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Learning Assistance as a Solution to Improve Literacy and Numeracy Skills for Primary School Students

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Abstract

Many students face challenges in mastering reading, writing, and arithmetic due to the limitations of preschool education, low learning support from families, and the lack of available learning resources. In addition to the above reasons, it cannot be denied that the lack of interest and motivation to learn is also one of the reasons why many students have not been able to master these basic numeracy and literacy skills. Therefore, this community service activity aims to improve basic reading, writing, and counting skills in students from grade 1 to 3 of SDN X Ciherang. This mentoring programme is designed as a form of preparation for the calistung competition through a fun learning approach and focuses on improving basic academic skills. The methods used in this activity are quantitative and qualitative methods, through the implementation of pre-test and post-test that have met the standards of the Ministry of Culture, Research and Technology, observation of student learning behaviour, and short interviews. Mentoring activities were carried out for approximately three weeks with a frequency of 2-3 times per week. The evaluation results showed a significant improvement in students' abilities in reading, writing, and counting after being given intensive guidance. In addition to improving academic skills, students also showed a more positive attitude towards learning. This activity shows that tutoring designed according to the needs of children and the local context can improve students' readiness to participate in competitions, as well as have a positive impact on their motivation and confidence in learning.

Keywords: *academic skills development, basic literacy, calistung, learning assistance, primary school students*

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Introduction

Basic reading, writing, and arithmetic skills (commonly known as *calistung* from Indonesian terms *"baca, tulis, dan berhitung"*) serve as the fundamental skills determining a child's success in subsequent educational stages. These skills function as the cornerstone of academic development, as children who master them demonstrate greater learning readiness and adaptability to increasingly complex educational demands. Thus, *calistung* proficiency is not only an indicator of school readiness but also a determinant of long-term learning quality (Asiah, 2018).

Effective learning processes depend not only on teaching methods but also on the quality of social interaction between learners and educators. Meaningful learning occurs through interaction between children and more experienced individuals, where the support provided enables children to accomplish tasks beyond their current capabilities (Samongilailai & Damanik, 2025). A responsive and supportive learning environment has been shown to enhance language development, reading skills, and critical thinking abilities in children.

In addition to social factors, the characteristics of brain development also influence learning effectiveness. Amalina (2020) emphasized that children learn optimally through enjoyable and exploratory play activities, as such experiences stimulate curiosity while strengthening memory retention. Therefore, play-based learning approaches are considered more suitable for early childhood education, particularly in fostering cognitive and fine motor skills that underpin *calistung* abilities.

In the context of 21st-century education, foundational literacy and numeracy skills are not only academic competencies but also essential life skills necessary for adapting to social and technological change. Ongardwanich et al. (2015) stated that literacy and numeracy serve as crucial tools that enable individuals to adapt, make decisions, and solve everyday problems. Consequently, mastering *calistung* represents a long-term investment that supports both academic achievement and the development of independent learning in children.

Based on observations and interviews with the school, it was found that most lower-grade students (Grades 1 to 3) at SDN X Ciherang continue to struggle with reading, writing, and arithmetic. This issue stems primarily from students' limited learning readiness, as many have

not attended early childhood education programs such as preschool or kindergarten. As a result, they enter elementary school without adequate literacy and numeracy foundations.

Furthermore, the continued use of conventional teaching methods presents another barrier. Classroom activities often emphasize rote memorization and repetitive exercises rather than engaging, contextual, or play-based learning. This approach causes students to lose interest quickly and struggle to grasp basic *calistung* concepts. Castillo (2024) warned that implementing academic instruction that does not align with children's developmental stages may lead to stress, anxiety, and behavioral issues (Castillo, 2024). Similarly, findings from Sikma et al. (2024) revealed that premature academic pressure through early *calistung* instruction can hinder emotional development and learning motivation (Sikma et al., 2024).

The community's limited awareness of the importance of literacy and numeracy further exacerbates the situation. These fundamental skills play a vital role in social participation and readiness to face life challenges, including financial management and basic problem-solving (Dianastiti et al., 2024). However, in many communities, attention to strengthening these basic skills remains low, resulting in insufficient support for children's learning processes. The situation at SDN X Ciherang illustrates that several students still struggle to learn independently and face difficulties preparing for literacy and numeracy competitions at the district level. This underscores the urgency of providing intensive assistance programs that can comprehensively improve students' foundational skills.

To address these issues, the implementation team organized a learning assistance program aimed at enhancing *calistung* skills among lower-grade students at SDN X Ciherang. The program sought to improve students' literacy and numeracy abilities while preparing them for participation in district-level competitions. The approach adopted a play-based learning model, emphasizing enjoyable, interactive, and developmentally appropriate activities.

Supportive tutoring approaches help students overcome academic barriers while enhancing learning motivation (Jauzarafa et al., 2024). Guided by this principle, the program was designed with four main strategies: 1) Individual and small-group tutoring for students with specific difficulties in reading, writing, and arithmetic; 2) Implementation of educational games, such as word, number, and picture-based activities that stimulate cognitive

development; 3) Active involvement of teachers and parents to ensure consistency between home and school learning environments; and 4) Regular progress evaluations to assess program effectiveness and student improvement.

The activities were carried out collaboratively with classroom teachers and school staff to ensure program sustainability. Through this initiative, students are expected to demonstrate significant improvement in their literacy and numeracy skills, while teachers gain new insights into implementing creative and interactive teaching methods. Furthermore, parents are encouraged to understand the importance of supporting learning at home, thereby fostering a positive learning environment built on strong collaboration between families and schools.

Methods

This section describes the methods used in implementing the community engagement program conducted by the community service team from the Faculty of Psychology and the Faculty of Economics and Business, Universitas Tarumanagara, in collaboration with SDN X Ciherang as the partner institution. The primary target of this initiative was students in Grades 1 to 3 of elementary school, with the main objective of strengthening foundational reading, writing, and arithmetic (*calistung*) skills as preparation for school-level literacy and numeracy competitions. The program was carried out over a three-week period, with learning sessions held two to three times per week according to a mutually agreed schedule with the school administration.

A mixed-methods design was employed, integrating both quantitative and qualitative approaches to obtain a comprehensive understanding of the program's processes and outcomes. The mixed-methods approach enables researchers to combine numerical and narrative data to produce a more holistic interpretation of the studied phenomenon (Cresswell & Clark, 2017). In this context, quantitative methods were used to measure improvements in students' *calistung* abilities, while qualitative techniques were applied to explore behavioral changes, motivation, and learning experiences throughout the mentoring process.

The implementation of the program consisted of four main stages. The first stage involved participant selection, conducted by administering basic assessments in *Bahasa Indonesia* and

mathematics to identify students' initial ability levels. Input from classroom teachers was also considered to determine which students required more intensive support. The second stage consisted of a pre-test aimed at assessing students' baseline literacy and numeracy competencies prior to the intervention. The assessment covered three domains—reading, writing, and arithmetic. Writing ability was evaluated based on handwriting neatness, sentence structure, and idea development, while arithmetic skills were assessed through accuracy, problem-solving speed, and understanding of numerical concepts.

The third stage focused on the implementation of learning assistance, which took place after regular school hours to avoid interfering with formal academic activities. The program adopted a play-based learning approach**,** integrating various interactive media and engaging activities such as educational games, counting songs, and contextual exercises related to students' daily experiences. This approach aimed to create an enjoyable and meaningful learning atmosphere, enhance student engagement, and facilitate conceptual understanding through hands-on experiences.

The final stage was evaluation, which included a post-test and reflective interviews with students and supervising teachers. The post-test utilized equivalent items to those used in the pre-test to ensure measurement consistency and to objectively assess learning improvements. Short semi-structured interviews were also conducted to collect qualitative insights regarding changes in students' attitudes, enthusiasm, and perceptions of the mentoring activities.

The evaluation framework employed a quantitative scoring rubric developed based on the literacy and numeracy indicators established by the Ministry of Education, Culture, Research, and Technology (*Kemendikbud*). Each domain was assessed through three indicators: reading (fluency, comprehension, and vocabulary mastery), writing (handwriting neatness, sentence structure, and idea development), and arithmetic (accuracy, problem-solving speed, and conceptual understanding). Each indicator was rated on a four-point ordinal scale, ranging from 1 (Poor), 2 (Fair), 3 (Good), to 4 (Excellent). This rating system enabled the quantitative measurement of students' progress and facilitated comparative data analysis between pre-test and post-test results.

This systematic and integrated approach provided a comprehensive evaluation of the program's effectiveness, both in terms of academic improvement and the qualitative learning experiences gained by the students throughout the community engagement activities. The stages of the literacy and numeracy assistance program are illustrated in Figure 1.

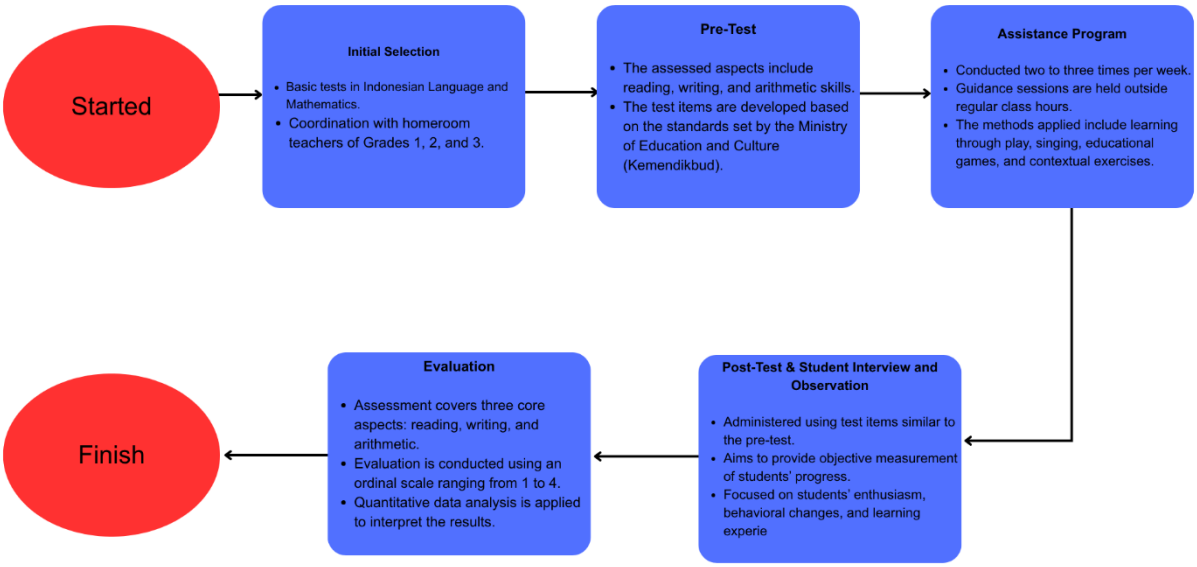

Fig. 1. Flowchart of the implementation of the literacy and numeracy assistance program

The figure illustrates the stages of the literacy and numeracy assistance program conducted at SDN X Ciherang. The process began with initial selection, which involved basic screening in Indonesian language and mathematics, and coordination with homeroom teachers of Grades 1, 2, and 3. Following this stage, a pre-test was administered to assess students' baseline abilities in reading, writing, and arithmetic, based on the standards set by the Ministry of Education and Culture (*Kemdikbud*).

The assistance program was carried out three times per week, focusing on guided sessions that incorporated engaging learning media, contextual activities, and games designed to strengthen students' foundational literacy and numeracy skills. Subsequently, an evaluation was conducted to review students' progress in the three core aspects of reading, writing, and numeracy. Finally, a post-test and student interviews were performed to measure improvement, capture students' learning experiences, and identify behavioral changes during the program.

The assessment involved 8 students from Grades 1 to 3, who were selected based on teachers' recommendations and initial screening results. These participants were actively engaged throughout the sessions and demonstrated noticeable development in confidence and basic academic performance.

Results and Discussions

Results

After conducting pre-tests and post-tests on eight students who participated in the literacy mentoring program, the data were analysed using SPSS. The results are presented in Table 1 and Table 2 below.

Table 1 presents the descriptive statistics of students' pre-test and post-test scores. As shown, the mean pre-test score was 24.5000, while the mean post-test score was 28.7500. This indicates an improvement in students' average performance after participating in the mentoring program.

Table 1. Results of processing the average pre-test and post-test scores (literacy)

Paired samples statistics

Pair 1	Mean	N	Std. Deviation	Std. Error Mean
TOTAL_PRE	24.5000	8	3.11677	1.10195
TOTAL_POST	28.7500	8	1.98206	0.70076

The results in Table 1 show a clear increase in the mean scores from pre-test to post-test, suggesting that students' literacy performance improved after the intervention. However, to determine whether this difference was statistically significant, a paired-samples t-test was conducted.

Table 2 presents the results of the paired-samples t-test comparing pre-test and post-test scores. The mean difference between the two tests was -4.25000, with a standard deviation of 3.01188. The t-value was -3.991, and the p-value was 0.005, which is lower than the 0.05 significance level.

Table 2. Results of pre-test and post-test data analysis (*calistung*) using paired simple test SPSS

Paired Differences	Mean	Std. Deviation	Std. Error Mean	95% CI Lower	t	df	Sig. (2-tailed)
Total Pre-test - Total Post-test	-4.25000	3.01188	1.06486	-6.76800	-1.73200	-3.991	7

The results ($p = 0.005 < 0.05$) show a statistically significant increase in students' literacy scores after the tutoring sessions. This indicates that literacy tutoring (reading, writing, and arithmetic) has a meaningful impact on students' understanding and performance. Overall, these findings indicate that the literacy tutoring program effectively improves students' basic academic skills, as evidenced by descriptive and inferential analyses.

Fig. 2. Pre-test activities and literacy learning

Figure 2 shows pre-test and literacy learning activities conducted with students in grades 1 to 3 to assess their ability to understand lessons, including the use of mathematical language and other relevant skills. The test questions were designed in accordance with the standards set by the Ministry of Education and Culture.

Figure 3 shows post-test activities and literacy learning to measure or determine the extent of students' understanding after participating in learning assistance, and to determine whether the learning methods we use are able to keep students engaged in learning.

Fig. 3. Post-test activities and *calistung* learning

Discussions

The *calistung* assistance program at SDN X Ciherang demonstrated a clear improvement in students' basic reading, writing, and arithmetic skills among first- to third-grade students. The quantitative analysis showed a significant increase in the average score from the pre-test ($M = 24.50$) to the post-test ($M = 28.75$), with a p-value of 0.005 ($p < 0.05$). This indicates that the mentoring program had a statistically significant positive impact on student learning outcomes. These findings confirm that structured mentoring with developmentally appropriate strategies can effectively enhance students' foundational literacy and numeracy abilities.

In addition to the quantitative results, qualitative findings from observations and interviews revealed several key factors that influenced students' literacy skills at SDN X Ciherang, as follows:

1. Not attending preschool: Most students had not attended early childhood education or kindergarten, leading to a lack of readiness to learn, particularly in recognizing letters and numbers.
2. Lack of parental support: Discussions with homeroom teachers indicated that many parents were not actively involved in their children's learning at home due to time constraints or limited understanding of the importance of literacy.
3. Conventional learning methods: Teachers tended to use traditional classroom approaches that lacked play and visualization elements, making students easily lose interest during lessons.

From the perspective of cognitive development theory, these results align with the Zone of Proximal Development (ZPD) concept proposed by Habsy et al. (2024), which suggests that children can complete tasks beyond their current abilities with the support of more knowledgeable individuals, such as teachers or mentors. The learning through play approach used in this program also reflects Piaget's (1952) theory of cognitive development, in which children in the pre-operational stage (ages 2–7) learn more effectively through concrete, enjoyable experiences (Piaget, 1952, as cited in Haoyue, 2024). Furthermore, this enjoyable and interactive learning approach helps reduce academic pressure—a common source of stress among young learners (Castillo, 2024; Wulansuci, 2021). The observed increase in students' enthusiasm and confidence during sessions further supports this theoretical framework.

A comparative analysis can also be made with the community service project by Jauzarafa et al. (2024), titled "Improving *Calistung* Comprehension Skills in Children at the Ranggi Literacy House." Both programs successfully improved literacy outcomes but applied different methodological designs. The SDN X Ciherang program employed a mixed-method approach supported by quantitative testing, whereas Ranggi Literacy House utilized a qualitative and descriptive approach. The learning media also differed: SDN X Ciherang used counting songs, games, and contextual exercises, while Ranggi Literacy House implemented folk tales and visual aids. Moreover, the evaluation systems were distinct—SDN X Ciherang used standardized pre- and post-tests from the Ministry of Education and Culture, while Ranggi Literacy House relied on observation and interviews.

Despite these methodological differences, both programs produced meaningful outcomes. The SDN X Ciherang mentoring activities resulted in measurable improvements in students' literacy and numeracy scores, whereas the Ranggi Literacy House initiative increased children's motivation and engagement in learning. These results collectively highlight that contextual, enjoyable, and theory-based learning approaches grounded in cognitive development principles can effectively enhance students' basic literacy and numeracy. Such initiatives are particularly relevant for elementary schools with limited access to early childhood education and minimal parental support for home learning.

Conclusion

The *calistung* assistance program implemented at SDN X Ciherang proved effective in improving students' foundational reading, writing, and arithmetic skills. Quantitative analysis showed a significant increase in post-test scores compared to pre-test results, confirming the positive impact of the intervention.

Beyond academic performance, the program revealed critical insights into students' learning environment. Many participants faced challenges due to limited early childhood education and minimal parental support, highlighting the importance of designing learning programs that are both engaging and responsive to students' real-life conditions.

Compared to similar initiatives, such as Rumah Literasi Ranggi, this program adds value by integrating quantitative assessment with interactive, play-based learning. While methodological approaches differ, both programs demonstrate that appropriately designed learning activities can enhance children's motivation, engagement, and skill acquisition.

Overall, the program illustrates that simple yet thoughtfully structured teaching strategies, grounded in child development theory, can produce meaningful improvements in literacy and numeracy. With continued support and sustainable implementation, such interventions have the potential to help more students establish a strong foundation for their future academic and personal development.

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