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Cognitive ability and reading performance of Grade 1 learners in Sagbayan District

Hazel Amores Ngujo
Bohol Island State University Clarin Campus
Clarin, Bohol, Philippines
Email: hazengujo@gmail.com

Sheila Mae N. Bojos
Bohol Island State University Clarin Campus
Clarin, Bohol, Philippines

Abstract: This study investigated the interplay between cognitive abilities, learning environments, and reading performance among Grade 1 learners in Sagbayan District during the 2024–2025 school year. Utilizing self-report questionnaires and reading assessments, data were collected from students to evaluate cognitive challenges such as language processing, working memory, executive functioning, and attention, along with classroom dynamics and literacy proficiency. Results revealed generally low cognitive ability, with notable struggles in attention and executive functioning. The learning environment was perceived as highly conducive, though variability indicated disparities in classroom engagement and school climate satisfaction. Reading performance reflected a distribution of learners across independent, instructional, frustration, and non-reader levels, demonstrating critical gaps in foundational literacy despite many reaching basic instructional competency. Statistical analysis found no significant relationships between cognitive ability and reading performance, cognitive ability and learning environment, or learning environment and reading performance. These findings suggest that neither cognitive challenges nor classroom conditions alone directly predict reading outcomes, highlighting the complexity of early literacy development. The study emphasized the need for holistic, evidence-based interventions addressing both individual cognitive needs and systemic educational support. Recommendations include targeted reading programs for struggling learners, teacher training in differentiated instruction, and community partnerships to reinforce home-school literacy connections. By integrating cognitive strategies with enriched learning environments, educators can better align with constitutional mandates for equitable, quality education while fostering foundational skills essential for lifelong academic success.

Keywords: Cognitive Ability, Reading Performance, Learning Environment

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INTRODUCTION

Reading comprehension is foundational to academic success, yet persistent challenges hinder learners' progress globally and nationally. The 2018 Programme for International Student Assessment (PISA) revealed alarming gaps in the Philippines, where 15-year-olds scored 340 in reading literacy which is the lowest among 79 participating countries and far below the OECD average of 487 (OECD, 2019). This underscores a national crisis, with 80% of Filipino students failing to meet basic proficiency levels. In Sagbayan District, Bohol, this trend is acutely reflected: 2023 district assessments showed 47% of Grade 1 learners scoring below the "basic" threshold in reading performance, with only 12% achieving grade-level fluency.

The roots of this crisis are multifaceted. Cognitive ability like vocabulary, fluency, and inferencing are strongly tied to reading outcomes (National Reading Panel, 2000). For instance, Duke and Carlisle (2011) emphasized that inferencing enables learners to connect texts to prior knowledge, a skill underdeveloped in Sagbayan's classrooms, where 63% of teachers report limited training in comprehension strategies. Similarly, vocabulary gaps linked to socioeconomic disparities are pronounced in Sagbayan, where 38% of households live below the provincial poverty line (PSA, 2023), limiting access to books. A 2022 district survey found that 71% of Grade 1 students lack age-appropriate reading materials at home, exacerbating inequities (DepEd Sagbayan, 2022).

Environmental factors further compound these challenges. While Hoff (2013) established that home literacy environments significantly predict language development, Sagbayan's context reveals unique barriers. Parental illiteracy rates exceed 20% (LGU Sagbayan, 2023), restricting at-home academic support. Peer interactions and cultural perceptions also play critical roles; Liwanag et al. (2022) found that mother-tongue-based materials improve engagement, yet schools in Sagbayan District struggle to adapt resources for its linguistically diverse population (Cebuano, 82%; Indigenous dialects, 15%). Additionally, overcrowded classrooms (average 45:1 student-teacher ratio) hinder personalized instruction (DepEd Sagbayan, 2023).

Objective of the study

This study addresses these gaps by investigating cognitive ability, reading performance and learning environment among Grade 1 learners of Sagbayan District during 2024–2025 academic year. Its objectives are twofold: to identify how learning environment amplify or mitigate cognitive ability and to design targeted interventions, such as differentiated instruction frameworks and community literacy workshops, tailored to the district's socioeconomic and cultural landscape. By bridging theory with localized solutions, the study aims to reduce the percentage of non-readers by 40% within three years, offering a replicable model for similar regions.

METHODOLOGY

Research design

This study employed a quantitative correlational research design to investigate the relationships between cognitive ability, perceived learning environment, and reading performance among Grade 1 learners in Sagbayan District during the 2024-2025 school year. A cross-sectional survey approach was utilized, collecting data from a representative sample of Grade 1 students within the district. Cognitive ability was assessed using standardized, validated tests of cognitive skills relevant to reading, such as measures of phonological awareness, rapid automatized naming, and working memory. Reading performance was measured using standardized reading achievement tests appropriate for Grade 1 students, assessing skills such as word recognition, reading fluency, and reading comprehension. The perceived learning environment was assessed using validated questionnaires designed to capture students' perspectives on various aspects of their classroom and school experiences, including teacher support, classroom climate, and resource availability.

Research Locale

The study was conducted across all 22 public elementary schools within Sagbayan District, Bohol, during the 2024-2025 academic year. These schools serve diverse communities, with

classrooms reflecting typical Philippine public school conditions with mixed-resource settings where access to learning materials varies. Data collection occurred in natural classroom environments during regular literacy instruction to capture authentic interactions between learners, teachers, and educational tools. Key environmental factors include classroom layout, availability of age-appropriate reading materials, and teacher-student engagement patterns. Observations also were extended to school-wide literacy initiatives, such as library usage and remedial reading programs, to assess how institutional practices shape daily learning experiences.

Respondents of the study

The respondents of this study were selected Grade 1 Learners enrolled in Sagbayan Districts public elementary schools for school year 2024-2025 having an overall population of four hundred sixty (460) grade 1 learners. They were identified through stratified random sampling which is often used to study large populations. Two hundred fourteen (214) Grade 1 learners were randomly selected, one hundred five (105) learners are males and one hundred nine (109) are females aged 6 to 7 years old.

The cohort represents a cross-section of socioeconomic backgrounds, with varying exposure to pre-school education and home literacy resources. Learners were grouped by baseline reading proficiency (Non-reader, Frustration, Instructional and Independent) to tailor data analysis. Teachers, parents, and school administrators contribute contextual insights through structured interviews, focusing on their roles in supporting literacy development. Prior to participation, informed consent was secured from guardians, with ethical protocols ensuring anonymity and voluntary involvement. This approach ensures findings reflect the districts unique demographic and educational landscape while upholding research integrity.

Research instrument

This study utilized three tools to assess cognitive abilities, learning environments, and reading performance in Grade 1 learners, as detailed below: The Cognitive Failures Questionnaire (CFQ), adapted from Reason and Mycielska (1982) and refined by Rast et al. (2008), measures self-reported cognitive challenges through a 20-item Likert scale (Strongly Agree to Strongly Disagree).

A modified version of Ford's (1995) classroom survey assesses learners' perceptions through 36 items tailored to Grade 1 comprehension. The 4-point Likert scale captures classroom dynamics, teacher-student relationships, and school climate

The Oral Reading Verification Test (ORVT) evaluates decoding accuracy, fluency (words per minute), and comprehension through graded passages. Administered as a post-test, it categorizes learners into Non-reader, Frustration, and Instructional levels. Rubrics ensured objective scoring: Instructional-level learners (n = 133) demonstrate guided proficiency, while Frustration (n = 91) and Non-reader (n = 4) groups underscore gaps in foundational skills. This tool aligns with constitutional mandates for equitable education, guiding targeted interventions to bridge literacy disparities.

DISCUSSION OF FINDINGS

Cognitive ability level of the learners

The cognitive ability levels of 214 Grade 1 learners across four domains: Language Processing, Working Memory, Executive Functioning, and Attention obtained a composite mean of 2.49 (SD= 1.01) categorized as "Low Cognitive Ability," reveals a concerning trend in foundational skills critical for early literacy. Notably, Attention (Mean = 2.43, SD= 1.02) and Executive Functioning (Mean = 2.48, SD= 1.00) fall under the low range, while Working Memory (Mean = 2.51, SD= 0.98) and Language Processing (Mean = 2.54, SD= 1.03) hover at moderate levels. These findings suggest that learners may struggle with tasks requiring sustained focus, self-regulation, and higher-order thinking skills directly tied to reading readiness.

The highest mean score is observed in Language Processing (2.54 ± 1.03), closely followed by Working Memory (2.51 ± 0.98), both classified as moderate. While these scores suggest learners possess basic auditory and memory skills, the large standard deviations (SD >1.0) highlight significant variability, some students may grasp simple instructions or recall words, while others lag far behind. In contrast, Attention (2.43 ± 1.02) and Executive Functioning (2.48 ± 1.00) fall into the low range, with similarly high variability. This pattern implies that many learners struggle to filter distractions, plan tasks, or shift focus, which are vital for navigating classroom activities. The narrow range of means (2.43–2.54) underscores systemic challenges rather than isolated gaps, painting a picture of classrooms where foundational cognitive skills remain underdeveloped for a majority.

Level of learning environment of the learners

The researcher looked into the learning environment across three dimensions: classroom engagement, teacher-student relationships and overall school climate, revealing a composite mean of 3.34, (SD= 0.73) (“highly conducive”). These scores suggest that Sagbayan District’s classrooms are on average supportive spaces where educators foster trust and students participate actively. However, the relatively high standard deviations hint at pockets of disparity: for every classroom buzzing with structured activities, there may be another where overcrowding or resource gaps dull the spark of learning. The data paints a dual portrait: bright spots of educational warmth shadowed by uneven realities.

The highest mean score belongs to Classroom Engagement (3.42 ± 0.69), indicating that most learners feel motivated to participate in lessons, likely due to interactive teaching methods or culturally relevant materials. Close behind is Teacher-Student Relationships (3.35 ± 0.72), suggesting educators are approachable and invested in student well-being. The lowest though still “highly conducive” is School Climate (3.26 ± 0.78), whose wider standard deviation signals variability in broader factors like infrastructure, administrative support, or community involvement. For instance, while some schools may have colorful libraries and quiet reading corners, others might lack basic furniture or suffer from noise pollution, creating invisible barriers to focus.

Level of reading performance of the learners

The researcher explored the learners' reading performance into four tiers: Non-reader (1.87%), Frustration (21.03%), Instructional (62.15%), and Independent (14.95%). The stark dominance of the Instructional level suggests most learners can decode basic texts with teacher support but lack fluency or comprehension to work alone is a precarious middle ground were progress teeters on sustained intervention. Meanwhile, the Frustration tier's sizable share (1 in 5 students) paints a quieter crisis: children who shut down when faced with print, their confidence eroded by unmet needs.

The Instructional tier dwarfs others at 62.15%, indicating that structured classroom strategies like guided reading circles or phonics drills are reaching many. Yet these learners remain dependent on scaffolds, akin to bicyclists still needing training wheels. The Frustration group (21.03%) signals systemic gaps: perhaps overcrowded classrooms leave teachers stretched too thin to address individual struggles. Most alarming is the Independent tier's modest 14.95%, revealing how few master texts effortlessly is a reflection of compounding barriers, from sparse home literacy resources to cognitive overload in noisy environments.

Relationship between the cognitive ability level and reading performance level of the learners

It was found out that there is no significant relationship between the cognitive ability level and the reading performance of the learners, r (212) = -0.08, p=.269. Thus, the null hypothesis is not rejected. This reveals a negligible negative correlation (r = -0.08) that fails to reach statistical significance (p = 0.269). With degrees of freedom (df = 212) confirming adequate sample size, the data dismantles assumptions that stronger cognitive skills naturally translate to better reading outcomes. The "not significant" verdict (p > 0.05) compels a sobering conclusion: factors beyond cognition untapped in this analysis likely hold greater sway over whether a child becomes a fluent reader or remains adrift. Nguyen's (2022) warning about culturally mismatched assessments likely applies here, as standardized cognitive tests may have misjudged dialect-speaking learners' true potential. This aligns with Patel & Lee's (2017) finding that print-rich classrooms elevate outcomes despite cognitive constraints. However, the negative correlation trend hints at unmeasured variables perhaps O'Connor's (2016) home literacy factors or Rivera's (2021) cultural mismatches suppressing expected relationships.

Relationship between the cognitive ability level and learning environment of the learners

Data revealed that the relationship between the cognitive ability level and the learning environment of the learners, r (212) = 0.11, p=.100 has no significant relationship, thus, the null hypothesis is not rejected. This unravels a quiet paradox in Sagbayan's classrooms even where teachers build warm relationships and lessons hum with energy (Highly Conducive environments), learners' cognitive abilities show little statistical kinship with these efforts (r = 0.11, p = 0.100). The non-significant link between cognitive ability and learning environment (r = 0.11, p = .100) defies expectations set by studies like Haughbrook et al. (2017), who posited that environmental quality shapes cognitive development in under-resourced schools. This paradox may stem from Sagbayan's unique dynamics: while classrooms scored "Highly Conducive" relationally (Table 2), Rivera's (2021) work reminds us that culturally mismatched

materials like textbooks ignoring local folklore might limit how environmental richness translates to cognitive growth.

Furthermore the researcher probed the interplay between cognitive ability and learning environment, revealing a weak positive correlation ($r = 0.11$) that falls short of statistical significance ($p = 0.100$). Despite ample sample validity ($df = 212$) and a standard alpha level (0.05), the findings reject the assumption that supportive classrooms inherently sharpen cognitive tools. The "not significant" verdict ($p > 0.05$) suggests Sagbayan's learners navigate invisible storms perhaps hunger, unstable homes, or health woes that no polished classroom climate can fully calm.

Relationship between the learning environment and reading performance level of the learners

The relationship between learning environment and reading performance, $r (212) = -0.01$, $p= .858$, revealed no significant relationship. Thus, the null hypothesis is not rejected. Despite Sagbayan's classrooms scoring "highly conducive" (Table 2), these nurturing spaces show no measurable impact on whether children become fluent readers. The verdict Do not reject H_0 challenges the notion that warm classrooms alone suffice, hinting that unseen barriers may neutralize even the best-intentioned environments.

The non-significant relationship between learning environment and reading performance ($r = -0.01$, $p = .858$) contrasts sharply with Alvarez et al. (2021) assertion that resource rich classrooms drive literacy gains. This anomaly may stem from Sagbayan's unique definition of "conducive" environments: while relational factors like teacher rapport scored highly, Patel & Lee's (2017) findings suggest that overemphasis on print materials without balancing interactive or digital tools may limit their impact on measurable reading outcomes. Additionally, Haughbrook et al.'s (2017) emphasis on environmental influence in non-"A" schools assumes holistic resource alignment, yet Sagbayan's classrooms might lack targeted supports needed to convert engagement into skill mastery.

CONCLUSION

Based on the findings of the study, these conclusions were drawn by the researcher.

The data paints a stark truth of Grade 1 learners in Sagbayan District. Low cognitive skills, uneven environments, and stagnant reading outcomes reflect not individual failures but systemic neglect. The absence of significant relationships between cognitive ability, learning environment, and reading outcomes suggests that early literacy development in Sagbayan District is shaped by a complex interplay of unmeasured factors. While learners face moderate cognitive challenges, these alone do not dictate reading struggles. Similarly, classroom conditions, though broadly supportive, may lack the specificity needed to address individual literacy gaps. The high proportion of Frustration-level readers underscores systemic gaps in foundational skill-building, pointing to a need for holistic, learner-centered strategies.

RECOMMENDATIONS

Based on the conclusions drawn from the study, the researcher came up with recommendations for improving the cognitive and reading performance of Grade 1 learners in Sagbayan District.

Teachers may implement differentiated reading instruction through structured peer mentoring (Grade 3-4 buddies) and targeted 1:1 tutoring using leveled readers.

Teachers may strengthen working memory by integrating multisensory phonics drills and chunked reading practices into daily lessons.

Administrators may launch professional development programs focused on adaptive teaching strategies, including mindfulness practices and inclusive classroom management.

Administrators & Local Government may partner with community leaders to organize monthly parent literacy workshops and distribute take-home kits with multilingual resources.

Policymakers may advocate for budget allocations to hire reading specialists and develop thematic, culturally relevant reading materials.

Future research similar to this study may consider to find more strategies to improve learners reading performance. Consider to define test item formats and comprehension questions not limited to multiple's choice only.

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