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SIGAP Home-Based Program to Foster Logical Thinking in Toddlers: A Case Study Approach

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ABSTRACT
Developing logical thinking at an early age is a crucial foundation for children's cognitive growth. This study explores the implementation of the SIGAP Tanoto Foundation Home-Based Program in fostering logical thinking among children aged 2–3 years, as well as the challenges encountered during its execution. Employing a qualitative case study approach, the research was conducted at RAS Nusa Indah in Sumber Sari Village. Data were collected through unstructured interviews, participant observation, and documentation. The findings reveal that the program was implemented in alignment with the learning modules, utilizing both existing and self-made educational tools. However, several challenges emerged, categorized as internal—such as inconsistent attendance, incomplete materials, and children's physical and emotional conditions—and external, including facilitators' limited availability, poor road access, and low community engagement. The study underscores the potential of structured home-based programs to enhance early logical reasoning, while also highlighting the importance of addressing contextual barriers to optimize program delivery.

Keywords: SIGAP Program, Logical Thinking, Early Childhood, Tanoto Foundation, Home-Based Learning

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INTRODUCTION

The Tanoto Foundation has implemented a variety of programs aimed at improving the quality of education and the standard of living, one of which is early childhood parenting support under the name SIGAP (Siapkan Generasi Anak Berprestasi) (Septiani et al., 2025). This program offers three core services: KBB (Joint Play Activities), SI (Individual Stimulation), and Thematic Learning. The rationale behind the establishment of the SIGAP program lies in the understanding that investment in early childhood development occurs only once in a human's lifetime and that early investment in child development and education holds great value for both the future of the individual and the nation (Haryanto et al., 2023; Muris et al., 2023).

The development of various aspects in early childhood can be supported through education (Nurfahma et al., 2024; Putri et al., 2025; Rohali & Sitorus, 2025). Ki Hajar Dewantara, a prominent Indonesian education reformer, emphasized that early childhood is a

sensitive and critical period in human development. During this period, a child's soul is open to experiences, and every encounter becomes foundational and enduring in the child's psyche (Ainia, 2020). Therefore, education during this sensitive stage should serve to enrich the soul rather than alter its core. Dewantara further stated that early childhood education should be liberating, as long as it does not pose any threat to the child's well-being (Purwaningsih et al., 2022).

One of the essential developmental domains that requires early stimulation is cognitive development. According to Piaget (1976), cognitive development is defined as an individual's ability to perceive, remember, and reason imaginatively. Cognitive growth includes not only mathematical and scientific thinking but also problem-solving abilities (Veronica, 2018). In this study, the focus of cognitive development lies in the domain of logical thinking.

Logical thinking refers to the ability to identify differences, classify objects, recognize patterns, take initiative, plan actions, and understand cause-effect relationships (Isnariyati et al., 2025; Laela et al., 2023; Nur Fadilah et al., 2025; Rahmadhani & Surbakti, 2022). These skills are reflected in children's basic competencies such as identifying objects in their environment (e.g., names, colors, shapes, sizes, patterns, characteristics, sounds, textures, functions, and other attributes), and expressing what they know about these objects through creative works (N. I. Purnamasari & Yusma, 2021). Several methods have been identified as effective for improving logical thinking in early childhood, including play-based learning, storytelling, and experimentation (Khadijah, 2016; Warmansyah et al., 2023).

According to Armawati et al., (2025), obstacles that hinder children's optimal information processing are often referred to as learning difficulties. These difficulties typically arise from two main sources: internal factors, such as interest, motivation, attitude, and physical or mental health; and external factors, including the family environment, societal environment, and school environment.

Based on a preliminary data collection conducted on Monday, October 23, 2023, the researcher conducted informal interviews with facilitators of the Bintang Terang Group (Bright Star Group) for children aged 2–3, as well as with facilitators of the Individual Stimulation (SI) service. Further observations were made during an internship placement at SIGAP Children's Home (Rumah Anak SIGAP) from June to December 2023. During these observations, the researcher noted that the children's cognitive abilities particularly their logical thinking—were not yet optimal.

This issue became evident during learning sessions, where several children were still unable to identify parts of facial features, animals, understand the concept of size, interpret numerical symbols, recognize body parts, or identify geometric shapes. For instance, during the initial observations, some children demonstrated difficulty in identifying images such as animals or fruits, naming parts of the body through picture media, recognizing patterns, and correctly understanding numerical symbols and size concepts.

Considering the significance of early logical thinking development, it is essential that learning processes for young children are designed through play and tailored to their developmental stages (Poppyariyana & Munajat, 2020). Accordingly, this study aims to explore how logical thinking can be enhanced through activities embedded in the SIGAP Home-Based Program. As Fadlilah (2022), notes, educational media are tools or

intermediaries that help deliver learning materials effectively, making them more accessible, understandable, and impactful for learners.

The development of logical thinking in young children can be facilitated through innovative and engaging activities, such as those implemented in the SIGAP Children's Home program initiated by the Tanoto Foundation. Therefore, the present study seeks to describe the implementation of the SIGAP Home-Based Program by the Tanoto Foundation in fostering logical thinking skills in 2–3-year-old children at RAS Nusa Indah, Sumber Sari Village.

RESEARCH METHODOLOGY

The research method employed in this study is a qualitative approach, specifically utilizing a case study design. The subjects of this research are the children and facilitators at RAS Nusa Indah, located in Sumber Sari Village. The object of this study is the implementation of the Rumah Anak SIGAP program by the Tanoto Foundation in fostering logical thinking skills in children aged 2–3 years.

The data and data sources used in this study comprise both primary and secondary data. The primary data consist of first-hand information obtained directly from key informants and respondents, which are not in the form of pre-existing documents or files. These include direct interactions and firsthand accounts provided by those involved in the program. The secondary data refer to documentary evidence that illustrates the general condition of the Rumah Anak SIGAP, such as the institutional profile of RAS, data on student enrollment, and other relevant documentation.

The data collection techniques used in this research include observation, unstructured interviews, and documentation. Furthermore, data analysis was conducted through the following procedures: data collection, data reduction, data presentation, and conclusion drawing. This analytical process aims to comprehensively interpret the implementation of the Rumah Anak SIGAP Tanoto Foundation program in developing logical thinking abilities among children aged 2–3 years at RAS Nusa Indah in Sumber Sari Village.

RESULTS AND DISCUSSION

Results

This study presents the implementation of the Rumah Anak SIGAP Program by the Tanoto Foundation in developing logical thinking skills among children at Rumah Anak SIGAP Nusa Indah, located in Sumber Sari Village. Additionally, it describes the challenges encountered during the program's implementation.

The data collection techniques employed in this research include observation, interviews, and documentation. The study began with a preliminary observation conducted on July 24, 2023, during the author's internship at Rumah Anak SIGAP Nusa Indah, and was followed by the main research phase from March 18 to May 11, 2024.

The findings indicate that the facilitators implemented the Rumah Anak SIGAP Program through a series of cognitive activities, particularly focusing on logical thinking skills. These activities utilized educational play tools provided by the Tanoto Foundation, as well as additional materials created from recycled items to enrich the services offered to children.

Implementation of the Rumah Anak SIGAP Tanoto Foundation Program in Developing Logical Thinking Skills in Children Aged 2–3 Years at Rumah Anak SIGAP Nusa Indah, Sumber Sari Village

Based on an interview conducted with Ms. SE, the individual stimulation facilitator, regarding the implementation of the Rumah Anak SIGAP Program in developing logical thinking skills in children aged 2–3 years, she explained:

> *"I am responsible for individual stimulation activities, which are carried out one-on-one with the parents. For implementation, I use learning modules provided by the Tanoto Foundation, especially those focusing on cognitive aspects, including logical thinking. These modules include specific activities and educational tools. If such tools are unavailable, I create them myself, adapting to the module's themes."*

In agreement with this statement, Ms. W, a regular facilitator, stated:

> *"In the Group Play Sessions (KBB), we focus on interactive play to help children develop social skills, as they are previously accustomed to learning one-on-one with the facilitator and their mothers in the individual stimulation class. I use learning modules from the Tanoto Foundation to guide the service activities. These modules include activities and sample tools. If the suggested tools are unavailable, I either make them myself or borrow them from the school where I teach."*

Aligned with the facilitators' statements, observations made during the implementation of the Rumah Anak SIGAP Program revealed the following:

Individual Stimulation

The facilitator of the individual stimulation class (SE, S.Pd) designed activities based on the learning modules provided, aligning with the daily themes and topics. For example, on Monday, April 1, 2024, the activities focused on promoting motor and cognitive development through number recognition, pattern identification, and bead threading. The sessions were conducted one-on-one between the facilitator, the child, and the parent. Prior to the activities, the facilitator explained the procedures to the child. During the sessions, children engaged in tasks such as recognizing numbers using a cotton bud tree, threading beads, and identifying letters by circling them.

After each activity, the facilitator evaluated the session by discussing it with the parent, highlighting the benefits and outcomes of the activity. Furthermore, the child's development was documented in the Tanoto Foundation's monthly progress reports.

Field notes recorded by the researcher include the following observations:

> *"In the number recognition game using the counting tree, the facilitator first explained the steps involved. The tree had holes to be filled with cotton buds. Once the explanation was complete, the child began the activity."*

> *"The facilitator invited the child to create beaded necklaces and bracelets. Before starting, the facilitator explained each step in detail. The child was accompanied by the parent and the facilitator throughout the activity."*

Figure 1. Individual stimulation activities to recognize numbers and letters

These findings suggest that the facilitators implemented the program systematically and adaptively, adhering to the provided modules while demonstrating creativity in creating or sourcing educational tools. The approach emphasizes both the instructional process and meaningful engagement between children, parents, and facilitators to support the development of logical thinking skills in early childhood.

Group Play Activities (Kelompok Bermain Bersama – KBB)

In addition to the Individual Stimulation class, the Rumah Anak SIGAP Program of the Tanoto Foundation also offers a Group Play class (Kelompok Bermain Bersama – KBB) facilitated by regular facilitators. Unlike the Individual Stimulation class, the KBB sessions are conducted in group settings with children of the same age category. Facilitators design and implement activities based on the learning modules provided by the Tanoto Foundation, ensuring alignment with the targeted developmental goals.

This was confirmed through an interview with Ms. W, a regular facilitator, who stated:

> *"For the implementation of KBB, we emphasize group play activities to encourage children to socialize with their peers, as previously, in individual stimulation sessions, children only interacted with the facilitator and their mothers. In these group sessions, we focus on recognizing numbers, colors, body parts, and shapes together with other children. These sessions are conducted a few times a month on a flexible schedule, based on mutually agreed dates with the parents."*

During the KBB sessions, the regular facilitator designs and prepares a variety of activities in accordance with the learning modules, particularly those aimed at enhancing children's fine motor and cognitive skills. Educational tools and materials are selected or created based on the themes and objectives outlined in the module.

During implementation, the facilitator actively involves both the children and their parents in collaborative learning experiences. Activities include writing, coloring, and shape-matching using building blocks. At the end of each session, the facilitator conducts an evaluation—primarily engaging the parents—to explain the learning process and benefits of the day's activities. Additionally, children's developmental progress is documented and reported monthly to the Tanoto Foundation.

Figure 2. Group Play Activities (Kelompok Bermain Bersama – KBB)

These group-based activities complement the individualized sessions by promoting social interaction, cooperative learning, and practical application of logical thinking concepts through structured and play-based methods. The program's integration of parent involvement further enhances the quality and continuity of early childhood cognitive development outside formal classroom settings.

Thematic Activities

In thematic activities, parents become the central focus of the facilitator's educational efforts. Prior to conducting the thematic session, the facilitator engages in careful planning to determine the materials to be delivered to parents. When necessary, the facilitator also creates mapping tools to structure the delivery of content. These materials are derived from the learning modules developed by the Tanoto Foundation.

During the thematic class, the regular facilitator presents content related to topics such as child health, development, and other relevant issues. Upon completion of the session, time is allocated for an interactive question-and-answer session, allowing parents—particularly mothers—to ask questions regarding their child's development. This approach was confirmed during an interview with a regular facilitator, who stated:

> *"Apart from the Group Play class (KBB), we also conduct Thematic Classes which focus on delivering materials to parents regarding child development, child health, and so on—based on the pre-existing learning modules. Furthermore, parents are given the opportunity to consult and clarify if there are things they do not fully understand."*

Figure 3. Thematic Activity Session

Based on the above explanation, it can be analyzed that the implementation of the Rumah Anak SIGAP Tanoto Foundation program in fostering logical thinking among children is carried out in a flexible yet structured manner, adhering closely to the existing learning modules. Facilitators take the initiative to prepare educational play materials

independently when such materials are unavailable from the central office, utilizing local tools and resources while referencing social media for ideas—as long as they align with the Tanoto Foundation's curriculum.

During the learning process, facilitators provide structured guidance, never allowing children to explore activities without direction. Instead, they offer clear instructions and demonstrations, ensuring that each activity contributes meaningfully to the cognitive development of children, particularly in enhancing logical thinking abilities among toddlers aged 2–3 years at Rumah Anak SIGAP Tanoto Foundation, Sumbersari Village.

Challenges in Implementing the Rumah Anak SIGAP Tanoto Foundation Program in Enhancing Logical Thinking in Children Aged 2–3 Years at RAS Nusa Indah, Sumbersari Village

As with most educational interventions, the implementation of the Rumah Anak SIGAP program encounters several challenges. These barriers represent factors that can either hinder or slow the progress of learning activities and are typically categorized into internal factors (originating from facilitators) and external factors (arising from parents and children). In such contexts, the facilitator's role becomes even more critical in mitigating disruptions and sustaining program efficacy.

An interview with both a regular facilitator and an individual stimulation facilitator revealed the following insights:

> *"Challenges definitely exist, both within and outside the RAS environment. Internally, issues such as the physical condition of children and inconsistent attendance often disrupt the pre-planned schedules. We also face shortages of learning tools and raw materials needed for educational games, which makes it harder to implement activities aligned with the modules. However, we try to overcome these constraints as best as we can. Externally, environmental factors such as poor road infrastructure and unpaved, muddy access—especially during the rainy season—make it difficult for parents to reach the RAS center. Additionally, since the RAS program is still relatively new, public awareness remains low, and some community members still question the purpose and benefits of the program, leading to lower participation."*

> *"From my experience as a facilitator, one of the main challenges is the lack of adequate play materials. Due to budget limitations from the central office, we often face shortages in the tools and equipment required for effective facilitation. Another challenge is time management—I also teach at another institution, and sometimes this causes schedule conflicts. Nevertheless, I try to manage my time by negotiating alternative schedules with parents to continue the service delivery."*

These findings underscore the importance of both logistical preparedness and ongoing community engagement in the successful implementation of early childhood development programs. Addressing these challenges requires strategic support, both structurally and administratively, to ensure that learning objectives, particularly in fostering logical thinking in young children, are consistently achieved.

Discussion

The SIGAP Children's Home program, initiated by Tanoto Foundation, represents a structured effort to enhance logical thinking in children aged 2–3 years. Implemented in RAS Nusa Indah Village, Sumber Sari, the program's multifaceted approach, encompassing activities such as Group Play Together (KBB), Individual Stimulation (SI), and Thematic Activities, provides a comprehensive framework aimed at supporting cognitive, socio-emotional, and communication development in early childhood. This holistic approach ensures that the children's growth is nurtured through meaningful interactions involving both facilitators and parents, particularly mothers.

The Group Play Together (KBB) activity has proven to be an effective means of fostering social skills while simultaneously promoting cognitive exploration through peer interactions. As highlighted by Purnamasari et al. (2022), play is a vital learning tool for young children, facilitating the acquisition of social norms, emotional regulation, and cognitive processes such as problem-solving and cooperation. Play serves not only as a form of recreation but also as a pedagogical tool that allows children to internalize logical concepts through practical, hands-on experiences.

Furthermore, the Individual Stimulation (SI) approach offers a more personalized and focused interaction between the facilitator, the child, and the parent—particularly the mother. This form of stimulation encourages close emotional engagement, which, as noted by Faruqi (2021), enhances the effectiveness of early interventions. By maintaining a dialogic communication style, this activity creates a space where both children and parents can address challenges in learning and daily life. It underscores the importance of parental involvement in supporting a child's developmental milestones.

Thematic Activities, which primarily engage parents, serve as a critical platform for disseminating knowledge about child development, health, and parenting strategies. According to Haryadi et al. (2021), these activities act as a vehicle for transferring important information to parents, thereby strengthening their capacity to support their child's growth at home. The thematic approach ensures that parents are not only informed but are also empowered to become active participants in the child's educational journey.

Observational data from the study indicates that the integration of these activities significantly contributed to the development of logical thinking in children, as outlined in the Ministry of Education and Culture Regulation No. 137 of 2014 (Fadlillah, 2016). Children participating in the program demonstrated progress in recognizing body parts, understanding concepts of size, geometry, and patterns, as well as identifying numbers and letters. This advancement reflects the findings of Kurniasari et al., (2018), who emphasized the importance of using play and relevant educational media to enhance cognitive development. The findings suggest that the diverse range of learning methods—such as storytelling, play, and experimentation—combined with age-appropriate educational tools, plays a pivotal role in supporting children's logical thinking abilities.

However, despite the positive outcomes, several internal and external challenges hinder the program's full potential. Internal obstacles include irregular attendance of children and parents, inadequate educational materials and toys, and issues related to the physical and emotional states of the children, which can fluctuate. These factors can impact the

consistency of engagement and the quality of stimulation provided. On the external front, challenges arise from logistical and infrastructural limitations, such as poor road conditions during rainy weather, which make it difficult for facilitators to reach the program site. Additionally, the facilitators' responsibilities in other teaching locations limit the amount of time they can dedicate to the program. Moreover, there is a lack of awareness in the wider community about the program, leading to lower participation and limited reach.

According to Yuberta et al., (2022), learning difficulties in young children may stem from both internal and external factors. Internal factors include low motivation, lack of interest, and suboptimal physical and psychological conditions. Meanwhile, external factors are related to environmental conditions, such as family dynamics, community support, and the educational setting. Based on the perspective of Armiyansyah et al., (2021), learning barriers can be categorized into three main types: ontogenetic, didactic, and epistemological. In the context of the SIGAP program, these obstacles are reflected in children's limited mental readiness, ineffective instructional strategies, and insufficient prior knowledge, all of which collectively hinder the optimal development of logical thinking skills.

Therefore, addressing these challenges requires both managerial and technical improvements. It is crucial to enhance facilitator capacity, ensure the availability of appropriate materials, and implement more effective communication strategies to raise awareness within the community. Furthermore, sustained parental involvement and empowerment must remain a cornerstone of the program to ensure the continuity of cognitive stimulation and to address the evolving developmental needs of the children.

CONCLUSION

The implementation of the Rumah Anak SIGAP program by the Tanoto Foundation at Rumah Anak SIGAP Nusa Indah in Sumber Sari Village for children aged 2–3 years is carried out through structured activities based on a learning module. These activities utilize both available educational toys and facilitator-made materials crafted from locally sourced resources. The development of logical thinking in children aged 2–3 years was evident through their ability to identify body parts, understand size concepts, recognize shapes and geometric patterns, and begin to identify numbers, letters, animals, fruits, and colors accurately. However, the implementation of the program faces both internal and external challenges. Internal barriers include irregular attendance of children and parents, limited availability of educational tools and materials, as well as the fluctuating physical condition and mood of the children. External obstacles stem from the limited availability of regular facilitators due to their teaching responsibilities elsewhere, poor road conditions during the rainy season, and a general lack of public awareness, which results in low community engagement with the program.

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