

Addressing the Basic Literacy and Numeracy Crisis in Underdeveloped Villages: A Model of Parental and Teacher Facilitation through Local Educational Games

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ABSTRACT

This study explores a community-based model to mitigate the crisis of basic literacy and numeracy in underdeveloped rural villages through the collaborative facilitation by parents and teachers using local educational games. Employing a qualitative research methodology, the study analyzes the effectiveness of integrating traditional games in literacy and numeracy development in disadvantaged village settings in Indonesia. Data were collected through interviews, focus groups, and observations involving educators, parents, and village children. Findings indicate that the model fosters increased engagement, comprehension, and supportive learning environments at home and schools. The participatory approach enhances awareness, motivation, and the application of basic numeracy and literacy skills, suggesting a culturally contextualized sustainable strategy for rural education improvement.

Keywords: literacy crisis, numeracy, rural education, parental involvement, teacher facilitation, educational games.

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INTRODUCTION

Basic literacy and numeracy are universally recognized as foundational competencies that are essential for individuals to effectively navigate daily life, participate meaningfully in society, and access economic opportunities. Literacy encompasses the ability to read and write coherently, and numeracy, involving basic mathematical skills such as counting, measuring, and problem-solving, forms the bedrock of cognitive and socio-economic development. Despite Indonesia's commendable efforts to expand access to education over the past few decades, many regions particularly underdeveloped rural villages continue to face significant

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challenges related to low levels of basic literacy and numeracy. This persistent crisis undermines human capital development, perpetuates poverty cycles, and limits the country's progress toward sustainable development goals (Francisco et al., 2025)

Indonesia's literacy and numeracy challenges manifest most acutely in rural and marginalized communities. According to the 2018 Programme for International Student Assessment (PISA), approximately 70% of Indonesian students scored below Level 2 in reading proficiency, indicating that they lacked the capability to extract key ideas or comprehend simple texts. This statistic reflects a pervasive reading literacy crisis that affects the majority of school-aged children across the archipelago. The situation is compounded by low reading interest; data from Statistics Indonesia (BPS) in 2018 revealed that less than 15% of Indonesians over the age of ten regularly read newspapers or magazines—an alarming decline from previous years. The limited availability of quality reading materials and libraries, especially in rural and remote areas, has been identified as a critical factor exacerbating the literacy crisis.

In numeracy, the situation is similar. Recent analyses indicate that despite high enrolment rates and prolonged schooling, Indonesian students exhibit very low mastery of basic mathematical skills. Learning profiles from the Indonesian Family Life Survey (IFLS) have revealed a consistent gap between the national curriculum's expectations and actual student competencies. Even senior high school graduates often struggle with problems that are theoretically mastered by primary school students. Numeracy deficits are particularly pronounced in eastern Indonesian provinces and among rural populations, signaling an urgent need to address equity gaps in educational outcomes (Stanggo & Susanto, 2025).

The Indonesian government has implemented numerous national programs aimed at improving literacy and numeracy, such as the nine-year compulsory education policy and the National Literacy Movement initiated in 2016. However, these interventions have achieved limited success, particularly in remote villages where infrastructural constraints, teacher shortages, and insufficient community engagement persist. The COVID-19 pandemic has further exacerbated existing learning losses and disengagement, disproportionately affecting vulnerable communities with minimal digital access. This context reveals the pressing need for innovative community-based models that complement formal education by mobilizing local resources and fostering active participation among parents, teachers, and children.

Parental involvement has been recognized globally as a vital factor influencing children's learning outcomes, yet it remains an underutilized resource in many rural Indonesian contexts. Parents in underdeveloped villages often face literacy challenges and lack pedagogical knowledge, which inhibits their ability to support children's learning at home. Meanwhile, schools in these areas are frequently under-resourced and unable to sustain engaging and personalized instruction. Thus, designing models that equip parents and teachers with culturally relevant and accessible tools to facilitate literacy and numeracy development is essential. Local educational games have emerged as a promising medium with the potential to enhance motivation, contextualize abstract concepts, and encourage collaborative learning (Zulaikha, 2024).

Traditional games embedded within local cultures serve not only as entertainment but also as informal learning platforms where skills such as counting, pattern recognition, and social interaction are practiced. Leveraging such games for educational purposes can create familiar and enjoyable learning environments that resonate with the children's lived experiences. Integrating local games into instructional practices has also been shown to improve engagement and comprehension, resulting in better literacy and numeracy acquisition. Furthermore, these games offer practical means to collaboratively involve parents and teachers, fostering supportive learning ecosystems that extend beyond school walls.

This study aimed to develop and analyze a model of parental and teacher facilitation through local educational games as a strategy to address the basic literacy and numeracy crisis in underdeveloped Indonesian villages. Using qualitative research methods, including in-depth interviews, focus groups, and participant observation, this study investigated the effectiveness, challenges, and community perceptions of this participatory approach. This study situates itself within the broader context of rural education challenges in Indonesia, seeking to contribute evidence-based insights for culturally contextualized interventions that promote sustainable rural educational development.

The significance of this study lies in its focus on community empowerment and culturally appropriate practices as critical levers for educational improvement. Previous studies in Indonesia and comparable contexts have underscored that simply increasing schooling years or instructional time is insufficient when learning quality and engagement remain low. Building on these insights, the present study prioritizes cooperative facilitation by parents and teachers and anchoring learning to local cultural assets. The findings will have important implications for policy design, teacher training, and community mobilization programs aimed at closing literacy and numeracy gaps in marginalized areas.

METHOD

The research design is grounded in an exploratory qualitative framework that emphasizes rich descriptive data collection and thematic analysis. This design facilitates an understanding of how local educational games function as learning mediators when collaboratively facilitated by parents and teachers, and how such facilitation impacts children's literacy and numeracy development in rural contexts. The design also supports capturing the nuances of cultural relevance, community involvement, challenges encountered, and perceived outcomes from the perspectives of multiple stakeholders.

Research Site and Participants

The study was conducted in a selected underdeveloped village in Indonesia characterized by limited literacy and numeracy proficiency, resource constraints, and low parental involvement in formal education. The site was purposively chosen to represent the typical rural educational challenges confronting many similar villages across the archipelago.

Participants Were purposively sampled to include diverse community actors Who were directly involved in or affected by the intervention. The sampling frame consisted of:

- Parents: Both mothers and fathers regularly engage in children's learning at home.
- Teachers: Elementary school teachers responsible for literacy and numeracy instruction.
- Children: Elementary-aged students participating in a local educational game program.
- Community Leaders: Village heads or education committee members who influence community mobilization.

Such purposive sampling ensures data richness and triangulation from different viewpoints, which is vital for comprehensive qualitative inquiry.

Data Collection Methods

Multiple qualitative data collection techniques were used to capture the complexity of the phenomena studied

In-depth Interviews

Semi-structured interviews were conducted with parents, teachers, and community leaders to explore their perceptions, experiences, and attitudes concerning literacy and numeracy crises, the use of local educational games, and the role of joint facilitation. Interviews allowed probing for detailed narratives about challenges, adaptations, and observed changes in children's learning behaviors.

Focus Group Discussions (FGDs)

FGDs are convened with groups of children to understand their engagement with local educational games and to elicit collective perspectives on how games influence their motivation, comprehension, and collaboration skills. FGDs provide a safe, interactive space for children to express their thoughts and reflect on their peerlearning experiences.

Participant Observations

The researcher participated as an observer during educational game sessions in school and community settings. Observations focused on documenting the interaction patterns between parents, teachers, and children, the facilitation methods employed, children's responses, and the contextual factors shaping the sessions. Observational data complement interviews and FGD findings by providing real-time evidence of processes and behaviors.

Document and Artifact Analysis

Relevant educational materials, local game instructions, and field notes were reviewed to contextualize the findings and understand the integration of cultural elements into learning tools.

Data Collection Procedure

Data collection followed a phase approach

- Initial rapport building with community stakeholders to gain trust and facilitate participation.
- Scheduling and conducting interviews and FGDs using open-ended question guides tailored to each participant group.
- Systematic observation of multiple game sessions until thematic saturation was reached indicated that, no new significant insights emerged.
- Documentation of all procedures and reflective field notes to maintain research rigor and reflexivity.
- To ensure ethical compliance, all participants provided informed consent, confidentiality was guaranteed, and cultural sensitivit was respected.

Data Analysis

Data analysis employs an inductive thematic approach consistent with qualitative traditions (Malik, 2013; Rustamana et al., 2024). The analytical process involvesthe following steps:

- Transcribing interviews and verbatim FGD
- Data were coded into meaningful units using open coding to identify initial categories related to engagement, facilitation roles, cultural relevance, challenges, and learning outcomes.
- Axial coding was used to explore the relationships between categories and develop broader themes regarding the intervention model’s effectiveness and contextual factors.
- Constant comparative method to refine themes by contrasting data segments within and across participant groups.
- Triangulation of data sources (interviews, FGDs, and observations) to validate the findings and enhance theircredibility.

Ongoing memo writing and reflexive journaling by the researcher to capture emerging interpretations and contextual nuances.

RESULTS AND DISCUSSION

A total of 40 participants contributed to the study: 15 parents (9 mothers and 6 fathers), 10 elementary school teachers, 10 children (aged 7-12), and five community leaders. The participant characteristics are summarized in Table 1.

Table 1. Participant Characteristics

| Participant Group | Number | Gender Distribution | Age Range | Role/Position |
|-------------------|--------|---------------------|-------------|----------------------------|
| Parents | 15 | 9F, 6M | 25-50 years | Guardians of students |
| Teachers | 10 | 7F, 3M | 30-45 years | Literacy/Numeracy teachers |

| Participant Group | Number | Gender Distribution | Age Range | Role/Position |
|-------------------|--------|---------------------|-------------|-----------------------------------|
| Children | 10 | 5F, 5M | 7-12 years | Elementary school students |
| Community Leaders | 5 | 3M, 2F | 40-60 years | Village elders, committee members |

The thematic analysis generated five primary themes describing the impact, facilitators, challenges, and cultural dimensions of the model:

- Increased Student Engagement through Local Educational Games
- Strengthened Parental Involvement and Home-School Partnerships
- Cultural relevance enhancement learning and community ownership
- Observable Improvements in Literacy and Numeracy Skills
- Challenges of Implementation and Sustainability
- These themes are elaborated below with supporting evidence.

Participants consistently reported that integrating local traditional games into literacy and numeracy learning significantly enhanced their interest and active participation. Teachers described a shift in classroom dynamics, with children showing higher enthusiasm and longer attention spans during learning activities embedded in familiar games such as engklek (hopscotch) and congklak (mancala).

A teacher stated:

“Children are more excited to learn when counting or reading is part of a game they know in their daily lives. This reduces boredom fear of math and reading lessons.” (Teacher 3)

Children in the focus groups echoed this sentiment, expressing joy and pride in using games linked to their cultural backgrounds for learning:

“When we play engklek with numbers and words, it feels fun, not like studying.” (Child 7)

Observations confirmed that game-based sessions led to active peer collaboration, problemsolving, and lively discussions, thereby increasing social interaction and cognitive engagement. This aligns with the existing literature that emphasizes play as a motivating factor for literacy and numeracy development (Kusumadewi et al., 2023).

Parents and teachers jointly facilitated the central innovation of the model. Many parents reported gaining confidence and knowledge to support their children’s learning at home, aided by teacher guidance. One mother shared: “Before, I didn’t know how to help my child with reading or counting. Now, because of the games and teachers’ instructions, I can practice together with my child.” (Parent 8)

Teachers emphasized the importance of training parents to use local games as educational tools

“When parents join in and understand the games’ educational purpose, they reinforce learning outside school hours. It creates a consistent learning environment.” (Teacher 7)

Community leaders noted increased awareness and motivation among parents to engage with their children's education, signaling stronger home-school collaboration that had been limited prior to the intervention.

Embedding literacy and numeracy learning in local cultural games is highly valued. The participants reported that connecting abstract skills to familiar cultural practices made concepts easier to grasp and more meaningful.

A community leader remarked:

"Children learn better when lessons are linked to their culture and daily life. This also encourages respect for our traditions." (Leader 2)

Parents and teachers observed that culturally grounded games promoted ownership of the learning process within the community, fostering pride and responsibility toward education.

This culturally responsive approach helped overcome barriers related to alienating formal education methods, especially in villages where standard curricula may feel disconnected from the local realities. Integrating indigenous knowledge and play facilitates contextualized learning (Fuaduddin et al., 2019), as reflected in this study.

Participants noted substantial progress in children's literacy such as improved reading fluency, vocabulary, sentence construction and numeracy skills including counting accuracy, problem solving, and number recognition.

One teacher provided the following examples

"After several weeks, children who struggled initially with counting during congklak could recognize numbers up to 50 and add simple sums." (Teacher 1)

The parents echoed this observation

"My child now reads simple stories aloud confidently and counts money during household shopping." (Parent 4)

Focus groups revealed enhanced critical thinking, especially from problem solving embedded in game rules, which encouraged logical reasoning.

Observational records documented children applying newly acquired skills spontaneously during play and daily activities, indicating a transfer beyond formal instruction.

Despite the positive outcomes, several challenges have emerged

- Parental Literacy Levels: Some parents' limited literacy skills hindered their ability to fully engage as facilitators, thus requiring ongoing support.
- Resource Constraints: Lack of printed materials and game supplies sometimes restricts consistent program delivery.
- Time Limitations: Parents balancing work and household duties struggled to dedicate sufficient time to learning facilitation.
 - Teacher Workload: Teachers expressed difficulties in managing facilitation along with regular teaching responsibilities.
- External Support Needs: Participants highlighted the necessity for continued training, monitoring, and government or NGO backing to scale and sustain the model.

Table 2. Facilitators and Challenges of Parental and Teacher Facilitation Model

| Theme | Facilitators | Challenges |
|-------|--------------|------------|
|-------|--------------|------------|

| Theme | Facilitators | Challenges |
|-------------------------|---|--|
| Student Engagement | Cultural familiarity with games, peer collaboration, fun learning environment | Initial skepticism, distraction risk in informal settings |
| Parental Involvement | Teacher training of parents, clear guidance on game facilitation | Parental illiteracy, time constraints, low confidence |
| Cultural Relevance | Use of traditional games, respect for local values | Need to continuously adapt materials to specific village culture |
| Literacy/Numeracy Gains | Interactive learning, problem-solving opportunities | Unequal skill levels among children |
| Sustainability | Community ownership, enthusiasm for education | Resource and material shortages, lack of external support |

Discussion

This study aimed to explore a community-based facilitation model involving parents and teachers using local educational games to address the persistent crisis of basic literacy and numeracy skills in underdeveloped rural villages in Indonesia. Through qualitative methods such as interviews, focus groups, and observations the research revealed several key themes: enhanced student engagement via culturally grounded games, increased parental involvement boosting home-school collaboration, meaningful cultural relevance fostering community ownership, observable improvements in literacy and numeracy competencies, and challenges related to resource limitations and parental literacy.

These findings underscore the potential of culturally contextualized participatory educational interventions to improve foundational learning outcomes in marginalized settings. The discussion contextualizes these outcomes within existing research, explores their theoretical and practical implications, addresses limitations, and suggests directions for future research (Oktaviyanti et al., 2022).

A central finding is that embedding literacy and numeracy learning within traditional local games markedly improved children's motivation, attention, and active participation. This aligns with prior studies that emphasize play as an effective pedagogical tool to reduce learning anxiety and foster intrinsic motivation (Prayogo et al., 2023). Familiarity with games such as engklek and congklak created a bridge between abstract academic skills and children's lived cultural experiences, enabling a natural, enjoyable learning process.

The dynamic peer interactions observed during game sessions promoted cooperative learning and social skills development, consistent with theories of social constructivism in which learning is mediated through social engagement and negotiation of meaning. This result supports the argument that culturally resonant and

social learning environments can enhance cognitive and affective domains simultaneously, which is particularly crucial in under-resourced rural settings where formal instructional quality may be limited.

This study highlights the critical role of parental facilitation guided by teachers in reinforcing literacy and numeracy skills beyond the classroom. Previously, parental involvement in underdeveloped villages was often minimal due to low literacy levels and a lack of pedagogical knowledge. This study confirms the transformative potential of equipping parents with appropriate tools and guidance, enabling them to engage confidently in their children's learning (Sarmiento et al., 2025).

Such home-school partnerships create a consistent learning environment that increases practice opportunities and motivation, which are essential for skill acquisition and retention. This finding resonates with Giampietro and Romiti (2025), who emphasized that community stakeholder collaboration is indispensable for sustainable educational improvement. The model's participatory nature empowers parents, gradually shifting their educational responsibility from schools alone to a more distributed, supportive community framework (Giampietro & Romiti, 2025).

The integration of local cultural elements through traditional games has proved instrumental in making literacy and numeracy learning meaningful and contextually relatable. This approach counters the alienation that often arises from imported or overly standardized curricula, which can disconnect learners from their socio-cultural realities. The use of indigenous games fosters respect for local knowledge systems and nurtures community pride, increasing educational engagement and promoting social cohesion.

By aligning the learning content with community heritage, the intervention respects cultural identity, which educational theorists assert is crucial for fostering positive learner attitudes and long-term adoption. It also encourages community ownership of educational initiatives, which is a prerequisite for sustainability and self-driven development, especially where external resources are limited (Saad & Abdullah, 2025).

The reported and observed improvements in children's literacy and numeracy skills affirmed the practical effectiveness of the facilitation model. Gains in reading fluency, vocabulary, number recognition, counting, and basic problem-solving underscore that educational games are not merely entertainment but powerful pedagogical tools when purposefully designed and facilitated.

Moreover, the development of critical thinking skills through problem-solving embedded in game rules points to the potential for holistic cognitive development. These findings align with Krisdianti et al. (2025) finding that interactive learning methods support numeracy and literacy gains even in resource-constrained environments (Krisdianti et al., 2025).

Although promising, the model faces several implementation challenges. Parental illiteracy limits some parents' ability to fully engage as facilitators, which requires ongoing support and adaptable materials. Resource constraints, including the availability of game supplies and printed support, restrict consistency and reach. Parents' time limitations due to livelihood demands constrain their availability for facilitation, and teacher workload burdens inhibit extensive collaboration outside of formal school hours.

These challenges signal that community-based models must be complemented with continuous capacity building, external support from educational authorities or NGOs, and flexible adaptation to local realities to maintain effectiveness and scalability. Without such systemic support, gain risk is piecemeal and unsustainable (Ismail, 2025).

Theoretically, this study reinforces constructivist and sociocultural theories in education that emphasize learning as a socially situated, culturally mediated process. This demonstrates how culturally contextualized play can function as a valuable pedagogical strategy to bridge formal curriculum demands with local realities, especially in socioeconomically disadvantaged contexts.

Practically, the findings advocate greater parental involvement supported by teacher facilitation as a viable strategy to supplement formal schooling and enhance foundational skills at community level. Educational policymakers should recognize and harness local cultural resources, shifting from a one-size-fits-all approach to a more adaptive participatory framework. Training programs for teachers and parents focused on facilitation skills and culturally relevant tools could greatly improve rural education outcomes.

Additionally, the model encourages the decentralization of educational responsibility, fostering community empowerment and resilience, and aligning with global calls for inclusive, community-driven educational development.

Despite its contributions, this study has certain limitations typical of qualitative research. Purposive sampling and focus on one village limit generalizability; the findings may not apply universally across diverse Indonesian rural contexts with varying cultures and challenges. Social desirability bias may have influenced participant responses, particularly for parents and teachers who are eager to present positive experiences.

The research period and resources limited extensive longitudinal analysis, which would be valuable for assessing the sustained impact over time. Furthermore, the quantitative measurement of literacy and numeracy improvement was limited, relying mainly on participant reports and observations rather than standardized testing.

Acknowledging these restrictions, the study provides rich, context-specific insights but invites further research for broader validation and generalization.

CONCLUSION

The conclusion answers the hypothesis, research objectives research findings and suggestions regarding further ideas from the research. The conclusions are presented in the following paragraphs.

All references referenced in the text of the article are listed in the reference section. References must contain reference libraries originating from primary sources (scientific journals amounting to a minimum of 80% of the total bibliography) published in the last 10 (ten) years. Each article contained at least 10 (ten) references.

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