ENVIRONMENTAL STIMULATION AND COGNITIVE DEVELOPMENT IN EARLY CHILDHOOD (1–5 YEARS): A CASE STUDY IN THE GREATER KOLAKA REGION

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Abstract: *This article aims to determine the environmental stimulation of early childhood cognitive development with an age range of 1- 5 years in the Greater Kolaka area (Kolaka, East Kolaka). The research method used is a combination method or commonly known as mixed methods, a combination of quantitative and qualitative research. This research was conducted from October to December, using data collection tools through direct interviews. The results obtained from this study are that there are 20% of respondents who get very good scores from the statements given regarding the influence of environmental stimulation on their children's cognitive development, and the good category is at 50%, the sufficient category is 30% and the category is less than 0%. So in summary it can be said that in the Greater Kolaka region (Kolaka, East Kolaka) early childhood cognitive development due to environmental stimulation falls into the good category.*

Keywords*: Environmental stimulation, cognitive development, early childhood*

INTRODUCTION

Early childhood is a critical period in human development, as the experiences gained during this stage play a role in shaping a child's ability to learn, think, communicate, and adapt to their environment. Cognitive development during this phase involves more than just the capacity to remember or recognize objects; it encompasses the processes of acquiring knowledge, focusing attention, understanding cause-and-effect relationships, using language, and solving simple problems, all in accordance with the child's developmental stage. In this context, environmental stimulation is a key factor, as it provides the experiences and

learning opportunities that allow children to construct understanding through interactions with others and the objects around them. Rakesh et al. (2024) explain that cognitive stimulation includes environmental inputs that enrich sensory experiences and offer learning opportunities for children. Such stimulation can occur through interactions with caregivers, play activities, communication, exploration, and learning experiences embedded in daily life. Consequently, the quality of a child's developmental environment should not be assessed solely by the availability of facilities, but rather by the extent to which it enables the child to engage actively in the learning process.

A child's developmental environment encompasses the family, early childhood education settings, and the broader social environment. While each of these environments provides different forms of stimulation, they complement one another in supporting cognitive development. The family serves as the primary environment where children gain experience in communication, object recognition, the formation of habits, and guidance in daily activities. Meanwhile, educational settings and the wider community expand a child's experiences through social interaction, play, exploration, and exposure to new situations. Sitorus and Sit (2024) highlight the significance of the family, early childhood education settings, and the community for a child's cognitive development. In a similar vein, Rakesh et al. (2024) emphasize that cognitive stimulation should be understood as a process that unfolds through various sources and types of experiences, including interactions that involve adults. These findings indicate that the environment plays a significant role in providing learning opportunities; however, this does not necessarily mean that every child within the same environment will exhibit identical cognitive development. A child's response to stimulation may vary based on their age, experiences, the intensity of interactions, and the characteristics of their caregiving environment. Therefore, research on environmental stimulation must take into account both the nature of the experiences a child receives and the developmental manifestations observable in their daily life.

Several previous studies have addressed the relationship between environmental stimulation and child development. Through a literature review, Kristina and Sari (2021) concluded that education regarding stimulation is one approach that can support the cognitive development of young children. However, as their work relied on a literature-based approach, it does not directly capture the variations in stimulation experiences that children encounter within a specific local community. Sitorus and Sit (2024) examined the roles of the family environment, educational institutions, and the broader community in children's cognitive development, providing a conceptual foundation for the importance of an environment that fosters the learning process. Internationally, a review by Rakesh et al. (2024) indicates that cognitive stimulation is a crucial aspect of environmental

experience, linked to both cognitive and neurological development in children. Nevertheless, the authors also highlighted the limitations in comprehensively measuring cognitive stimulation—particularly when such stimulation originates from diverse environments and involves adults other than primary caregivers. Overall, while these studies have established a theoretical and empirical basis for understanding the significance of stimulation, there remains a need for contextual research that illustrates how environmental stimulation and indicators of cognitive development manifest in the daily lives of children within specific communities.

Research on environmental stimulation and the cognitive development of young children has been conducted through literature reviews, conceptual discussions, and studies within specific contexts. However, empirical data specifically detailing environmental stimulation and the cognitive development of children aged 1–5 years in the Kolaka Raya region—specifically in Kolaka Regency and East Kolaka Regency—requires further strengthening through the collection of primary data from the local community. Existing research findings do not yet fully explain how the stimulation provided by parents and caregivers relates to indicators of child development within the specific social and environmental context of the area. Furthermore, environmental stimulation encompasses a diverse range of experiences—such as verbal interactions, adult guidance, play activities, and opportunities for exploration each of which warrants attention to gain a more detailed picture of a child's development. Assessments that merely aggregate these experiences into broad, general categories may fail to capture which aspects of stimulation are well-developed and which still require further attention. Consequently, research in the Greater Kolaka (Kolaka Raya) region is essential to generate an empirical, data-driven overview of environmental stimulation and indicators of cognitive development in children aged 1–5 years. This, in turn, provides a foundation for future studies that could employ a broader range of respondents and more standardized measurement instruments.

This study yields local, descriptive evidence regarding categories of environmental stimulation and indicators of cognitive development among children aged 1–5 years, based on data from respondents in the Greater Kolaka region. The findings offer insight into the state of environmental stimulation and developmental behaviors as reported by respondents within the local community context. These results can serve as a preliminary reference for parents and educators to consider the quality of children's daily learning experiences including their interactions, play activities, and opportunities for exploration. Moreover, these findings establish a basis for subsequent research utilizing a wider participant pool and more standardized measurement tools that could allow for a deeper examination of the relationship between environmental stimulation and children's cognitive development. In this way, this study provides an empirical perspective on

environmental stimulation and child development within the local context of Greater Kolaka, while broadening the understanding of why it is crucial to examine child development in relation to the specific environmental conditions in which children grow and learn.

METHOD

This study employs a mixed-methods approach—a research strategy that integrates quantitative and qualitative methods throughout the processes of data collection, analysis, and interpretation to derive findings and draw research conclusions (Subagyo, 2020). The mixed-methods approach combines the strengths of both quantitative and qualitative research, thereby providing a more comprehensive understanding of the issues under investigation (Lestari, 2015). In practice, this study begins with a quantitative approach—analyzing numerical data—followed by a qualitative approach to explain and provide greater depth to the results of that analysis (Creswell, 2016). Quantitative data are used to represent respondents' assessments in numerical form, while qualitative data are used to elaborate on findings based on the results of conducted interviews.

The study was conducted from October to December 2024 in the Kolaka Raya region, which encompasses both Kolaka Regency and East Kolaka Regency. Data were collected through interviews with 20 respondents who have children aged 1–5 years. The data collection instrument consisted of a series of statements, with assessments measured on a scale of 1–4. A higher score indicates a more favorable assessment of the aspect being measured. The data obtained were analyzed quantitatively to identify trends in the respondents' assessments and subsequently interpreted qualitatively, based on interview results, to gain a deeper understanding in line with the research objectives.

The scoring system serves to quantify respondents' answers, allowing the collected data to be analyzed systematically and used to illustrate trends in the assessments of the aspects under study. The details of the response options and their corresponding scores are presented in Table 1:

Table 1: Alternative Answer Scores

No	ANSWER	SCORE
1	Very well	4
2	Good	3
3	Enough	2
4	Less	1

Next, the scores obtained from the respondents' answers are interpreted based on established assessment criteria. These criteria are used to classify the assessment results into categories"Very Good," "Good," "Fair," and "Poor"based on the average valuesobtained. The use of this interval scale is intended to facilitate data interpretation and provide a consistent basis for determining the categories of the research findings. The details of these assessment categories are presented in Table 2.

Table 2: Criteria for Score Interpretation

No	Scale	Assessment Indicators
1	4 – 4,9	Very well
2	3 – 3,9	Good
3	2 - 2,9	Enough
4	0 - 1,9	Less

The following are the details regarding the assessment indicators, derived from the results:

Table 3. Assessment indicators

NO	ASSESSMENT INDICATOR	DESCRIPTION
1	Very well	Excellent at responding to, imitating, paying attention to, adapting to, and playing with other children
2	Good	Good at responding to, imitating, paying attention to, adapting to, and playing with other children
3	Enough	Fairly good at responding to, imitating, paying attention to, adapting to, and playing with other children
4	Less	Lacking in responding to, imitating, paying attention to, adapting to, and playing with other children

RESULTS AND DISCUSSION

This study examines the influence of environmental stimulation on the cognitive development of young children (aged 1–5 years) in the Greater Kolaka region (Kolaka and East Kolaka). Based on the interview forms completed by the respondents, the data analysis yielded the following results:

Diagram 1: Results of the Research Data Analysis



The diagram above shows that 20% of respondents fall into the "Excellent" category, 50% (the highest proportion) into "Good," 30% into "Fair," and 0% into "Poor" (none).

It can therefore be concluded that the influence of environmental stimulation on the cognitive development of young children (aged 1–5 years) in the Greater Kolaka region (Kolaka and East Kolaka) is "Good." This indicates that young children in this region, within the 1–5 age range, demonstrate positive cognitive development—evidenced by their ability to respond, imitate, pay attention, adapt, and play with other children—as a result of stimulation from their surrounding environment.

Stimulation refers to activities designed to trigger a child's fundamental abilities, enabling them to grow and develop optimally. Parents can begin providing this stimulation as early as possible. Targeted stimulation focuses on developing a child's core capabilities, such as gross motor skills. This process should start as early as possible—ideally from birth, or even as early as the sixth month of fetal development—and should be applied consistently, routinely, and in a varied manner by everyone who interacts with the child throughout their daily life. Providing adequate stimulation is crucial for a child's developmental progress; without it, children may struggle to—or fail to—achieve key developmental milestones. Most psychologists, particularly those in the field of cognitive psychology, believe that the process of human cognitive development begins at birth. The foundational elements of human development—namely motor and sensory capacities—are, to a certain extent, also influenced by activities within the cognitive domain.

A child's cognitive development is a complex process influenced by various factors, one of which is environmental stimulation. Appropriate stimulation from an

early age can encourage a child's brain to develop optimally. Below are several important factors to consider:

1. Social Interaction

Social interaction is the foundation for a child's cognitive and emotional growth. Through interactions with others, children learn to communicate, collaborate, and understand the world around them. When playing with peers, children develop social skills such as sharing, taking turns, and resolving conflicts. Furthermore, interactions with adults—such as parents and teachers—help children learn language, social rules, and moral values.

An environment that fosters social interaction is essential for a child's healthy development. Parents can create a warm and affectionate environment by frequently talking to their children, reading stories to them, and involving them in family activities. Schools also play a crucial role in facilitating children's social interactions by providing a variety of meaningful activities.

2. A Stimulating Environment

An environment rich in stimulation is key to a child's cognitive development. Just as plants require nutrients to grow, a child's brain needs stimulation to develop. A stimulating environment can include educational toys, books, challenging games, and new experiences. Through exploration and interaction with their surroundings, children learn about the world, develop critical thinking skills, and enhance their creativity.

A safe and comfortable environment is also essential for supporting a child's cognitive development. Children need to feel secure enough to explore and try new things without the fear of danger. A conducive environment allows children to focus on learning and personal development. Furthermore, a positive environment can help children build self-confidence and motivate them to continue learning and growing. Playing outdoors provides children with opportunities to explore the natural environment, develop gross motor skills, and learn about concepts such as size, shape, and space.

3. Language

Language is a child's primary tool for interacting with the world around them. Through language, children learn to grasp abstract concepts such as time, space, and cause and effect. Language also enables children to express their

thoughts, feelings, and needs. In other words, language serves as a bridge connecting a child's mind to the outside world.

Reading storybooks, singing, and regularly talking with children are essential for their language development. These activities not only enrich a child's vocabulary but also help them develop skills in listening, speaking, and understanding sentence structure. Furthermore, the language that adults use when communicating with children serves as a model for the children as they develop their own language abilities.

4. Good Nutrition

Good nutrition is essential for a child's brain growth. Ensure that children receive adequate nutrients from wholesome foods such as fruits, vegetables, proteins, and whole grains.

Proper nutrition serves as the foundation for a child's brain development. Much like fuel for a car, the right nutrients provide the energy the brain needs to function optimally. Nutrients such as omega-3 fatty acids, iron, and iodine are crucial for the development of brain cells and the formation of neural connections. A lack of these nutrients can hinder a child's cognitive development, affecting their ability to learn and concentrate. Providing a balanced, nutritious diet from an early age is vital. Foods like fish, eggs, legumes, fruits, and green vegetables contain the nutrients necessary for a child's brain to grow and thrive. Furthermore, eating together as a family offers children the opportunity to learn about different types of food and develop healthy eating habits.

5. Sensory Stimulation

Sensory stimulation is the key to opening a window to the world for a child. Through their five senses, children learn to recognize and understand the environment around them. As children touch various textures, hear different sounds, see a variety of colors, smell diverse scents, and taste different flavors, their brains form new and complex neural connections. Rich sensory stimulation helps children develop cognitive skills such as attention, memory, and problem-solving.

Activities that engage the five senses are essential for a child's brain development. Experiences such as playing with water, sand, or slime, listening to music, reading picture books, and smelling flowers help children develop an awareness of their own bodies and the world around them.

6. Educational Games

Educational games offer an enjoyable way for children to learn and grow. Through play, children can explore the world around them and develop motor, cognitive, and socio-emotional skills. Such play is not only fun but also highly beneficial for brain development; as children play, their brains form new neural connections and strengthen existing ones. Challenging games encourage critical and creative thinking, while collaborative games help children learn to work with others. Educational games are specifically designed to stimulate a child's curiosity and assist them in grasping more complex concepts—for instance, puzzles help children develop problem-solving abilities.

Beyond puzzles, role-playing is another educational activity that enhances cognitive development. Role-playing involves pretending to be specific characters—such as a mother, a father, or a shopkeeper—often using everyday objects found in the child's environment. This supports various developmental aspects, particularly cognitive growth, as children learn to engage with real-world objects before they are capable of abstract thought.

Cognitive development in early childhood aims to foster a child's ability to process what they have learned, generate various alternative solutions to problems, and develop mathematical logic as well as an understanding of space and time. Furthermore, children are trained to sort, categorize, and cultivate the capacity for careful, precise thinking (Suyadi & Dahlia, 2015: 40). Ultimately, these objectives seek to nurture children who possess creativity, a spirit of innovation, and critical thinking skills essential traits for navigating a dynamic world.

CONCLUSION

The research findings indicate that environmental stimulation plays a significant role in supporting the cognitive development of young children aged 1–5 years in the Greater Kolaka region, which encompasses both Kolaka Regency and East Kolaka Regency. Based on an analysis of 20 respondents, 20% fell into the "excellent" category, 50% into the "good" category, and 30% into the "fair" category, with no respondents falling into the "poor" category. These results suggest that, overall, the respondents' assessment of environmental stimulation in supporting children's cognitive development is positive. The developmental aspects examined in this study include a child's ability to respond, imitate, pay attention, adapt, and engage in play with other children. Stimulation through social interaction, an environment that encourages exploration, communication, play activities, and

sensory experiences can be crucial in supporting a child's cognitive development. Therefore, it is essential for parents, families, and caregivers to provide stimulation that is appropriate for the child's developmental stage, in a consistent and sustained manner. Nevertheless, these findings should be interpreted with caution, as the number of respondents is limited and the data presented are insufficient to establish a causal relationship between environmental stimulation and children's cognitive development. Future research should involve a more diverse group of respondents and utilize validated instruments for measuring child development, allowing for a more in-depth examination of the relationship between environmental stimulation and cognitive development.

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