teachers, parents, and children in authentic contexts. Through such approaches, researchers can gain deeper insights into how pedagogical strategies are interpreted, adapted, and enacted in everyday classroom practices.

Recent qualitative studies in Indonesian early childhood education provide important insights into various aspects of children's development and learning environments. For instance, research on well-being-based education highlights the importance of creating emotionally supportive environments to facilitate recovery and resilience in young children (Ferawati, 2026). Similarly, studies on parenting emphasize the critical role of family involvement in maintaining children's mental helat

and supporting their learning processes (Ni, 2026). These findings suggest that learning readiness is closely intertwined with emotional security and relational support, both within the classroom and at home.

Moreover, studies focusing on children's behavioral and developmental challenges further underscore the importance of adaptive and responsive teaching strategies. Research on delayed communication skills reveals that targeted interventions and supportive learning environments are essential for helping children overcome developmental barriers (Isnaini, 2026; Ratniawati, 2026). Likewise, case studies on attention difficulties and high mobility behaviors indicate that children require structured yet flexible learning experiences that can accommodate their individual needs (Jelina, 2026). These findings highlight the necessity of pedagogical approaches that are not only cognitively stimulating but also responsive to children's behavioral and emotional characteristics.

In addition, character education and habit formation have been identified as key components of early childhood learning. The integration of positive habits, such as self-discipline, responsibility, and cooperation, contributes significantly to children's overall readiness to learn and engage in educational activities (Ismah, 2026). Multisensory learning aligns with this perspective by providing interactive and meaningful experiences that encourage active participation, collaboration, and self-directed learning. Through sensory engagement, children are more likely to internalize learning experiences and develop positive attitudes toward learning.

Teacher practices also play a crucial role in shaping the effectiveness of learning environments. Studies have shown that teachers' experiences and perceptions influence how educational programs are implemented and how children respond to them. For example, research on the integration of nutrition programs into early childhood learning demonstrates that teachers' adaptability and creativity are essential in creating meaningful and engaging learning experiences (Liyana, 2026). This suggests that the success of multisensory learning approaches depends not only on the activities themselves but also on how they are facilitated by educators.

Despite the growing body of research on early childhood education in Indonesia, there remains a significant gap in understanding how multisensory learning specifically contributes to children's learning readiness. Existing studies tend to focus on isolated aspects of development, such as cognitive skills, emotional well-being, or behavioral outcomes, without examining the integrated impact of sensory-based learning approaches. Furthermore, limited attention has been given to the perspectives of both teachers and parents, who play crucial roles in supporting children's learning experiences.

This study addresses these gaps by exploring the implementation of multisensory learning activities in an Indonesian early childhood setting and examining their perceived impact on children's learning readiness. Drawing on a qualitative descriptive approach, this research seeks to capture the experiences and perspectives of teachers and parents, as well as to observe children's responses to multisensory activities in real classroom contexts. By focusing on aspects such as attention, emotional

regulation, and task persistence, this study aims to provide a comprehensive understanding of how multisensory learning supports children's readiness to learn.

The significance of this study lies in its contribution to both theory and practice. From a theoretical perspective, it enriches the understanding of learning readiness as a multidimensional construct influenced by sensory, emotional, and social factors. From a practical perspective, it offers insights for educators and policymakers on how to design and implement multisensory learning environments that are inclusive, engaging, and developmentally appropriate. In doing so, the study responds to the need for contextually grounded research that reflects the realities of early childhood education in Indonesia.

Ultimately, fostering learning readiness in early childhood requires a holistic approach that integrates cognitive, emotional, and sensory dimensions of learning. Multisensory learning provides a promising pathway to achieve this goal by creating dynamic and meaningful learning experiences that support children's overall development. Therefore, understanding how such approaches are implemented and experienced in real educational settings is essential for advancing the quality of early childhood education and ensuring that all children are prepared for lifelong learning.

2. LITERATURE REVIEW

Early Childhood Education and Learning Readiness

Early Childhood Education (ECE) emphasizes holistic child development, integrating cognitive, emotional, social, and physical domains into meaningful learning experiences. Learning readiness is a crucial construct within this framework, referring to children's ability to engage effectively in learning through attention, emotional regulation, and persistence in completing tasks. Contemporary research suggests that readiness is not solely determined by cognitive maturity but is shaped by environmental interactions and relational contexts (Blair & Raver, 2015; Denham et al., 2017). Children who experience supportive relationships with caregivers and teachers tend to demonstrate higher levels of engagement and self-regulation in classroom settings (Yoshikawa et al., 2018). Emotional well-being plays a central role in enabling children to participate actively in learning activities, as it influences motivation and behavioral control (Ferawati, 2026; Ni, 2026). In Indonesian early childhood contexts, qualitative findings highlight that emotional support and relational interactions are essential for building learning readiness (Maisyaroh, 2026). Furthermore, inclusive classroom environments that accommodate diverse developmental needs contribute significantly to children's readiness to learn (OECD, 2019). Therefore, learning readiness should be understood as a multidimensional construct that reflects the integration of cognitive, emotional, and social processes.

Self-regulation is a key component of learning readiness, encompassing children's ability to manage attention, emotions, and behavior in learning contexts. Research indicates that self-regulation is strongly associated with academic success and social competence in early childhood (Ursache et al., 2012; Denham et al., 2017). Children who develop strong self-regulation skills are better able to follow instructions, remain focused, and complete tasks independently. In early childhood settings, self-regulation is fostered through structured interactions, guided activities, and supportive relationships

with teachers and peers. Studies have shown that classroom practices that emphasize routine, structure, and emotional support can enhance children's regulatory capacities (Blair & Raver, 2015). In the Indonesian context, self-regulation is viewed as a relational process influenced by interactions between children and their learning environments (Maisyaroh, 2026). Parenting practices also play a significant role in shaping children's self-regulation, as consistent and responsive caregiving supports emotional development (Ni, 2026). Therefore, effective pedagogical approaches must integrate strategies that support both cognitive and emotional aspects of self-regulation.

Multisensory Learning in Early Childhood Education

Multisensory learning is an instructional approach that engages multiple sensory modalities, including visual, auditory, tactile, and kinesthetic inputs, to enhance learning experiences. This approach is grounded in cognitive and neuroscientific theories suggesting that learning is more effective when multiple sensory pathways are activated simultaneously (Shams & Seitz, 2008; Mayer, 2017). In early childhood education, multisensory learning aligns with the developmental nature of children, who learn best through exploration and direct interaction with their environment. Research indicates that multisensory approaches can improve engagement, motivation, and comprehension in young learners (Moreno & Mayer, 2016). By integrating different sensory inputs, children are able to process information more effectively and develop deeper understanding. Multisensory activities such as movement, music, and tactile exploration provide opportunities for active learning and participation. These approaches are particularly beneficial in inclusive classrooms, where children have diverse learning needs and preferences (Al-Azawei et al., 2016). Therefore, multisensory learning represents a flexible and adaptive strategy for enhancing early childhood education.

In practice, multisensory learning often involves hands-on activities that encourage children to explore and interact with materials using their senses. Examples include textured letter tracing, sand play, rhythmic movement, and interactive storytelling. Such activities allow children to connect sensory experiences with cognitive processes, thereby enhancing memory and understanding. Research shows that children who engage in multisensory learning demonstrate higher levels of participation and sustained attention (Ibrahim et al., 2021). Teachers play a crucial role in facilitating these experiences by designing activities that are meaningful and developmentally appropriate. In the Indonesian context, studies indicate that teachers' creativity and adaptability are essential in implementing innovative learning approaches (Liyana, 2026). However, challenges such as limited resources and training may affect the effectiveness of multisensory learning implementation. Despite these challenges, multisensory approaches offer significant potential for improving learning outcomes in early childhood settings.

Multisensory Learning and Cognitive Development

Multisensory learning has been widely associated with improvements in cognitive development, particularly in attention, memory, and problem-solving skills. Neuroscientific research suggests that multisensory integration enhances neural connectivity, leading to more efficient information processing (Shams & Seitz, 2008). This is especially important in early childhood, where

the brain is highly responsive to sensory stimulation. Studies have shown that multisensory instruction significantly improves early literacy skills, including phonological awareness and reading comprehension (Ehri, 2017; Birsh, 2018). By engaging multiple senses, children are able to form stronger associations between sounds, symbols, and meanings. Multisensory approaches also support executive functions, such as working memory and cognitive flexibility, which are critical for academic success (Diamond, 2016). In addition, play-based multisensory activities encourage creativity and problem-solving by allowing children to explore and experiment. These findings highlight the importance of integrating multisensory strategies into early childhood curricula to support cognitive development.

Furthermore, multisensory learning is particularly beneficial for children with learning difficulties, as it provides alternative pathways for processing information. Research indicates that children with dyslexia and other learning challenges benefit from multisensory instruction, which helps them access and retain information more effectively (Snowling & Hulme, 2021; Goswami, 2015). In early childhood settings, this approach supports inclusive education by accommodating diverse learning needs. Multisensory environments also encourage active engagement, which enhances children's ability to concentrate and sustain attention. Studies have shown that interactive and sensory-rich activities can improve children's working memory and problem-solving abilities. In the Indonesian context, interventions for children with delayed communication emphasize the importance of interactive and sensory-based learning (Isnaini, 2026; Ratniawati, 2026). These findings suggest that multisensory learning is not only effective for typical learners but also essential for supporting children with developmental challenges. Therefore, multisensory approaches play a critical role in promoting equitable learning opportunities.

Multisensory Learning and Emotional Regulation

In addition to cognitive benefits, multisensory learning contributes significantly to children's emotional regulation and well-being. Emotional regulation refers to children's ability to manage their emotions and respond appropriately to different situations. Research indicates that sensory-rich environments can create calming and engaging experiences that support emotional stability (Denham et al., 2017). Activities such as rhythmic movement, music, and tactile exploration have been shown to reduce anxiety and promote relaxation. Children who participate in multisensory learning are more likely to develop confidence and willingness to engage in classroom activities. Emotional regulation is closely linked to learning readiness, as children who can manage their emotions are better able to focus and complete tasks (Durlak et al., 2011). In qualitative studies, teachers have observed that sensory-based activities help children remain calm and attentive. Therefore, multisensory learning plays an important role in supporting emotional development.

In the Indonesian context, research highlights the importance of supportive learning environments in fostering emotional regulation. Studies on children with attention difficulties show that structured and engaging activities can help channel energy and improve focus (Jelina, 2026). Similarly, interventions for children with communication delays emphasize the role of interactive learning in enhancing emotional and social development (Isnaini, 2026). Teachers' support and

encouragement are essential in helping children feel safe and confident during learning activities. Multisensory learning provides opportunities for children to express themselves and explore their emotions in a supportive environment. In addition, collaborative activities promote social interaction and peer relationships, which contribute to emotional well-being. These findings suggest that multisensory learning supports not only individual development but also social and emotional growth. Therefore, integrating multisensory approaches into early childhood education can enhance both learning and well-being.

Multisensory Learning and Inclusive Education

Multisensory learning is closely aligned with the principles of inclusive education, which emphasize accommodating diverse learning needs and abilities. By providing multiple ways of accessing and expressing knowledge, multisensory approaches support differentiated instruction (Al-Azawei et al., 2016). Inclusive classrooms require teachers to adopt flexible strategies that respond to individual differences. Research indicates that teachers' beliefs and competencies significantly influence the effectiveness of inclusive practices (OECD, 2019). Professional development in multisensory pedagogy is essential for enabling teachers to implement effective instructional strategies. Multisensory learning also supports children with developmental challenges by providing alternative ways to engage with learning materials. In addition, sensory-based activities promote participation and engagement among all learners. Therefore, multisensory learning is a key strategy for achieving inclusive education.

Family involvement is another important aspect of inclusive education, as parents play a crucial role in supporting children's learning. Research shows that parental engagement enhances children's motivation and learning outcomes (Ni, 2026). Collaboration between teachers and parents ensures consistency between home and school learning environments. Multisensory activities can be extended to home settings, allowing parents to reinforce learning experiences. In the Indonesian context, qualitative studies highlight the importance of family support in early childhood education (Ferawati, 2026). Teachers and parents must work together to create supportive and inclusive learning environments. Multisensory learning provides a common framework for collaboration, as it is flexible and adaptable to different contexts. Therefore, strengthening partnerships between schools and families is essential for maximizing the benefits of multisensory learning.

Research Gap and Conceptual Framework

Despite the extensive literature on multisensory learning, several research gaps remain. Most studies focus on cognitive outcomes, with limited attention to learning readiness as a multidimensional construct. Learning readiness involves not only cognitive skills but also emotional regulation and task persistence. Furthermore, there is a lack of qualitative research exploring the perspectives of teachers and parents in implementing multisensory learning. This gap is particularly evident in non-Western contexts, including Indonesia. Existing studies often examine specific developmental domains in isolation rather than considering the integrated impact of multisensory learning. Therefore, there is a need for research that adopts a holistic perspective.

This study is guided by constructivist and sociocultural theories, which view learning as an active process shaped by interaction with the environment and social relationships (Piaget, 1952; Vygotsky, 1978). Multisensory learning is conceptualized as a dynamic approach that supports cognitive engagement, emotional regulation, and behavioral adaptation. Learning readiness is understood as an emergent outcome of these interactions. By exploring the implementation of multisensory learning in real classroom contexts, this study aims to provide a comprehensive understanding of its impact. The qualitative approach allows for in-depth exploration of participants' experiences and perceptions. This study also addresses the gap in the literature by focusing on Indonesian early childhood settings. Therefore, it contributes to both theoretical and practical knowledge in early childhood education.

3. METHODOLOGY

Research Design

This study employed a qualitative descriptive research design to explore the implementation of multisensory learning activities in early childhood education settings and to understand their impact on children's learning readiness. A qualitative approach was chosen because it allows for an in-depth exploration of participants' lived experiences, perceptions, and interpretations within natural contexts. Unlike quantitative methods that focus on measurement and generalization, qualitative research emphasizes meaning-making and contextual understanding (Creswell & Poth, 2018). This design is particularly suitable for early childhood research, where learning processes are complex, dynamic, and influenced by social interactions. The descriptive nature of the study enables the researcher to present findings in a straightforward and comprehensive manner without imposing rigid theoretical frameworks. In addition, this approach allows for the integration of multiple data sources, such as interviews and observations, to provide a holistic understanding of the phenomenon. The study also aligns with constructivist paradigms, which view knowledge as being constructed through interaction with the environment (Vygotsky, 1978). Therefore, a qualitative descriptive design was considered the most appropriate method for achieving the research objectives.

Furthermore, qualitative descriptive research provides flexibility in capturing participants' authentic voices and experiences. This is particularly important in early childhood education, where teachers and parents play crucial roles in shaping children's learning environments. By focusing on participants' perspectives, the study seeks to uncover how multisensory learning is understood and implemented in real classroom settings. The design also allows for the identification of patterns and themes that emerge from the data, providing insights into the effectiveness of multisensory activities. In addition, the use of qualitative methods enables the researcher to capture subtle changes in children's behavior, such as improvements in attention, emotional regulation, and engagement. These aspects are often difficult to measure using quantitative instruments. The descriptive approach also supports the documentation of contextual factors that influence learning, such as classroom dynamics and teacher practices. As a result, the study provides rich and detailed findings that reflect the

complexity of early childhood learning. This methodological approach ensures that the research remains grounded in real-world educational practices.

Research Setting and Participants

The study was conducted in a public early childhood education center located in Mustika Jaya, Indonesia. This setting was selected because it represents a typical early childhood classroom where multisensory learning activities are implemented as part of daily instruction. The participants included one classroom teacher and one parent who were directly involved in the learning process. In addition, five children aged five to six years participated in classroom observations. The selection of participants was based on purposive sampling, which allows the researcher to choose individuals who have relevant experience and knowledge related to the research topic (Patton, 2015). The teacher was selected because of her active role in implementing multisensory learning activities, while the parent was chosen to provide insights into children's behavior outside the classroom. The inclusion of children in the observation process provided direct evidence of how multisensory activities influence learning readiness. This combination of participants ensured a comprehensive understanding of the phenomenon from multiple perspectives.

The research setting provided a naturalistic environment where children engaged in various multisensory activities, such as tactile exploration, movement-based learning, and interactive play. Observing children in their natural classroom context allowed the researcher to capture authentic behaviors and interactions. The small number of participants enabled in-depth data collection and detailed analysis. Although the sample size is limited, it is appropriate for qualitative research, which prioritizes depth over breadth. The diversity of participants, including both adults and children, enriched the data and provided multiple viewpoints. Ethical considerations were taken into account when involving children in the study, ensuring that their participation was safe and respectful. The setting also allowed for the examination of contextual factors, such as classroom layout and teaching strategies. These factors play an important role in shaping children's learning experiences. Therefore, the selected setting and participants were suitable for addressing the research objectives.

Data Collection Methods

Data were collected using multiple qualitative methods, including semi-structured interviews, classroom observations, and field notes. Semi-structured interviews were conducted with the teacher and the parent to explore their perceptions and experiences regarding multisensory learning activities. This method allows for flexibility in questioning while ensuring that key topics are covered (Creswell & Poth, 2018). The interviews focused on participants' understanding of multisensory learning, its implementation, and its perceived impact on children's attention, emotional regulation, and engagement. Each interview was conducted in a comfortable and familiar setting to encourage open and honest responses. The interviews were audio-recorded and transcribed verbatim to ensure accuracy. This process enabled the researcher to capture detailed narratives and insights from participants. The use of interviews provided rich qualitative data that reflects participants' lived experiences.

Classroom observations were conducted to examine children's behavior and interactions during multisensory learning activities. Observations focused on specific indicators of learning readiness, such as attention, emotional responses, and task completion. The researcher used a non-participant observation approach to minimize interference with the natural learning process. Detailed field notes were taken during each observation session to document children's responses and classroom dynamics. Observational data complemented interview data by providing direct evidence of how multisensory activities influence children's behavior. In addition, field notes were used to capture contextual information that may not be evident in interviews. The combination of multiple data collection methods enhanced the credibility and richness of the data. This triangulation approach ensures that the findings are well-supported and reliable (Patton, 2015). Therefore, the use of interviews, observations, and field notes provided a comprehensive understanding of the research phenomenon.

Data Analysis Techniques

Data analysis was conducted using thematic analysis, which is a widely used method for identifying, analyzing, and interpreting patterns within qualitative data (Braun & Clarke, 2006). The analysis process began with data familiarization, where the researcher reviewed interview transcripts and field notes multiple times to gain a deep understanding of the data. This was followed by the coding process, where meaningful segments of data were labeled and categorized. Codes were then grouped into broader categories based on similarities and patterns. The researcher developed themes that represent key aspects of multisensory learning and its impact on children's learning readiness. These themes were refined and reviewed to ensure they accurately reflect the data. The analysis process was iterative, allowing for continuous refinement of themes.

To enhance the credibility of the analysis, data triangulation was employed by comparing findings from interviews and observations. This approach helps to validate the consistency of the data across different sources. The researcher also engaged in reflective practices to minimize bias and ensure objectivity. Member checking was conducted by sharing findings with participants to confirm the accuracy of interpretations. In addition, detailed descriptions were provided to ensure transparency in the analysis process. The use of thematic analysis allowed for the identification of meaningful patterns and insights. This method is particularly suitable for qualitative research, as it provides flexibility and depth in data interpretation. Therefore, thematic analysis was an appropriate technique for analyzing the data in this study.

Trustworthiness and Ethical Considerations

Ensuring the trustworthiness of qualitative research is essential for establishing the credibility and reliability of the findings. This study adopted several strategies to enhance trustworthiness, including credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985). Credibility was achieved through prolonged engagement in the research setting and triangulation of data sources. Transferability was ensured by providing detailed descriptions of the research context and participants. Dependability was addressed by maintaining a clear and systematic research process.

Confirmability was achieved through reflective practices and documentation of research decisions. These strategies contribute to the overall quality and rigor of the study.

Ethical considerations were carefully addressed throughout the research process. Participants provided informed consent prior to data collection, and their participation was voluntary. Pseudonyms were used to protect participants' identities and ensure confidentiality. Special attention was given to the ethical involvement of children, ensuring that their participation was safe and respectful. Data were stored securely and used only for research purposes. The researcher also ensured that the study did not disrupt the normal learning activities of the classroom. Ethical principles such as respect, beneficence, and justice were upheld throughout the study. These considerations ensure that the research was conducted responsibly and ethically. Therefore, the study meets the ethical standards required for qualitative research in early childhood education.

4. FINDINGS

The qualitative analysis of interview and observation data revealed three major themes regarding the implementation of multisensory learning activities and their impact on children's learning readiness: (1) enhanced attention and sustained focus, (2) improved emotional regulation and self-confidence, and (3) strengthened learning readiness and task persistence. These themes reflect the interconnected nature of cognitive, emotional, and behavioral dimensions in early childhood learning. The findings highlight how multisensory activities create a dynamic and engaging learning environment that supports children's holistic development. The integration of sensory experiences allows children to interact actively with learning materials, leading to more meaningful engagement. Teachers and parents consistently reported observable changes in children's behavior during and after multisensory activities. Observational data further confirmed these perceptions, demonstrating improvements in attention span, emotional stability, and task completion. The following sections present each theme in detail, supported by participants' narratives and classroom observations.

Theme 1: Enhanced Attention and Sustained Focus

One of the most prominent findings of this study is the significant improvement in children's attention and sustained focus during multisensory learning activities. Both the teacher and the parent observed that children were more engaged and able to concentrate for longer periods compared to traditional learning methods. Multisensory activities such as textured letter tracing, rhythmic movement, and sand play appeared to capture children's interest and maintain their attention throughout the learning process. The teacher explained that the use of varied sensory inputs helped reduce distractions and encouraged children to stay focused on tasks. This finding is consistent with classroom observations, where children demonstrated continuous engagement from the beginning to the end of activities. The integration of tactile and kinesthetic elements allowed children to actively participate rather than passively receive information. As a result, children showed improved ability to follow instructions and complete tasks without frequent reminders. These findings suggest that multisensory learning plays a crucial role in enhancing children's attentional control.

The teacher emphasized the importance of sensory engagement in maintaining children's focus, stating: *"When I use multisensory activities, the children are more interested and stay focused longer. They don't get distracted easily like during regular lessons."*

Similarly, the parent reported noticeable changes in the child's behavior at home, explaining: *"After participating in these activities, my child can sit longer and finish tasks without being reminded repeatedly."*

Observational data further supported these statements, as one child was able to maintain attention throughout a complete activity session and follow all instructions accurately. Another child demonstrated the ability to recall and repeat instructions independently, indicating improved working memory and concentration. The consistency between interview and observation data strengthens the credibility of this finding. These results indicate that multisensory learning not only captures children's attention but also helps sustain it over time. Therefore, multisensory activities can be considered an effective strategy for improving attentional skills in early childhood education.

Theme 2: Improved Emotional Regulation and Self-Confidence

The second major theme emerging from the data is the improvement in children's emotional regulation and self-confidence during multisensory learning activities. Children who initially appeared hesitant or anxious gradually became more comfortable and confident in participating in classroom activities. The use of sensory materials such as textured sand, colored powder, and movement-based exercises created a safe and enjoyable learning environment. These activities allowed children to express themselves freely and explore new experiences without fear of failure. The teacher observed that children became calmer and more emotionally stable during multisensory sessions. Emotional outbursts decreased, and children were more willing to engage with peers and teachers. This suggests that multisensory learning supports emotional development by providing structured yet flexible learning experiences. As a result, children developed greater confidence in their abilities.

The teacher described this change by stating: *"At first, some children were afraid to touch new materials, but after a few sessions, they became more confident and even asked to try new activities."*

The parent also noted improvements in the child's emotional behavior, saying: *"My child used to get frustrated easily, but now they seem calmer and more willing to try things, even when it's difficult."*

Observations revealed that children who were initially reluctant began to actively participate and interact with peers. One child who previously avoided group activities started initiating participation and engaging in collaborative tasks. Another child demonstrated increased confidence by completing tasks independently without seeking constant reassurance from the teacher. These behavioral changes indicate that multisensory learning fosters emotional resilience and self-confidence. The supportive and engaging nature of sensory-based activities helps children feel secure and motivated to learn. Therefore, multisensory learning contributes significantly to children's emotional regulation and overall well-being.

Theme 3: Strengthened Learning Readiness and Task Persistence

The third theme highlights the role of multisensory learning in strengthening children's overall learning readiness and task persistence. Children demonstrated improved ability to follow instructions, remain engaged in tasks, and complete activities independently. Multisensory activities provided clear structure and guidance while allowing flexibility for exploration. This balance enabled children to develop a sense of responsibility and independence in their learning. The teacher reported that children became more willing to complete tasks and showed greater persistence when faced with challenges. Highly active children, in particular, were able to channel their energy into structured activities, resulting in more productive behavior. Observations indicated that children were able to complete tasks neatly and accurately, reflecting increased focus and effort. These findings suggest that multisensory learning enhances both behavioral and cognitive aspects of learning readiness.

The teacher explained: *"Children who are usually very active can focus better when they are involved in activities that use movement and touch. They can complete their work more neatly and independently."*

The parent also observed similar improvements, stating: *"I see my child trying harder to finish tasks and not giving up easily like before."*

Classroom observations showed that children were more willing to assist peers and collaborate during activities, indicating positive social engagement. One child demonstrated persistence by completing a challenging task without assistance, while another helped a peer understand instructions. These interactions reflect the development of social responsibility and cooperative behavior. The consistency of these findings across data sources indicates that multisensory learning has a significant impact on children's readiness to learn. By integrating sensory, cognitive, and social elements, multisensory activities create a comprehensive learning experience. Therefore, multisensory learning supports children's ability to engage, persist, and succeed in early childhood education.

5. DISCUSSION

The findings of this study demonstrate that multisensory learning significantly enhances young children's attention, emotional regulation, and learning readiness. These results are consistent with a growing body of international research emphasizing the importance of sensory-rich learning environments in early childhood education. Multisensory learning facilitates deeper cognitive engagement by activating multiple sensory pathways, thereby strengthening neural connections and improving information processing (Mayer, 2017; Shams & Seitz, 2008). Recent studies have shown that children exposed to multisensory instruction exhibit higher levels of attention and engagement compared to those in traditional learning environments (Ibrahim et al., 2021; Moreno & Mayer, 2016). The present findings align with these studies, as children demonstrated sustained focus and reduced distraction during multisensory activities. Furthermore, the integration of tactile and kinesthetic elements appears to support active participation, which is essential for maintaining attention in early childhood contexts (Zosh et al., 2017). This suggests that multisensory learning provides a more effective alternative to passive instructional approaches. Therefore, the improvement in attention

observed in this study can be understood as a result of enhanced cognitive stimulation and engagement.

In addition to improving attention, the findings highlight the role of multisensory learning in supporting emotional regulation and self-confidence. This is consistent with research indicating that emotionally supportive and engaging learning environments contribute to children's socio-emotional development (Denham et al., 2017; Durlak et al., 2011). Sensory-based activities such as rhythmic movement and tactile exploration have been shown to reduce anxiety and promote emotional stability (Fleer, 2020; Pino-Pasternak & Whitebread, 2019). The observed reduction in emotional outbursts and increased willingness to participate suggest that multisensory learning creates a safe and supportive environment for children. These findings are also supported by studies on social-emotional learning (SEL), which emphasize the importance of integrating emotional and cognitive processes in early education (Jones et al., 2017; Taylor et al., 2017). In the Indonesian context, similar patterns have been reported, where supportive classroom environments enhance children's emotional well-being and engagement (Ferawati, 2026; Maisyaroh, 2026). The increase in self-confidence observed in this study further supports the idea that multisensory learning fosters positive learning experiences. Therefore, multisensory approaches contribute not only to cognitive development but also to emotional resilience.

The findings also indicate that multisensory learning strengthens children's learning readiness, particularly in terms of task persistence and independence. This aligns with research on executive function, which highlights the importance of working memory, cognitive flexibility, and inhibitory control in early learning (Diamond, 2016; Blair, 2016). Multisensory activities provide structured yet flexible learning experiences that support the development of these skills. For example, children in this study were able to follow instructions, complete tasks independently, and persist in challenging activities. These behaviors are indicative of improved executive functioning and self-regulation. Previous studies have shown that play-based and interactive learning environments enhance children's ability to regulate their behavior and sustain effort (Zosh et al., 2017; Whitebread et al., 2019). The present findings extend this literature by demonstrating how multisensory learning specifically contributes to these outcomes. In addition, the ability of highly active children to channel their energy into structured tasks highlights the adaptability of multisensory approaches. Therefore, multisensory learning plays a critical role in preparing children for formal schooling.

Another important aspect of this study is the role of multisensory learning in promoting inclusive education. International research emphasizes that inclusive classrooms require flexible teaching strategies that accommodate diverse learning needs (Al-Azawei et al., 2016; Florian & Black-Hawkins, 2011). Multisensory learning supports this goal by providing multiple pathways for accessing and expressing knowledge. Children with different learning styles and developmental challenges can engage with learning materials in ways that suit their individual needs. This is particularly relevant for children with communication delays and attention difficulties, as highlighted in previous Indonesian studies (Isnaini, 2026; Ratniawati, 2026; Jelina, 2026). Similarly, international research indicates that multisensory instruction is effective for children with learning difficulties, as it enhances accessibility and participation (Snowling & Hulme, 2021; Goswami, 2015). The findings of this study confirm that multisensory activities create an inclusive learning environment where all children can participate

meaningfully. Therefore, multisensory learning aligns with global efforts to promote equity and inclusion in education.

The study also highlights the critical role of teachers in facilitating effective multisensory learning. Teacher beliefs, competencies, and instructional practices significantly influence the success of educational interventions (OECD, 2019; Darling-Hammond et al., 2017). In this study, the teacher's ability to design engaging and developmentally appropriate activities contributed to positive learning outcomes. This finding is consistent with research indicating that teacher training and professional development are essential for implementing innovative pedagogies (Egert et al., 2018; Jensen et al., 2017). Furthermore, the teacher's responsiveness to children's needs and behaviors played a key role in supporting engagement and emotional regulation. The importance of teacher facilitation is also emphasized in sociocultural theories, which highlight the role of guided interaction in learning (Vygotsky, 1978). Therefore, effective implementation of multisensory learning requires not only appropriate materials but also skilled and reflective educators.

In addition to teacher influence, the findings underscore the importance of parental involvement in supporting children's learning readiness. Research indicates that family engagement enhances children's motivation, behavior, and academic outcomes (Yoshikawa et al., 2018; Sheridan et al., 2019). In this study, parents reported positive changes in children's behavior at home, suggesting that the benefits of multisensory learning extend beyond the classroom. This highlights the importance of collaboration between teachers and parents in creating consistent and supportive learning environments. Previous studies have shown that home-based reinforcement of learning activities can strengthen children's skills and confidence (Hill & Tyson, 2009; Sheridan et al., 2019). The alignment between teacher and parent perspectives in this study further supports the effectiveness of multisensory learning. Therefore, strengthening school-family partnerships is essential for maximizing learning outcomes.

Despite the positive findings, this study also highlights several challenges in implementing multisensory learning. Limited resources, lack of teacher training, and large class sizes are common barriers reported in international research (OECD, 2019; UNICEF, 2020). These challenges may affect the consistency and quality of multisensory learning practices. In the Indonesian context, disparities in educational resources may further complicate implementation. However, the findings suggest that even simple and low-cost multisensory activities can have a significant impact on children's learning. This indicates that the effectiveness of multisensory learning depends more on creativity and pedagogical approach than on expensive materials. Therefore, future efforts should focus on providing training and support for teachers to implement multisensory strategies effectively.

In conclusion, this study contributes to the growing body of literature on multisensory learning by providing qualitative evidence from an Indonesian early childhood context. The findings demonstrate that multisensory learning enhances attention, emotional regulation, and learning readiness, aligning with international research in the field. By integrating cognitive, emotional, and social dimensions, multisensory learning offers a comprehensive approach to early childhood education. The study also highlights the importance of teacher facilitation and parental involvement in maximizing learning outcomes. These findings have important implications for educational practice and policy, particularly in promoting inclusive and developmentally appropriate learning

environments. Future research should explore the long-term impact of multisensory learning and its application in diverse educational settings. Overall, multisensory learning represents a powerful and adaptable strategy for improving early childhood education and preparing children for lifelong learning.

6. CONCLUSION

This study concludes that multisensory learning activities play a significant role in enhancing young children's learning readiness by strengthening attention, emotional regulation, and task persistence within early childhood education settings. The findings demonstrate that integrating visual, auditory, tactile, and kinesthetic experiences creates a more engaging and supportive learning environment that promotes holistic child development. Children not only showed improved focus and sustained engagement but also developed greater emotional stability, confidence, and independence in completing tasks. These outcomes confirm that learning readiness is a multidimensional construct influenced by the interaction of cognitive, emotional, and social factors. The study contributes theoretically by expanding the conceptual understanding of learning readiness through a multisensory and sociocultural lens, emphasizing the importance of experiential and relational learning processes. Practically, it provides evidence-based insights for educators to design inclusive, developmentally appropriate, and engaging learning activities that accommodate diverse learner needs. Furthermore, the findings highlight the critical roles of teachers and parents in facilitating and reinforcing multisensory learning experiences both in school and at home. In terms of policy implications, this study suggests the need for integrating multisensory learning approaches into early childhood education curricula and teacher training programs, particularly in developing contexts such as Indonesia. Policymakers should support professional development initiatives, provide accessible resources, and encourage collaborative partnerships between schools and families to maximize learning outcomes. Overall, multisensory learning offers a promising and adaptable strategy for improving the quality of early childhood education and ensuring that children are well-prepared for future academic and life challenges.

7. REFERENCES

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