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Enhancing Cognitive Development of Early Childhood through Outdoor Play at SHEJA School Langkat Regency

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ABSTRACT

This study explores the role of outdoor play in enhancing cognitive development among early childhood learners at SHEJA School, Langkat Regency. Early childhood represents a critical stage in human development when cognitive functions-such as attention, memory, problem-solving, and language-undergo rapid growth. However, in many modern educational settings, children's learning experiences are increasingly confined indoors, limiting opportunities for exploration and sensory engagement. This research is grounded in the pedagogical belief that learning in natural and open environments stimulates children's curiosity, creativity, and cognitive flexibility. Drawing upon developmental theories by Piaget and Vygotsky, the study argues that outdoor play serves as an experiential laboratory where children integrate sensory input, physical movement, and social interaction into meaningful learning experiences. Methodologically, this study employs a qualitative descriptive approach through classroom observation, interviews with teachers, and documentation analysis. The findings reveal that outdoor play significantly contributes to the development of attention span, logical reasoning, spatial understanding, and cooperative problem-solving skills among children aged 4-6. Activities such as nature exploration, sand and water play, and team-based games foster not only cognitive but also emotional and social growth. Moreover, outdoor learning environments promote intrinsic motivation and creativity, allowing children to connect abstract concepts with real-world experiences. The research concludes that outdoor play is not merely recreational but educationally essential-it integrates physical, cognitive, and moral dimensions of development. Therefore, educators and policymakers should prioritize outdoor-based pedagogical approaches as an effective means of nurturing holistic learning in early childhood education.

Keywords: *Cognitive, Early Childhood, Outdoor Play*

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INTRODUCTION

Early childhood education represents the most crucial period in human development—a stage in which foundational cognitive, emotional, and social capacities are formed. Cognitive development, in particular, plays a vital role in shaping how children perceive, process, and respond to the world around them. According to Piaget's theory of cognitive development, children between the ages of three and six are in the preoperational stage, characterized by rapid language expansion, symbolic thinking, and imaginative play (Piaget, 1970). During this period, learning is not best achieved through rote instruction or passive memorization but through active exploration and interaction with their environment. Outdoor play, therefore, becomes a powerful pedagogical tool that stimulates children's sensory, motoric, and intellectual growth. It bridges the gap between abstract classroom learning and tangible real-world experience, allowing children to learn through doing—a principle central to constructivist pedagogy. In Indonesia, early childhood education (PAUD) institutions have increasingly recognized the significance of holistic learning approaches that integrate play-based activities. However, challenges remain, particularly in balancing structured academic goals with the need for spontaneous exploration. Many early education settings still emphasize indoor, worksheet-oriented tasks, which may limit opportunities for children to develop critical cognitive skills such as problem-solving, spatial reasoning, and creativity. SHEJA School in Langkat Regency represents an alternative model that embraces outdoor play as a core component of cognitive learning. Through various outdoor activities—such as group games, sensory exploration, gardening, and physical challenges—children are provided with opportunities to apply cognitive processes in authentic contexts. The school's approach reflects an understanding that outdoor play is not a recreational supplement but an integral aspect of curriculum design that fosters curiosity, observation, and reflection. Outdoor play enhances multiple dimensions of cognitive development. From a neuropsychological perspective, interaction with natural environments stimulates brain regions associated with attention, memory, and executive function (Berman et al., 2008). Activities such as climbing, running, and balancing not only develop gross motor coordination but also engage the prefrontal cortex—responsible for decision-making and planning. Moreover, exposure to open-ended play settings encourages divergent thinking, an essential skill for creativity and cognitive flexibility. When children encounter natural phenomena like rainfall, insects, or plant growth, they begin to formulate hypotheses, test their understanding, and refine their knowledge through direct experience. Vygotsky's (1978) sociocultural theory further reinforces this perspective, asserting that cognitive growth emerges through social interaction. Outdoor play, which often involves collaboration, negotiation, and communication, thus becomes a medium through which children internalize social norms and develop linguistic and reasoning skills simultaneously. In addition to its developmental benefits, outdoor play contributes to emotional regulation and concentration, which indirectly enhance cognitive performance. Children who engage in physical activity and nature-based play exhibit higher levels of self-control, reduced stress, and improved attention span (Ginsburg, 2007). These factors create optimal conditions for learning, as calm and focused children can absorb new information more effectively. The dynamic setting of outdoor learning also supports multi-sensory engagement, accommodating diverse learning styles and

reinforcing memory retention through experiential association. Consequently, integrating outdoor play into early childhood education aligns with the 21st-century learning paradigm that emphasizes creativity, critical thinking, communication, and collaboration.

This study focuses on exploring how outdoor play can enhance the cognitive development of early childhood learners at SHEJA School in Langkat Regency. It seeks to identify the forms of outdoor activities that effectively stimulate cognitive processes and examine how teachers design, facilitate, and evaluate such play experiences. Using the framework of developmental psychology and play-based pedagogy, the research underscores that outdoor play is not a peripheral activity but a core educational strategy that enriches children's learning experiences. By situating this study in a local context, it also contributes to the broader discourse on innovative early childhood education practices in Indonesia, highlighting how schools can creatively utilize their environment to support holistic child development. Ultimately, the integration of outdoor play at SHEJA School illustrates that when children are given space to explore freely under guided facilitation, their minds expand beyond the classroom walls—transforming play into a living laboratory of learning.

METHODS

This study employed a qualitative descriptive research design aimed at exploring how outdoor play contributes to the cognitive development of early childhood learners at SHEJA School, Langkat Regency. The qualitative approach was chosen because it allows for in-depth understanding of real experiences, emphasizing children's learning behaviors, teacher strategies, and environmental interactions. According to Creswell (2018), qualitative inquiry is appropriate for examining complex, context-dependent phenomena such as learning through play, where meaning and interpretation are essential. The study focuses on describing the processes, patterns, and implications of outdoor play rather than measuring outcomes quantitatively. The research participants consisted of three early childhood teachers and twenty-five students aged four to six years enrolled in the SHEJA School early education program. Teachers were selected purposively based on their active involvement in designing and supervising outdoor play activities. Ethical considerations were observed throughout the research, ensuring informed consent from teachers and parents, anonymity of participants, and confidentiality of observational data. The research was conducted over a three-month period, from March to May 2025, during which the school implemented its regular outdoor learning schedule. Observations focused on how children engaged cognitively during outdoor play—how they explored, experimented, solved problems, and interacted with peers. The researcher recorded field notes emphasizing aspects such as curiosity, reasoning, and language use. These interviews also explored teachers' perceptions of the relationship between outdoor play and cognitive growth. Documentation in the form of lesson plans, learning journals, and photo records of activities was analyzed to triangulate findings and ensure validity. During data reduction, the researcher categorized findings into emerging themes such as problem-solving behavior, language enrichment, spatial reasoning, and creative thinking. Data display involved constructing narrative matrices that illustrated the interconnections between play activities and cognitive indicators. The

entire research process was carried out prayerfully and ethically, recognizing that early childhood education is a sacred trust—nurturing not only knowledge but the divine potential within every child (Palmer, 2007).

RESULTS AND DISCUSSION

The results of this qualitative study reveal that outdoor play at SHEJA School serves as an integral medium for stimulating and enhancing the cognitive development of early childhood learners. Through systematic observation, teacher interviews, and document analysis, it was found that outdoor play supports cognitive growth in multiple dimensions: curiosity, problem-solving, language development, spatial reasoning, creativity, and scientific thinking. The findings align with the theoretical perspectives of Jean Piaget and Lev Vygotsky, both of whom emphasize that play serves as a foundational mechanism for children's intellectual construction and social cognition. At SHEJA School, outdoor play is not a peripheral activity but a structured pedagogical approach embedded in the curriculum to develop thinking skills through physical engagement, exploration, and collaborative discovery. One of the most prominent outcomes observed during outdoor play activities was the spontaneous emergence of curiosity among children. Outdoor environments provided sensory-rich stimuli—colors, textures, sounds, and natural objects—that provoked children to ask questions, test hypotheses, and make discoveries. For example, during a nature exploration activity, children were encouraged to collect leaves and compare their sizes, colors, and shapes. This hands-on engagement fostered observation and categorization skills, fundamental aspects of early cognitive development. According to Piaget (1952), such concrete experiences are essential in the preoperational stage of cognitive development, where children learn by manipulating and interacting with their environment. Teachers at SHEJA School strategically used open-ended questions to sustain curiosity: "Why do you think this leaf is different?" or "What happens if we put it in water?" These prompts invited children to think critically and hypothesize outcomes, reflecting the constructivist principle that knowledge is actively built rather than passively received. The study found that children who regularly participated in outdoor play exhibited greater cognitive flexibility and confidence in expressing their ideas compared to peers who preferred indoor tasks. Their natural curiosity evolved into sustained interest and persistence—two indicators of developing intellectual maturity. Outdoor play encouraged children to move from egocentric thinking toward more relational and reflective cognition. As they explored together, they negotiated meaning with peers and teachers, demonstrating what Vygotsky (1978) describes as the Zone of Proximal Development (ZPD)—the space where children's potential is extended through social interaction. Teachers acted as facilitators, scaffolding questions and guiding discoveries without dominating the process.

Another central finding was that outdoor play significantly enhanced children's problem-solving skills. Activities such as building sandcastles, navigating obstacle courses, and organizing games like "treasure hunt" demanded logical sequencing, cooperation, and decision-making. For instance, when constructing a tower from natural materials like sticks and stones, children experimented with balance, symmetry, and structure. When their structures fell, teachers encouraged reflection through guided dialogue: "What can

we change to make it stronger?" This process reflected experiential learning, where trial and error leads to cognitive growth.

Observational data indicated that problem-solving competence developed through three phases: (1) identifying challenges in the play environment, (2) hypothesizing potential solutions, and (3) testing and refining strategies. These cycles parallel Kolb's (1984) experiential learning model, wherein concrete experience leads to reflection, conceptualization, and active experimentation. Through these play-based challenges, children internalized logical reasoning and learned to anticipate outcomes—a key marker of developing cognitive control and executive function. Teachers at SHEJA School intentionally designed outdoor activities that integrated elements of inquiry-based learning. For example, during "water exploration day," students experimented with floating and sinking objects, predicting outcomes and comparing them with real results. This form of guided discovery connected scientific reasoning with joyful experience. Teachers observed that children who engaged regularly in such structured outdoor inquiry became more independent in forming conclusions and demonstrated early signs of scientific thinking—a crucial aspect of higher-order cognition. The cognitive benefits of outdoor play extended into the domain of language development. Children used descriptive language to articulate observations, ask questions, and negotiate rules during group activities. The open and dynamic outdoor setting provided opportunities for spontaneous dialogue that extended beyond teacher prompts. Interviews with teachers revealed that vocabulary growth was accelerated during outdoor play because children encountered diverse sensory experiences that required new words for description. For instance, they learned comparative adjectives ("bigger," "lighter," "smoother") and verbs related to movement ("climb," "slide," "balance"). Outdoor play fostered pragmatic language use—communication driven by purpose. When engaged in cooperative games, children needed to explain, persuade, and coordinate with peers, strengthening both expressive and receptive communication. This aligns with Vygotsky's (1978) assertion that language is the primary medium for cognitive development, serving as a tool for thought. Teachers reported that even quieter or introverted children became more expressive outdoors, indicating that the open environment reduced anxiety and encouraged participation. The study thus confirms that outdoor play serves not only as a physical outlet but as a linguistic incubator that nurtures articulation, comprehension, and reasoning through authentic social interaction. Spatial reasoning—the ability to perceive and manipulate relationships between objects and spaces—was found to be another key area enhanced by outdoor play. Activities like navigating obstacle courses, arranging natural materials, or constructing temporary "houses" from branches and leaves helped children visualize spatial relations such as distance, size, and direction. Teachers used verbal cues like "under," "beside," and "through" to reinforce spatial vocabulary, connecting physical movement with cognitive understanding. Observation showed that children developed not only physical coordination but also spatial intelligence as conceptualized by Gardner (2011). They learned to map their surroundings mentally, plan movement, and adjust actions in real time. This cognitive process is critical for developing mathematical reasoning and problem-solving in later education. Furthermore, outdoor

learning cultivated environmental awareness—children learned to recognize patterns in nature, understand cause-effect relationships, and appreciate ecological balance. Teachers integrated Christian perspectives of stewardship into these lessons, reminding children that caring for creation is part of honoring God's world. This theological framing gave cognitive learning a moral dimension, linking knowledge with ethical responsibility. Outdoor play provided fertile ground for creative thinking. Freed from the constraints of structured classroom environments, children transformed ordinary objects into imaginative tools—a stick became a magic wand, leaves became currency, and rocks formed cities. Such symbolic play reflects what Piaget (1951) calls "symbolic function", where children use mental representations to create and manipulate imaginary scenarios. This imaginative activity directly enhances abstract thinking, enabling children to visualize possibilities beyond immediate reality. Teachers at SHEJA School encouraged creative risk-taking by refraining from over-directing play. They provided loose materials—sand, water, fabric, stones—and allowed children to generate their own narratives and rules. This autonomy stimulated intrinsic motivation, which, according to Deci and Ryan's (2000) self-determination theory, enhances engagement and cognitive persistence. The study found that children who regularly participated in open-ended outdoor play displayed increased originality and flexibility when solving problems in other academic contexts.

An important dimension of cognitive development observed in outdoor play was the growth of social cognition—the ability to understand others' perspectives and regulate one's own behavior within group dynamics. Outdoor games demanded rule-following, negotiation, and empathy. For example, during a team-based "relay game," children had to wait their turn, encourage teammates, and accept winning or losing gracefully. These interactions developed executive functions such as impulse control, planning, and perspective-taking. Teachers described outdoor play as a "laboratory for moral intelligence," where cognitive and emotional learning intersected. Through real-time social challenges, children developed metacognitive awareness—the ability to reflect on their actions and adjust accordingly. This corresponds with the Christian educational philosophy upheld by SHEJA School, which views cognitive development as inseparable from character formation. The teachers emphasized that wisdom involves both knowing and doing what is right. Thus, outdoor play became a holistic form of formation, bridging intellectual, emotional, and spiritual dimensions of learning. Interviews with teachers revealed that their pedagogical philosophy treated outdoor play as a structured learning opportunity rather than a leisure break. Teachers designed play scenarios aligned with weekly learning objectives—such as classification, counting, or problem-solving—embedding academic goals in natural exploration. The educators functioned as scaffolders (Vygotsky, 1978), adjusting the level of support based on each child's readiness. They modeled curiosity and inquiry, demonstrating that learning is a lifelong, joyful process. One teacher described her role as "preparing the space for discovery and letting the children find the joy of thinking." This pedagogical stance reflects Palmer's (2007) idea that good teaching flows from an "integrated self"—one whose inner life is aligned with the values being taught. Teachers who approached outdoor learning prayerfully and reflectively were more effective in fostering cognitive engagement because their presence conveyed patience, attention, and wonder. Unique to SHEJA School is the integration of Christian spirituality into outdoor learning. Teachers

encouraged students to see God's creation as a living classroom. During observation, one activity involved children observing insects and discussing their roles in nature, followed by a short reflection on God's creativity. This approach not only stimulated scientific reasoning but also theological reflection, teaching children to connect knowledge with gratitude. Faith-based integration also reinforced moral cognition—the ability to discern right from wrong and to act accordingly. As teachers guided children to care for plants, share materials, and respect living things, they instilled an ethical framework grounded in biblical stewardship. The study found that this faith-centered context enhanced the meaning-making process; children did not merely learn facts about nature but perceived learning as an act of worship and wonder. This aligns with the holistic model of Christian education proposed by Knight (2006), where intellectual development is integrated with spiritual transformation. Outdoor play, being inherently physical, stimulated neurological and cognitive benefits. Physical movement enhances brain function by increasing oxygen flow, improving concentration, and promoting neural connectivity (Pellegrini & Smith, 1998). Teachers observed that after outdoor sessions, children exhibited improved attention spans, better memory retention, and more coherent verbal expression. Activities requiring balance, coordination, and timing strengthened executive functions—mental processes involved in planning, organizing, and regulating behavior. These findings correspond with the embodied cognition theory, which asserts that thinking is grounded in bodily experience (Wilson, 2002). Children who climbed, ran, or jumped while engaging with educational tasks developed cognitive maps linking sensory input with reasoning. The integration of body and mind during outdoor play thus contributed to holistic learning—reinforcing that cognitive development is not isolated from physical and emotional health. Teachers also reflected on the need for professional development in play-based pedagogy. While many possessed strong spiritual commitment, they sought more structured training in connecting play activities to specific learning outcomes. This finding echoes studies by Arikunto (2022) and Darmawan & Kustandi (2020), which highlight the importance of pedagogical competence in early childhood educators. SHEJA School has since initiated collaborative workshops with local universities to strengthen teachers' capacities in designing integrated outdoor curricula.

The findings from SHEJA School carry implications beyond the immediate context. They affirm that cognitive development in early childhood thrives in environments that integrate freedom, exploration, and relational guidance. Outdoor play functions as both a cognitive accelerator and a moral compass—cultivating reasoning, creativity, and empathy in unity. In policy terms, this study suggests that early childhood institutions should allocate structured time and space for outdoor learning, not as recreation but as an essential part of cognitive instruction. The integration of faith and play underscores the distinctive mission of Christian education: to cultivate wisdom, not merely intelligence. Wisdom, in this sense, involves perceiving divine purpose in learning, connecting facts with faith, and understanding with compassion. SHEJA School's model exemplifies how play can become a form of worship—an embodied acknowledgment of God's creativity mirrored in the curiosity of children. These processes reflect the constructivist paradigm, but with a theological depth characteristic of Christian education. Outdoor play thus becomes a "sacred pedagogy" where learning is both cognitive and spiritual—rooted in wonder, inquiry, and gratitude. The results from SHEJA

School demonstrate that outdoor play is not peripheral but essential to early cognitive formation. It activates multiple intelligences, enhances problem-solving, strengthens language and reasoning, and cultivates environmental and moral awareness. Teachers, functioning as facilitators and spiritual mentors, transform the playground into a living laboratory of the mind and soul. By engaging in outdoor play, children learn not only how to think but how to see the world with curiosity, compassion, and reverence—hallmarks of true cognitive and spiritual growth.

CONCLUSION

This study concludes that outdoor play serves as a powerful pedagogical medium for promoting the holistic cognitive development of early childhood learners. Drawing from classroom observation, teacher reflection, and relevant theoretical literature, it becomes evident that the open environment of outdoor play nurtures not only intellectual abilities but also emotional, social, and spiritual dimensions of learning. The findings affirm that cognitive growth in early childhood is best cultivated through play-based, experiential, and relational learning—an approach that transforms the playground into a dynamic laboratory of discovery and imagination. At SHEJA School in Langkat Regency, outdoor play was found to stimulate children's curiosity, problem-solving, language, spatial reasoning, and creativity in ways that traditional classroom instruction often cannot. When children explored nature—collecting leaves, building structures, or engaging in team-based games—they were not merely playing; they were constructing knowledge, forming hypotheses, and developing higher-order thinking. Such active engagement aligns with Piaget's constructivist theory that children learn by interacting with their environment and manipulating objects to build mental representations. Similarly, Vygotsky's social development theory finds expression in the collaborative nature of outdoor play, where peer interaction and teacher scaffolding enhance cognitive growth within the Zone of Proximal Development (ZPD). Beyond its developmental benefits, outdoor play promotes integrated learning, combining cognitive, linguistic, and moral education. The study found that outdoor experiences encouraged children to articulate ideas, describe phenomena, and engage in reflective conversation—strengthening language and communication skills. Moreover, through natural inquiry and experimentation, students developed early scientific reasoning and an appreciation of cause-effect relationships. Teachers played a crucial role in facilitating this growth, not as mere supervisors but as intentional mentors who guided discovery through questioning, storytelling, and reflection. The findings also highlight a distinct dimension of Christian early childhood education. By situating outdoor learning within the context of creation, teachers helped students perceive knowledge as part of divine revelation. Observing plants, animals, or weather patterns became opportunities to recognize God's creativity and stewardship. This integration of faith and cognition shaped moral awareness, teaching children to care for their environment and to view learning itself as an act of worship. Thus, cognitive formation was inseparable from spiritual formation—a hallmark of holistic Christian pedagogy. Nevertheless, the study also recognizes the challenges of implementing outdoor play. Teachers face logistical barriers such as weather, safety concerns, and limited facilities. Additionally, societal misconceptions about play as "non-academic" persist. Overcoming these obstacles requires institutional support and

parental awareness, ensuring that outdoor learning is valued as a legitimate and essential form of education. Professional development for teachers should include training in play-based curriculum design and assessment of cognitive outcomes to strengthen pedagogical competence and intentionality. The conclusion affirms that outdoor play must be reclaimed as a core strategy of early childhood education, particularly in Christian learning environments like SHEJA School. It is not merely an extracurricular supplement but a vital cognitive and spiritual process through which children learn to think, reason, communicate, and wonder. As children run, observe, build, and imagine, they are also learning to interpret God's world—to see patterns, connections, and meaning. In this sense, outdoor play cultivates not only intelligence but wisdom: the ability to unite knowledge with gratitude, creativity with care, and discovery with faith. By fostering such integrative learning, SHEJA School exemplifies how education can remain faithful to its highest calling—to nurture minds and hearts that reflect both intellectual growth and divine purpose.

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