

The Influence of Family Environment and Education on Children's Cognitive Development in Mandailing Natal (Qualitative Field Study)

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ABSTRACT

This study explores how the family environment and educational settings influence the cognitive development of children in Mandailing Natal. Using a qualitative field study approach, data were collected through home and school observations, interviews with parents and teachers, and supporting documentation. The findings show that family factors such as parenting style, communication, and access to learning materials play a major role in shaping children's early thinking, language, and problem-solving skills. Parental education and economic conditions further determine the quality of stimulation children receive at home. Schools also contribute significantly through structured learning, teacher competence, and peer interaction, although disparities in facilities affect learning outcomes. Overall, cognitive development results from the combined effects of family practices and school environments.

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INTRODUCTION

A child's cognitive development is a fundamental aspect of the growth and development process, determining their ability to think, understand, remember, and solve problems (Albay, 2025). From early childhood through school age, cognitive development occurs rapidly and is influenced by various internal and external factors (Albay, 2025). One of the most dominant external factors is the family environment and the education a child receives, both formal and informal (Syaadah et al., 2022). The family environment is often referred to as a child's first and primary environment. The family serves as a place where children gain early experiences, parenting styles, habits, and social interactions that form the foundation of cognitive abilities (Husnia, 2025). The emotional relationship between parents and children, communication patterns, and the level of intellectual stimulation at home significantly influence a child's learning capacity.

In the Mandailing Natal region of North Sumatra, family and community characteristics have their own cultural patterns that influence parenting patterns and interactions between parents and children. Kinship values, customs, parental social roles, and the economic conditions of the community contribute to the diverse educational patterns children receive from an early age (Sukmana et al., 2025). This situation is interesting to

study because these cultural dynamics can influence cognitive development in unique ways compared to other regions.

In addition to the family, educational institutions such as elementary schools (SD) provide children with a variety of new experiences that hone their thinking skills through their curriculum, learning activities, and social interactions (Aryani et al., 2025). Teachers act as facilitators, developing children's cognitive potential through appropriate learning methods (Azizah et al., 2025). However, in reality, not all children have access to quality education. In some villages in Mandailing Natal, limited educational infrastructure, a lack of competent educators, and economic conditions that affect children's learning engagement present unique challenges. This inequality has the potential to significantly impact children's cognitive development.

Issues regarding children's cognitive development are often closely related to parental education levels. Parents with higher education tend to better understand the importance of cognitive stimulation and are therefore able to create a conducive learning environment at home (Alfarizi & Loka, 2025). Conversely, parents with lower levels of education may provide less appropriate stimulation, resulting in slower child development. In addition to parental education, family economic factors are also important. Families with lower-middle incomes sometimes focus more on meeting basic needs, resulting in less attention to their children's education. This situation is often found in rural areas of Mandailing Natal.

The influence of the surrounding social environment is also a variable that cannot be ignored. The play environment, the role of community leaders, and children's interactions with peers contribute to the development of cognitive abilities. Positive social interactions can improve language, reasoning, and problem-solving skills (Khoiriah et al., 2025). Another significant phenomenon in the Mandailing Natal context is the influence of local culture and religious values. These two aspects often influence how families educate their children and determine the boundaries they place on them. In some cases, children receive sufficient cognitive stimulation, but in others, their exploration is limited (Sari & Auliya, 2025).

Previous research has shown that children's cognitive development depends on the intensity of intellectual stimulation they receive. This stimulation can take the form of reading, dialogue, educational play, or direct experiences in the environment (Assyifa et al., 2025). Families that provide space for children to ask questions and explore tend to produce children with better cognitive abilities. Various formal educational factors are also inseparable from this issue. The quality of the curriculum, teaching methods, and teacher competence have been shown to have a direct influence on cognitive achievement. Schools that provide an active learning environment will produce children who are better trained in critical thinking.

However, studies on the influence of the family environment on children's cognitive development in Mandailing Natal are still limited. Most studies focus on general aspects of formal education without considering the in-depth local socio-cultural context. This creates a research gap that needs to be filled. Therefore, field research using a qualitative approach is essential to explore in-depth how families in Mandailing Natal educate their children, how the social environment influences child development, and how educational institutions play their role in developing children's cognitive abilities.

This research seeks to explore the perceptions of parents, teachers, and children regarding the daily educational process that influences cognitive abilities. Furthermore, this study explores parenting practices, learning activities, and the challenges faced by families and schools in supporting child development. Thus, this research not only adds to knowledge about the relationship between the family environment, education, and cognitive development but also provides a concrete picture of the socio-cultural conditions in Mandailing Natal. These findings are expected to inform the formulation of educational policies, parent training, and improving the quality of schools in the region.

METHOD

This research employed a qualitative approach with a field study design (Lexy J. Moleong, 2019). This approach was chosen because it allows for a natural and in-depth capture of the family and educational environment in Mandailing Natal, which cannot be measured numerically. Qualitative research allows researchers to understand the meanings, perceptions, and experiences of subjects holistically (Sugiyono, 2021). The research locations were several villages in Mandailing Natal Regency, purposively selected based on varying socioeconomic conditions and access to education. The study subjects included parents, elementary school teachers, and children aged 6–12. Participants were selected using a purposive sampling technique based on their involvement in their children's educational activities.

Data collection was conducted through direct observation, in-depth interviews, and documentation (Sugiyono, 2021). Observations were used to observe children's learning activities at home and at school (Lubis et al., 2025). In-depth interviews were conducted with parents and teachers to comprehensively explore experiences, parenting styles, and educational strategies implemented. Documentation was used to collect supporting data such as learning notes, activity photos, and school data. Data analysis was conducted using thematic analysis techniques. Interview data was transcribed, coded, and then grouped into several main themes

(Heriyanto & Nurislaminingsih, 2025). Analysis was conducted continuously from the initial data collection through the interpretation process. Data validity was strengthened through source triangulation, technical triangulation, and time triangulation.

Researchers obtained consent from parents and schools before observing the children. All participant identities were disguised to maintain confidentiality. All data was used solely for academic and research purposes.

RESULTS

Research results show that the family environment has a significant influence on children's cognitive development in Mandailing Natal. Parenting styles, communication quality, and the level of learning stimulation provided at home are determining factors (Ramona et al., 2025). Families in the middle to upper economic classes tend to provide more comprehensive learning facilities, such as books, educational toys, and digital access. This is evident in their children's faster ability to grasp basic concepts like numbers, letters, colors, and shapes (Ramona et al., 2025).

Meanwhile, families with lower economic status generally have less ability to provide adequate learning media. Children's learning activities rely more on everyday experiences, such as helping parents in the fields or participating in traditional activities (Fitriya et al., 2025). While these activities have their own educational value, they provide relatively little formal cognitive stimulation that children need.

Research also finds that parents' education influences how they interact with their children. Parents with higher education tend to engage their children in more frequent dialogue, telling stories, and providing explanations for their questions (Hasiana, 2024). These activities play a crucial role in developing children's language and logic skills. Conversely, parents with lower education tend to provide one-way instructions and focus more on children's obedience. This communication pattern provides less space for children to think critically and develop their verbal skills.

In the Mandailing cultural context, traditional values such as respect for parents and discipline play a crucial role in children's education. Children are taught to obey and maintain good manners, but this sometimes reduces opportunities for children to express themselves freely and ask questions. Observations show that some children appear less confident in asking questions of teachers because they are accustomed to communication patterns that place adults as the ultimate authority. This impacts cognitive development, especially in the areas of analysis and creativity.

The mother's role in providing stimulation at home is very dominant. Mothers who spend more time with their children are able to provide special attention, such as reading stories, teaching counting, or accompanying children in educational play (Ramona et al., 2025). Children of housewives tend to get more verbal stimulation than children of mothers who work all day.

On the other hand, some working mothers still strive to provide cognitive stimulation through a more structured daily routine. One mother stated that despite working, she still spends evenings accompanying her child in reading or writing (Ramona et al., 2025). Another factor identified is the father's role in their child's education. Fathers who actively encourage learning can increase children's motivation to understand school lessons. Unfortunately, most fathers in rural areas are more focused on work, so their involvement in their children's education is still limited (Ramona et al., 2025).

In terms of formal education, schools are where children gain more structured cognitive experiences. Teachers play a role in providing learning materials, thinking exercises, and educational play activities that support children's development (Muslimin et al., 2025). However, research has found an imbalance between schools with adequate resources and those with inadequate facilities. Schools equipped with teaching aids and learning media tend to produce children with more developed thinking skills.

Conversely, schools with minimal facilities rely on lectures and manual exercises. This results in slower development of children's cognitive abilities, particularly in creative and problem-solving aspects. Teachers are a key factor in cognitive stimulation. Active teachers who use a variety of learning methods can increase children's enthusiasm for learning. For example, teachers who use counting games, educational songs, and visual media can help children grasp concepts more quickly.

However, some teachers still rely on lectures due to a lack of training. Children appear passive and simply follow instructions without being encouraged to explore or ask questions. Social interactions at school also significantly impact cognitive development. Children with many friends find it easier to develop language, negotiation, and logic skills during play. Conversely, shy or self-confident children often experience obstacles in cognitive development due to a lack of social interactions that stimulate conversation and collaboration.

Other findings indicate that the role of community leaders such as religious teachers (ustadz), Quranic teachers, and traditional leaders also influences children's cognitive development through religious teaching and social conditioning. Moral values and memorizing prayers in some cases contribute to children's memory.

However, the focus of religious teaching, which places a greater emphasis on memorization, sometimes hinders critical thinking skills. This demonstrates the need for a balance between moral education and cognitive stimulation. In some families, children are given the opportunity to participate in economic activities such as helping in the garden or selling small goods. These activities provide valuable cognitive experiences in numeracy, organization, and understanding real-world situations.

However, if these activities take up too much time, they can reduce children's opportunities to learn and develop their academic abilities. The influence of technology has also emerged as a significant factor. Children from families with access to smartphones and the internet demonstrate more developed visual and language skills due to exposure to educational content. However, the risk of excessive use has also been identified in some cases.

Research shows that children who are given opportunities to discuss, tell stories, and play creatively at home have better cognitive development than children whose activities are primarily directed at routine physical tasks. Overall, the family environment and formal education complement each other in shaping children's cognitive development. The active role of parents and teachers is a key factor in determining the quality of this development.

Therefore, family- and school-based educational interventions are crucial for improving children's cognitive development in Mandailing Natal, particularly through improved communication quality, teaching methods, and a more stimulating learning environment.

CONCLUSION

This study concludes that children's cognitive development in Mandailing Natal is strongly influenced by two main factors: the family environment and formal education. The family serves as the initial foundation, providing parenting, communication, and intellectual stimulation. Parental education, economic conditions, and local cultural values determine the quality of this stimulation. Meanwhile, schools provide structured academic stimulation through the role of teachers, curriculum, and learning facilities. Inequality in the quality of education in schools impacts differences in cognitive development among children. Overall, positive synergy between families and schools is needed to optimize children's cognitive development in Mandailing Natal.

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