

Literacy Development in Serui, Papua: Challenges, Educational Practices, and Community-Based Strategies in Remote Primary Education

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Abstract

This study aims to examine literacy development in remote primary schools in Serui, Papua, by analyzing the interaction between structural constraints, pedagogical practices, and community engagement. Unlike previous studies that tend to isolate these factors, this research positions literacy as both a cognitive skill and a sociocultural practice, highlighting the need for an integrated analytical framework in multilingual and geographically isolated contexts. This study employed a convergent mixed-method multiple-case study design, in which qualitative and quantitative data were collected concurrently and integrated during analysis. The study involved six primary schools, 12 teachers, 6 principals, 48 students, and 24 parents selected through purposive sampling based on their active involvement in literacy practices. Data were obtained through classroom observations, semi-structured interviews, document analysis, and Oral Reading Fluency (ORF) assessments. Qualitative data were analyzed thematically, while quantitative data were analyzed descriptively, followed by data triangulation to ensure validity. The findings indicate that literacy outcomes are shaped by the interplay of structural limitations, multilingual instructional challenges, and community participation. Schools implementing culturally responsive pedagogy and community-based literacy programs showed higher reading performance (mean 66 WPM vs. 57 WPM). The integration of mother-tongue scaffolding and local storytelling significantly enhanced student engagement and comprehension. Based on these findings, this study proposes the Community-Integrated Literacy Framework (CILF) as a context-sensitive model for improving literacy in remote and multilingual settings.

Keywords: *Literacy Development, Remote Education, Multilingual Literacy, Community Engagement, Papua*

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Introduction

Literacy is widely recognized as a fundamental competency that shapes educational achievement, social participation, and long-term economic mobility (UNESCO, 2017). However, the concept of literacy remains theoretically contested. On one hand, literacy is often viewed as a cognitive skill, emphasizing decoding, fluency, and comprehension as individual competencies (Snow, Burns, & Griffin, 1998). On the other hand, literacy is increasingly understood as a sociocultural practice, shaped



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by language, interaction, and cultural context (Vygotsky, 1978; Moll et al., 1992). This debate highlights that literacy development cannot be fully explained without considering both individual and contextual dimensions.

Early grade reading proficiency, particularly by Grade 3, represents a critical milestone marking the transition from “learning to read” to “reading to learn.” Students who fail to reach this level are more likely to experience cumulative academic difficulties throughout their schooling trajectory. Despite global progress in expanding access to education, significant literacy disparities persist, particularly in remote and marginalized regions, where structural limitations, linguistic diversity, and limited instructional capacity intersect.

However, previous studies on literacy development have largely treated structural constraints, pedagogical practices, and community engagement as separate variables, resulting in fragmented explanations and interventions. Many studies rely on large-scale assessments that overlook local linguistic and cultural realities, while others focus narrowly on instructional strategies without considering broader social contexts. As a result, existing approaches often fail to explain how these factors interact dynamically in remote and multilingual settings such as Papua. This indicates a critical gap in developing an integrated, context-sensitive framework that captures literacy as both a cognitive and sociocultural process.

Therefore, this study aims to examine literacy development in remote primary schools in Serui by analyzing (1) structural constraints affecting literacy practices, (2) pedagogical strategies employed by teachers in multilingual classrooms, and (3) the role of community-based literacy initiatives in improving students’ reading outcomes.

Drawing on the perspective that literacy is not only a cognitive skill but also a sociocultural practice shaped by interaction, language, and cultural context, this study conceptualizes literacy development as the result of the dynamic interaction between structural conditions, pedagogical practices, and community engagement..

Methodology

This study employed a **convergent mixed-method multiple-case study design**, in which qualitative and quantitative data were collected simultaneously, analyzed separately, and integrated during interpretation to provide a comprehensive understanding of literacy development. The qualitative component was dominant, aiming to explore contextual and sociocultural aspects of literacy practices, while the quantitative component (Oral Reading Fluency/ORF) served to support and validate the findings.

A multiple-case study approach was used to allow cross-case comparison while maintaining contextual depth, with each school treated as a bounded case. The study was conducted over a four-month period in 2024 in **6 public primary schools in Serui, Yapen Islands Regency, Papua, Indonesia**, selected based on levels of remoteness: semi-urban, rural, and highly isolated areas.

Data were collected through classroom observations, semi-structured interviews, document analysis, and ORF assessments. The ORF instrument was **adapted from the standardized Early Grade Reading Assessment (EGRA)** framework and contextualized to local linguistic conditions. Reliability testing indicated good internal consistency (Cronbach’s $\alpha > 0.80$).

Qualitative data were analyzed using thematic analysis (Braun & Clarke), while quantitative data were analyzed descriptively (mean, percentage, comparison). Data integration was conducted using **triangulation**, by comparing and combining findings from different sources to identify convergence and complementarity.

To ensure rigor, this study applied **methodological triangulation, member checking, and peer debriefing** for qualitative data, and reliability testing for quantitative data. These procedures strengthen the validity and trustworthiness of the findings.

Research Design

This study employed a **mixed-method multiple-case study design** to examine literacy development in remote primary schools. The combination of qualitative and quantitative approaches was used to capture the complex interaction between structural conditions, pedagogical practices, and community engagement influencing students’ literacy outcomes. The multiple-case study design enabled in-depth exploration of each school context while allowing cross-case comparison (Yin, 2018).

Research Site

The study was conducted in six public primary schools located in Serui, Yapen Islands Regency, Papua, Indonesia. The schools were purposively selected to represent varying levels of geographical accessibility:

- (1) semi-urban coastal areas,
- (2) rural inland villages, and
- (3) highly isolated areas accessible only by boat or unpaved roads.

This categorization allowed comparative analysis of literacy practices under different structural conditions.

Participants

Participants were selected using purposive sampling, specifically criterion-based selection, to ensure representation of key stakeholders involved in literacy development. This sampling strategy was applied to both qualitative and quantitative components of the study.

For the qualitative component, participants (teachers, principals, and parents) were selected based on their direct involvement in literacy practices and their ability to provide in-depth, context-rich information.

For the quantitative component, students were also selected purposively to represent different grade levels (Grades 3–5) and school contexts (semi-urban, rural, and isolated). This approach was chosen to ensure contextual comparability across cases rather than statistical generalization, which aligns with the multiple-case study design.

The participants included 12 classroom teachers (Grades 3–5), 6 school principals, 48 students (16 students per grade level), and 24 parents.

Data Collection

Data were collected using multiple instruments to ensure methodological triangulation:

- **Classroom Observations**
Observations were conducted using a structured protocol focusing on teaching strategies, language use, student engagement, and availability of literacy materials. Each classroom was observed three times.
- **Semi-Structured Interviews**
Interviews were conducted with teachers, principals, parents, and students to explore literacy practices, instructional challenges, and community involvement. Each interview lasted approximately 30–60 minutes and was audio-recorded.
- **Document Analysis**
Documents analyzed included lesson plans, literacy program reports, student reading logs, and school records.
- **Oral Reading Fluency (ORF) Assessment**
Students' literacy performance was measured using ORF indicators, including:
 - Words Per Minute (WPM)
 - Reading accuracy (%)
 - Reading comprehension (%)

The instrument was adapted from Early Grade Reading Assessment (EGRA) frameworks and contextualized to local linguistic conditions.

Data Analysis

Qualitative and quantitative data were analyzed using complementary approaches:

- **Qualitative Data Analysis**
Qualitative data were analyzed using **thematic analysis** following Braun and Clarke (2006), including data familiarization, coding, theme development, and interpretation.
- **Quantitative Data Analysis**

Quantitative data from ORF assessments were analyzed descriptively using mean scores, percentages, and comparative analysis between schools with and without community-based literacy programs.

Results and Discussion

This section presents an **integrated analysis of qualitative and quantitative findings** to explain how structural conditions, pedagogical practices, and community engagement interact in shaping students' literacy outcomes across cases.

1. Structural Conditions and Literacy Outcomes

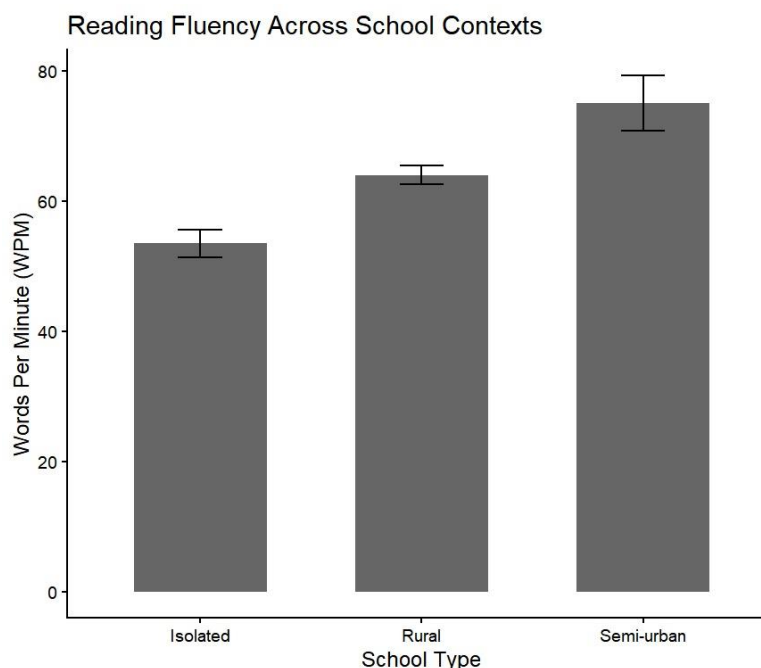


Figure 1. Reading fluency (WPM) across school contexts. Semi-urban schools demonstrate the highest average reading fluency, followed by rural and isolated schools. Error bars indicate variability within each group.

Quantitative results show clear disparities in reading performance across school contexts. Students in semi-urban schools (S1 and S2) achieved higher reading fluency (72–78 WPM), compared to rural schools (63–65 WPM) and highly isolated schools (52–55 WPM).

These differences are strongly supported by qualitative evidence. Classroom observations revealed that semi-urban schools had more stable access to electricity, a greater number of books (120–150), and more consistent teacher presence. In contrast, isolated schools faced severe resource limitations, including minimal reading materials and irregular instructional time.

As one teacher explained:

“We want to do regular reading activities, but sometimes there are no books, and students have to share one book for three or four children.” (Teacher, S5)

This indicates that **structural constraints directly limit students' opportunities to engage in reading practice**, which in turn affects fluency outcomes.

2. Pedagogical Practices in Multilingual Contexts

While Bahasa Indonesia was the primary language of instruction across all schools, students predominantly used local languages (Biak, Yapen, Ansum) in their daily lives. Quantitative differences in literacy outcomes were closely linked to how teachers managed this linguistic gap.

Schools with higher reading performance (S1, S2) implemented more structured instructional strategies, including guided reading and bilingual support. In contrast, lower-performing schools relied more on informal approaches such as storytelling without systematic scaffolding.

This pattern is illustrated in the joint analysis below:

Table: Integration of Quantitative and Qualitative Findings

School Type	Avg. WPM	Instructional Practices	Language Strategy	Community Involvement	Interpretation
Semi-urban	72–78	Guided reading, silent reading	Bilingual explanation	Active parent reading	High performance due to structured pedagogy + support
Rural	63–65	Storytelling, limited reading practice	Partial translation	Moderate involvement	Moderate performance, inconsistent instruction
Isolated	52–55	Informal storytelling	Minimal scaffolding	Strong cultural engagement	Lower performance due to lack of structure

Qualitative findings further reveal that **mother-tongue scaffolding enhances comprehension**:

“If I explain in the local language first, students understand faster, then they can follow the Indonesian text.” (Teacher, S3)

This suggests that literacy development is not merely a cognitive decoding process but is mediated by language familiarity and cultural context.

3. Community Engagement and Literacy Improvement

Quantitative comparisons indicate that schools with community-based literacy programs achieved higher outcomes (mean 66 WPM) compared to those without such programs (57 WPM).

This difference is explained by qualitative evidence highlighting the role of families and community practices in supporting literacy beyond the classroom. For example, in schools with active reading programs:

“Every evening, parents ask children to read at home, even if it is just a short story.” (Parent, S2)

In isolated areas, community engagement took culturally embedded forms such as storytelling:

“We tell stories from our ancestors, and children repeat them. That helps them remember words.”

(Community member, S6)

Interestingly, although isolated schools had strong community engagement, the lack of structured instructional support limited the translation of these practices into measurable reading fluency gains.

4. Integrated Interpretation of Literacy Development

The integration of qualitative and quantitative findings demonstrates that literacy outcomes are not determined by a single factor but by the interaction between structural conditions, pedagogical practices, and community engagement.

For instance, schools with strong infrastructure but weak pedagogy did not achieve optimal outcomes, while some resource-limited schools showed improvement when supported by strong community involvement. However, the most effective literacy development occurred in contexts where all three elements were aligned.

DISCUSSION

The findings of this study demonstrate that literacy development in remote primary schools is shaped by the interaction of structural, pedagogical, and sociocultural factors. These results reinforce the perspective that literacy is not merely an individual cognitive skill but a context-dependent process influenced by environmental conditions, language practices, and social interaction (Vygotsky, 1978; Moll et al., 1992; Street, 2003). This dual perspective aligns with contemporary literacy research that emphasizes the integration of cognitive and sociocultural dimensions in understanding reading development (Gee, 2015; Barton & Hamilton, 2000).

First, structural constraints were found to significantly affect literacy outcomes. Schools with limited access to books, unstable electricity, and fewer teachers demonstrated lower reading fluency and

comprehension levels. This finding is consistent with previous studies highlighting the critical role of learning resources and infrastructure in supporting literacy acquisition (UNESCO, 2017; World Bank, 2019; Piper et al., 2018). However, this study extends prior research by showing that structural limitations alone do not fully determine literacy outcomes, as variations were also observed among schools with similar resource conditions.

Second, pedagogical practices played a crucial role in mediating literacy development, particularly in multilingual contexts. The use of mother-tongue scaffolding and culturally relevant instructional strategies was associated with higher student engagement and comprehension. This finding supports Cummins' (2000) interdependence hypothesis, which posits that first-language proficiency facilitates second-language literacy development. It also aligns with recent studies emphasizing the effectiveness of culturally responsive pedagogy in improving literacy outcomes in multilingual settings (Paris & Alim, 2017; Bickmore et al., 2018).

Third, community engagement emerged as a significant factor influencing literacy development. Schools that implemented community-based literacy initiatives demonstrated higher reading performance compared to those without such programs. This finding is in line with research suggesting that family involvement and community participation enhance literacy learning by extending it beyond formal schooling environments (McNaughton, 2011; Takala et al., 2019; Kim et al., 2020). Notably, this study provides further evidence that community-based practices, such as storytelling and home reading activities, can strengthen literacy development even in resource-constrained settings.

Importantly, the integration of qualitative and quantitative findings in this study challenges deficit-oriented perspectives that attribute low literacy outcomes solely to resource scarcity. Instead, the findings demonstrate that literacy development is a relational and context-sensitive process shaped by the dynamic interaction between structural conditions, pedagogical strategies, and sociocultural practices. This integrative perspective addresses the limitations of previous studies that examined these factors in isolation.

Based on these findings, this study proposes the **Community-Integrated Literacy Framework (CILF)** as a conceptual model that emphasizes the alignment of structural support, culturally responsive pedagogy, and community engagement. This framework contributes to the literature by offering a more holistic and contextually grounded approach to literacy development, particularly in remote and multilingual educational settings..

Conclusion

This study demonstrates that literacy development in remote primary schools is shaped by the interaction of structural conditions, pedagogical practices, and community engagement. Structural limitations, such as limited access to learning resources and uneven teacher distribution, constrain students' reading performance, particularly in isolated contexts.

However, the findings show that culturally responsive pedagogy—especially mother-tongue scaffolding and local storytelling—along with active community participation, can significantly enhance literacy outcomes even in resource-constrained settings.

These results highlight the importance of an integrated approach to literacy development, as reflected in the proposed Community-Integrated Literacy Framework (CILF), which combines structural support, effective pedagogy, and community involvement. This framework offers a context-sensitive model for improving literacy in remote and multilingual educational settings.

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