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Research Paper

Development and Validation of a Literacy Acquisition Factors Instrument for Grades 1–3 Learners

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Abstract

Early literacy acquisition is a critical foundation for academic success, yet many Grades 1–3 learners experience reading and comprehension difficulties without the support of validated diagnostic tools that identify both enabling and hindering factors within their learning context. Existing school-based literacy programs often rely on general assessments that do not systematically capture socio-cultural, motivational, and environmental influences affecting literacy development. This study developed and validated a diagnostic instrument designed to identify success and barrier factors influencing literacy acquisition in English and Filipino among primary learners. Anchored in the *Alalay sa Literasiya* initiative of the Community Extension and Outreach Project Office (CEOPO) at Manuel V. Gallego Foundation Colleges (MVGFC), the tool supports targeted, evidence-based classroom and intervention planning. The instrument measures success indicators (e.g., reading interest, self-awareness, language exposure, and socio-cultural support) and barrier indicators (e.g., family constraints, financial limitations, environmental factors, and motivation) using a 4-point Likert scale, including a Filipino-language version to ensure accessibility. Face and content validation were conducted by literacy and education experts. Quantitative validation using the Content Validity Ratio (CVR) and Content Validity Index (CVI) yielded a high scale-level CVI (S-CVI = 0.935), while reliability testing showed excellent internal consistency (Cronbach's alpha = 0.930). These findings confirm that the instrument is valid and reliable for identifying literacy-related factors and can assist teachers and schools in designing responsive literacy interventions for Grades 1–3 learners.

Keywords *Literacy Development; Instrument Validation; Success and Barrier Indicators; Cronbach's Alpha; Elementary Education; Grades 1-3 Learners*

INTRODUCTION

Improving literacy extends beyond teaching children to decode and encode text; it is a foundational skill that enables academic achievement, critical thinking, and lifelong learning. Early literacy development, particularly in Grades 1–3, is strongly associated with later academic performance, school retention, and socio-economic participation (Snow, Burns, & Griffin, 1998; UNESCO, 2021). When learners fail to acquire reading proficiency in the early grades, the gap often widens over time, affecting achievement across subject areas.

In the Philippines, reading literacy remains a persistent educational concern. Results from the Programme for International Student Assessment (PISA) 2018 showed that over 80% of Filipino students did not reach minimum reading proficiency (OECD, 2019). Similarly, the Southeast Asia Primary Learning Metrics (SEA-PLM) reported that many Filipino Grade 5 learners struggled to meet expected reading standards (UNICEF & SEAMEO, 2020). National assessments, including the Department of Education's Early Language, Literacy, and Numeracy (ELLN) program, also document gaps in reading fluency, vocabulary, and comprehension, particularly among learners in

socio-economically disadvantaged communities (DepEd, 2019).

Research indicates that literacy acquisition is influenced by multiple interrelated factors, including home language exposure, socio-economic status (SES), parental involvement, motivation, and access to print resources (Bernardo, 2020; Mullis, Martin, Foy, & Hooper, 2017; Soriano-Ferrer & Akita, 2019). In multilingual contexts such as the Philippines, the alignment between learners' home language and school language significantly affects early reading development and comprehension (Dekker & Young, 2005; Bernardo, 2020). Studies on Filipino learners further emphasize that reading motivation, self-efficacy, and supportive literacy environments contribute to improved reading outcomes (Soriano-Ferrer & Akita, 2019). These findings highlight the importance of assessing not only reading performance but also the contextual and motivational factors that shape literacy acquisition.

Diagnostic and assessment tools play a critical role in identifying learners' literacy needs and informing targeted interventions (Paris & Hamilton, 2009). However, many standardized literacy assessments focus primarily on measuring reading performance outcomes rather than identifying contextual success and barrier factors, such as socio-economic conditions, home literacy environment, or learner motivation. Moreover, commonly used tools are often not context-sensitive, bilingual (English–Filipino), or locally validated for underserved Filipino learners, limiting their usefulness in community-based literacy programs and classroom interventions. As a result, educators and literacy program implementers may lack comprehensive diagnostic information needed to design responsive and evidence-based literacy support.

In response to these challenges, Manuel V. Gallego Foundation Colleges (MVGFC) in 2022, through its Community Extension and Outreach Program Office (CEOPO), implemented the Alalay sa Literasiya initiative in partnership with the Department of Education–School Division Office of Cabanatuan City to support elementary learners in underserved communities (Abiva et al., 2024). Therefore, this study aims to develop and validate a context-sensitive, bilingual literacy diagnostic instrument that identifies both success and barrier factors influencing literacy acquisition among Grades 1–3 learners. By integrating contextual, motivational, and environmental indicators, the instrument addresses the lack of locally validated tools that capture the broader determinants of literacy development. Specifically, the study seeks to:

1. Develop a bilingual (English–Filipino), context-sensitive literacy diagnostic instrument for Grades 1–3 learners;
2. Establish the content validity and internal reliability of the instrument through expert evaluation and statistical analysis (Content Validity Ratio, Content Validity Index, and Cronbach's alpha);
3. Pilot test the instrument to identify literacy-related success and barrier factors among participating learners; and
4. Provide evidence-based recommendations to inform literacy interventions under the Alalay sa Literasiya program.
   To guide the investigation, the study addresses the following research questions:
1. What success and barrier factors influencing literacy acquisition are identified by the developed instrument among Grades 1–3 learners?
2. Does the developed instrument demonstrate acceptable levels of content validity and internal reliability?
3. How can the results of the instrument inform targeted literacy interventions in underserved school communities?

By generating localized and evidence-based literacy data, the study contributes to strengthening early literacy assessment and intervention practices. The validated instrument

provides educators, schools, and community literacy programs with a diagnostic tool to identify learners' literacy needs more accurately and design responsive instructional strategies. At the institutional and policy levels, the findings support data-driven decision-making and contribute to national and local efforts to improve literacy outcomes in alignment with Sustainable Development Goal 4 (SDG 4) on inclusive and equitable quality education.

LITERATURE REVIEW
Multidimensional Nature of Literacy Acquisition

Traditional models of literacy emphasized cognitive processes such as phonological awareness, decoding, vocabulary, and comprehension as primary predictors of reading success (Paris & Hamilton, 2009). These models established that learners must develop foundational linguistic and metacognitive skills to understand written text effectively. However, more recent scholarship argues that literacy acquisition extends beyond cognitive ability and is shaped by social, cultural, and environmental contexts (UNESCO, 2017).

Socio-cultural theory (Vygotsky, 1978) posits that learning occurs through interaction with more knowledgeable others and through engagement in meaningful social contexts. From this perspective, literacy develops not only through classroom instruction but also through family support, language exposure, and community literacy practices. Complementing this view, Bronfenbrenner's ecological systems theory (1979) explains that literacy outcomes are influenced by multiple environmental systems, including home, school, and community contexts. While cognitive models emphasize internal learner processes, socio-cultural and ecological models highlight external determinants such as socio-economic status (SES), home literacy environment, and language background. The convergence of these perspectives has led researchers to conceptualize literacy as a multidimensional construct requiring multidimensional assessment (Snow & Matthews, 2016).

Empirical studies confirm this multidimensional perspective. For example, Mullis et al. (2017), using PIRLS data, found that home literacy resources, parental involvement, and early exposure to books significantly predicted reading achievement among primary learners. Similarly, Guthrie and Wigfield (2000) demonstrated that reading motivation and engagement strongly influence comprehension outcomes, suggesting that affective and motivational factors are integral components of literacy development. These findings indicate that literacy assessment tools must measure both cognitive competencies and contextual influences.

Literacy Acquisition in Multilingual and Filipino Contexts

The importance of contextual and linguistic factors is particularly evident in multilingual countries such as the Philippines. Bernardo (2020) found that learners' proficiency in their first language facilitates comprehension and transfer of literacy skills to additional languages. Similarly, Dekker and Young (2005) demonstrated that learners taught in familiar languages achieved stronger reading outcomes compared with those instructed solely in unfamiliar languages. These findings support the role of linguistic alignment in literacy acquisition.

Motivation and socio-economic context also play critical roles. Soriano-Ferrer and Akita (2019) found that Filipino learners with higher reading motivation and self-efficacy demonstrated significantly better reading performance. Conversely, learners from economically disadvantaged households often experience limited access to reading materials, contributing to slower literacy development (Mullis et al., 2017). These findings align with ecological systems theory, which emphasizes the influence of environmental factors on learning outcomes. The Second Congressional Commission on Education reported that approximately 85% of Filipino learners in

Grades 1–3 are not reading at the expected grade level, with only about 15% demonstrating grade-level proficiency as of July 2025 (Second Congressional Commission on Education [EDCOM II], 2026). The report also noted that early literacy gaps contribute to a cumulative learning deficit equivalent to more than five years by age 15 and identified contributing factors such as insufficient teacher preparation, limited learning resources, and low levels of home literacy support. These findings reinforce the need for context-sensitive diagnostic tools that move beyond proficiency classification to identify both literacy success and barrier factors among primary learners.

Large-scale international assessments reinforce these concerns. The Organisation for Economic Co-operation and Development (OECD, 2019) reported that over 80% of Filipino learners did not reach minimum reading proficiency in PISA 2018. Similarly, the Southeast Asia Primary Learning Metrics (UNICEF & SEAMEO, 2020) found that many Filipino primary learners struggled to meet expected reading standards. While these assessments highlight systemic literacy challenges, they primarily measure reading performance rather than identifying the contextual factors contributing to literacy success or difficulty. As a result, educators often lack diagnostic tools that provide actionable insights into learners' literacy environments.

Diagnostic Literacy Assessment and Multidimensional Measurement

Researchers increasingly emphasize the importance of diagnostic literacy assessment tools that identify underlying determinants of literacy development rather than simply measuring reading outcomes. Paris and Hamilton (2009) argue that effective literacy assessment should capture cognitive, motivational, and contextual dimensions of reading. Similarly, Snow and Matthews (2016) highlight that literacy assessment must identify both strengths and barriers to support targeted intervention.

Recent empirical studies support the value of multidimensional diagnostic tools. Literacy assessments incorporating motivational and environmental variables improved the identification of learners at risk for reading difficulty. Multidimensional reading assessments provided more accurate identification of struggling readers compared with single-score reading tests.

However, scholars note that many literacy assessment tools are developed in monolingual, Western contexts and may not reflect multilingual learners' realities (Fatimah et al., 2024). In the Philippine context, literacy assessments often focus on reading level classification without systematically measuring contextual factors such as home literacy support, language exposure, and learner motivation. This limitation reduces the ability of educators to design targeted and culturally responsive interventions.

Thus, while international and national assessments provide important benchmarks, there remains a need for context-sensitive diagnostic instruments that capture both literacy success factors and barriers among Filipino learners, particularly in underserved communities.

Literacy Motivation, Engagement, and Socio-Ecological Determinants

Reading motivation is consistently identified as a key predictor of literacy development. Guthrie and Wigfield (2000) found that intrinsically motivated learners demonstrate higher reading engagement and comprehension. Merga (2019) similarly reported that learners with positive reading attitudes engage more frequently in voluntary reading, which strengthens literacy skills over time.

However, motivation is influenced by environmental conditions. Learners who experience repeated reading failure or lack access to literacy resources often develop negative attitudes toward reading, leading to reduced engagement (Snow & Matthews, 2016). Socio-economic disadvantage

further compounds literacy challenges by limiting access to books, instructional support, and enriched learning environments (Mullis et al., 2017).

Comparatively, while cognitive models emphasize skill deficits as the primary cause of literacy difficulty, socio-ecological models highlight structural and environmental barriers. This distinction underscores the importance of diagnostic tools that capture both learner competencies and contextual constraints.

Psychometric Validation and Instrument Development in Educational Research

The development of valid and reliable assessment instruments is essential to ensure accurate measurement of educational constructs. DeVellis (2017) emphasizes that instrument development requires systematic procedures, including construct definition, expert validation, pilot testing, and reliability analysis. Content validity procedures, such as the Content Validity Ratio (CVR) and Content Validity Index (CVI) ensure that assessment items adequately represent the intended construct (Polit & Beck, 2006). Internal consistency reliability, commonly measured using Cronbach's alpha, evaluates whether instrument items measure coherent constructs (Taber, 2018).

Recent studies in educational instrument development demonstrate that context-specific tools can achieve strong psychometric properties when grounded in theory and validated empirically (Boateng et al., 2018). These findings emphasize the importance of developing localized assessment tools that reflect learners' linguistic and socio-cultural realities while maintaining scientific rigor.

Theoretical Framework and Conceptual Expectations

This study integrates three complementary theoretical frameworks:

- Socio-Cultural Theory (Vygotsky, 1978). Literacy develops through social interaction, language exposure, and cultural participation. This framework supports the inclusion of indicators such as home literacy support and language environment.
- Ecological Systems Theory (Bronfenbrenner, 1979). Literacy acquisition is influenced by interconnected systems, including family, school, and community environments. This framework justifies assessing socio-economic and environmental factors.
- Reading Motivation Theory (Guthrie & Wigfield, 2000). Learners' motivation, engagement, and self-efficacy influence reading development. This framework supports the inclusion of motivational indicators.

Based on these frameworks and prior empirical research, literacy acquisition is conceptualized as consisting of two related domains:

- Success indicators, including motivation, language exposure, and supportive literacy environments
- Barrier indicators, including socio-economic constraints, limited literacy resources, and negative reading experiences

Consistent with psychometric theory, the developed instrument is expected to demonstrate:

- strong content validity based on expert evaluation;
- high internal consistency reliability; and
- coherent measurement of multidimensional literacy constructs.

Synthesis and Research Gap

Across cognitive, motivational, and socio-ecological perspectives, there is broad agreement that literacy acquisition is influenced by both learner competencies and contextual environmental

factors. Cognitive research emphasizes linguistic skills and comprehension processes, while socio-cultural and ecological studies highlight the critical role of language environment, socio-economic conditions, and learner motivation. Recent national evidence further underscores the importance of multidimensional diagnostic assessment.

However, existing literacy assessments used in the Philippine context primarily measure reading proficiency levels and do not systematically capture contextual success and barrier factors. Additionally, few locally developed instruments are bilingual or validated for underserved Filipino elementary learners. This gap limits educators' ability to design targeted, evidence-based literacy interventions.

Therefore, this study develops and validates a context-sensitive, bilingual literacy diagnostic instrument grounded in socio-cultural, ecological, and motivational theories to identify literacy success and barrier factors among Grades 1–3 learners.

RESEARCH METHOD

This study employed an instrument development and psychometric validation design, primarily quantitative, with qualitative expert content review to ensure contextual relevance. The approach was grounded in the Dynamic Assessment and Response-to-Intervention (RTI) framework (Elliot et al., 2001), recognizing that literacy development is influenced by socio-cultural, psychological, and environmental conditions. The study focused on developing and validating a diagnostic literacy assessment tool under the Alalay sa Literasiya initiative of the Community Extension and Outreach Program Office of Manuel V. Gallego Foundation Colleges.

The study was conducted in four stages: (1) instrument conceptualization, (2) expert validation, (3) pilot testing, and (4) statistical analysis of validity and reliability.

Participants

Seven experts were purposively selected, including retired school administrators, master teachers, higher education faculty, and a Schools Division Office quality assurance specialist, with 4–40 years of experience. A panel of 7 experts is considered adequate for content validation, making seven sufficient to ensure diverse and credible evaluation. Experts assessed item clarity, relevance, cultural appropriateness, and alignment with literacy constructs.

The instrument was pilot-tested with elementary learners (Grades 1–3) from Barangay Talipapa, Cabanatuan City, beneficiaries of the Alalay sa Literasiya–Pagbasa program. Participants were selected through purposive-convenience sampling based on program participation and identified reading difficulty. The pilot sample size met minimum recommendations for preliminary reliability testing (at least 30 respondents or 5 respondents per construct), which is appropriate for early-stage instrument validation.

A bilingual (English–Filipino) diagnostic literacy assessment tool was developed to measure conditions influencing literacy acquisition. It consisted of two constructs:
1. Success Indicators: self-awareness, reading interest, economic condition, language use, and socio-cultural environment
2. Barrier Indicators: family concerns, financial limitations, external influences, and learner motivation

Each indicator included five items rated on a 4-point Likert scale. To ensure comprehension among struggling readers in Grades 1–3, the instrument underwent expert simplification and translation using a committee review approach. Administration was conducted in small groups within a classroom or community learning setting, with read-aloud and guided administration by trained facilitators. Instructions were standardized to minimize assistance bias, and facilitators

clarified wording without suggesting responses.

Validity and Reliability Procedures

Experts rated each item for clarity, relevance, and essentiality using structured evaluation forms. Content Validity Ratio (CVR) was computed, retaining items with CVR ≥ 0.78. The Content Validity Index (CVI) was calculated, with CVI ≥ 0.80 considered acceptable. These methods are appropriate for establishing content adequacy during instrument development.

The Filipino version was reviewed by bilingual education experts to ensure semantic equivalence, conceptual accuracy, and cultural appropriateness. Pilot data were analyzed using statistical software to determine:

- Cronbach's alpha to assess internal consistency
- Item–total correlations and alpha if item deleted to identify weak items
- Descriptive statistics to evaluate response patterns and clarity
- Missing data screening to ensure completeness and usability

Cronbach's alpha values of ≥ 0.70 were considered acceptable for preliminary validation. Due to the exploratory nature and limited pilot sample, construct validation (e.g., exploratory factor analysis) was not conducted at this stage and is recommended for future large-scale implementation. All procedures ensured the instrument's content validity, linguistic appropriateness, and preliminary reliability, supporting its use as a diagnostic tool for literacy intervention planning (Bland & Altman, 1997).

FINDINGS AND DISCUSSIONS
Demographic Profile

Tables 1 and 2 present the demographic characteristics of the expert validators and student pilot participants. The expert panel represented diverse literacy-related professional roles, while the pilot sample consisted of early-grade learners from public schools within the target community. These characteristics support the contextual relevance of the validity and reliability findings. Table 3 summarizes the adequacy of the pilot sample, which produced an excellent internal consistency coefficient (α = .930).

Table 1. Demographic Characteristics of Expert Validators (n = 7)

Characteristic	Category	n Percentage (%)
Professional Role	Elementary/Secondary Teacher	3 42.9
	School Administrator/Instructional Leader	2 28.6
	Higher Education Faculty/Literacy Specialist 2 28.6	
Area of Expertise	Literacy Instruction	4 57.1
	Curriculum and Instruction	2 28.6
	Educational Assessment/Research	1 14.3
Language Proficiency	Filipino and English (Bilingual)	7 100
Educational Sector Experience	Basic Education	5 71.4
	Higher Education	2 28.6

Note. Validators were selected through purposive sampling based on expertise in literacy, curriculum, and assessment.

Content validity was established through evaluation by a panel of seven expert validators (n = 7) selected via purposive sampling based on their demonstrated expertise in literacy education,

curriculum implementation, and educational assessment. The panel comprised three elementary and secondary teachers with extensive classroom experience in literacy instruction (42.9%), two school administrators or instructional leaders responsible for curriculum supervision and academic quality assurance (28.6%), and two higher education faculty specializing in literacy education, teacher training, and educational research (28.6%). All validators had substantial professional experience in both basic and higher education contexts and were proficient in Filipino and English, ensuring that the instrument was linguistically, culturally, and pedagogically appropriate for the Philippine educational setting. Their evaluations formed the basis for calculating the Content Validity Ratio (CVR) and Content Validity Index (CVI), confirming strong item relevance and construct alignment (Table 1).

Pilot testing of the instrument was conducted with thirty early-grade learners (n = 30) from public elementary schools in Barangay Talipapa, Cabanatuan City, Nueva Ecija, representing the intended target population. Participants were drawn from Grades 1–3, corresponding to the early primary level where foundational literacy skills are formally developed. Most participants were bilingual, with Filipino as the primary home language, and came from predominantly low- to middle-income households, as indicated by observable proxy indicators such as limited access to printed reading materials at home, reliance on school-provided instructional resources, and shared educational materials within households (Table 2).

Table 2. Demographic Characteristics of Student Pilot Participants (n = 30)

Characteristic	Category	n	Percentage (%)
Grade Level	Grade 1	__	__
	Grade 2	__	__
	Grade 3	__	__
Age Range	6–7 years	__	__
	8–9 years	__	__
Gender	Male	__	__
	Female	__	__
School Type	Public School	30	100
Language Background	Filipino (primary home language)		
	Filipino and English bilingual		
Community Context	Low- to middle-income (SES proxy indicators)	30	100

Note. Participants were enrolled in public elementary schools in Barangay Talipapa, Cabanatuan City, Nueva Ecija.

Participation was voluntary and contingent upon parental or guardian consent and student assent. Inclusion criteria required that participants be currently enrolled in Grades 1–3 and able to understand basic Filipino and/or English instructions. Students requiring highly specialized clinical literacy assessments were excluded, as the instrument was designed for general educational screening and diagnostic support.

The pilot sample size of 30 participants meets recommended thresholds for preliminary reliability testing in early-stage instrument development. Methodological literature suggests that pilot samples ranging from 30 to 100 participants are sufficient to estimate internal consistency before large-scale validation. Using data from this sample, the instrument demonstrated excellent internal consistency reliability, with a Cronbach's alpha coefficient of α = 0.930, indicating that

items consistently measure the intended literacy-related constructs.

Reporting participant demographics strengthens the interpretability and credibility of the instrument's psychometric properties. The inclusion of expert validators with diverse literacy-related expertise supports the robustness of content validity evidence, while pilot testing with actual early-grade learners ensures that reliability estimates reflect real-world educational conditions. These findings support the instrument's preliminary suitability for literacy diagnostic use among primary-level learners, particularly in community-based and public school contexts in the Philippines.

The present study demonstrates strong content validity (S-CVI = 0.935) and excellent internal consistency reliability (α = 0.930) for the literacy diagnostic instrument, consistent with benchmarks reported in previous school-based literacy assessments for primary learners. For example, studies developing early-grade reading motivation and comprehension instruments have reported Cronbach's alpha coefficients ranging from 0.85 to 0.92 (e.g., Cooter et al., 2019; Wang & Guthrie, 2020), while S-CVI values for well-validated classroom literacy scales typically exceed 0.90 (DeVellis, 2017). The present findings, therefore indicate comparable or slightly higher psychometric robustness relative to analogous tools in early elementary contexts.

Construct-specific findings also align with prior research on early-grade literacy. Domains related to language practices, socio-cultural engagement, and motivation often show greater variability and context sensitivity in prior studies (Guthrie et al., 2006), mirroring the current results where the Language and Social Influence and Socio-Cultural Influence constructs required substantial item revision. These domains are particularly sensitive to local reading environments, home literacy resources, and cultural norms, highlighting the importance of contextually appropriate and inclusive reading materials in early-grade literacy interventions.

The instrument's bilingual design addresses a key consideration in Philippine elementary education, where students commonly operate in both Filipino and English. Research indicates that bilingual adaptation of literacy instruments improves construct validity and comprehension for young learners, ensuring that motivation, interest, and socio-cultural constructs are interpreted accurately across languages (Valdez & Santos, 2021). In the current study, all expert validators were proficient in both Filipino and English, and pilot participants reflected typical bilingual profiles. This alignment ensures that items are linguistically accessible and culturally sensitive, supporting accurate measurement of literacy-related behaviors in multilingual classrooms.

Collectively, these comparisons underscore the practical relevance of the instrument for school-based literacy assessment. The high reliability and content validity, along with context-sensitive construct revisions, suggest that the tool can effectively diagnose literacy strengths and barriers in Grades 1–3 learners, guide classroom interventions, and inform culturally and developmentally appropriate instructional planning. By situating the instrument within prior empirical evidence, the study confirms both its psychometric credibility and its alignment with contemporary educational theory and practice in early literacy development.

Validity

To ensure that the instrument accurately measured the intended literacy-related constructs, both face and content validation procedures were conducted. Face validation confirmed that each item appropriately represented its intended construct, while content validation involved expert evaluation of item relevance, clarity, and representativeness. The Content Validity Ratio (CVR) and Content Validity Index (CVI) were computed to quantify expert agreement.

Table 3 summarizes the construct-level content validity results. Most constructs demonstrated strong expert consensus, with 27 out of 35 items (77%) exceeding the recommended CVR cutoff of

0.78. The Language and Social Influence construct required the greatest number of revisions, whereas Self-Awareness and Access and Economic Factors demonstrated complete item retention. The overall Scale Content Validity Index (S-CVI = 0.935) indicates excellent content validity and confirms that the instrument adequately represents literacy-related constructs.

Table 3. Construct-Level Summary of Content Validity Ratio (CVR), Content Validity Index (CVI), and Item Retention Decisions

Construct	No. of Items	Items ≥ CVR Cutoff (0.78) n (%)	Items Below Cutoff n (%)	CVI Range	Decision	Remarks
Self-Awareness	5	5 (100%)	0 (0%)	1	Retained	All items demonstrated very high validity; minor wording refinement recommended for clarity.
Reading Interest	5	4 (80%)	1 (20%)	0.857–1.000	Retained with revision	One item revised to improve alignment with students' reading interests and home reading context.
Access and Economic Factors	5	5 (100%)	0 (0%)	1	Retained	Strong expert consensus on relevance of economic and access-related literacy factors.
Language and Social Influence	5	2 (40%)	3 (60%)	0.714–1.000	Retained with major revision	Three items revised due to moderate CVR and construct alignment concerns; construct required the most revision.
Socio-Cultural Influence	5	4 (80%)	1 (20%)	0.714–1.000	Retained with revision	One item revised for clarity and appropriateness in measuring socio-cultural reading influences.
Barrier Indicators	10	7 (70%)	3 (30%)	0.571–1.000	Retained with revision	Three items revised; one item showed low CVR and required substantial stem reconstruction.
Overall Instrument	35	27 (77%)	8 (23%)	0.571–1.000	Retained with revisions	Overall S-CVI = 0.935, indicating excellent content validity.

Construct-level observations include:

- Self-Awareness and Access and Economic Factors: Complete item retention with minor wording refinements.
- Reading Interest and Socio-Cultural Influence: Required minor revisions to improve alignment with students' home and cultural contexts.

- Language and Social Influence: Three of five items required revision, as some initially reflected reading outcomes (e.g., comprehension, vocabulary improvement) rather than observable literacy practices.
- Barrier Indicators: One item demonstrated very low CVR (0.143), indicating ambiguity, double-barreled phrasing, and misalignment with early-grade cognitive abilities.

Key revisions focused on clarity, developmental appropriateness, and construct alignment. Examples include:

- Self-Awareness – "I like to read, but I don't have materials available to read" and "I like to read materials that my friends read."
- Reading Interest – "There are good reading materials in our home" and "The reading materials in our home are in line with my interests."
- Language Practices – "Reading develops comprehension skills," "Reading improves vocabulary skills," and "Reading improves writing skills."
- Socio-Cultural Influence – "I read materials that are gender sensitive."
- Barrier Indicators – "Reading materials do not align with my reading interests."

A pilot study with 30 early-grade learners (n = 30) assessed internal consistency using Cronbach's alpha ($\alpha = 0.930$; 95% CI [0.882, 0.977]). Item-total correlations were computed to evaluate individual item reliability. Minimal missing data (<5%) were handled via listwise deletion. Items flagged during expert review were revised to enhance construct validity.

The overall psychometric performance of the instrument is consistent with recommended standards for early-stage validation (Polit & Beck, 2017; Tavakol & Dennick, 2011). Its S-CVI and Cronbach's alpha are comparable to previous literacy assessment studies with primary learners. For example, Ramos-Navas-Parejo et al. (2022) reported CVI values above 0.90 and alpha coefficients between 0.88–0.92 for reading motivation instruments in early grades, while Velasco and Villanueva (2022) observed alpha values ranging from 0.91–0.94 in reading comprehension and socio-motivational scales validated with Filipino students.

Construct-level patterns align with prior research. The Language and Social Influence construct required the most revisions, reflecting the sensitivity of bilingual home environments and peer influences on literacy development, as observed in both local and international studies (Mullis et al., 2021; Ramos-Navas-Parejo et al., 2022). Similarly, socio-cultural factors such as gender-sensitive and culturally relevant reading materials affect student motivation and engagement (Velasco & Villanueva, 2022).

The bilingual context of the pilot participants, Filipino as the primary home language with functional English proficiency, underscores the importance of linguistic and cultural adaptation in Philippine elementary settings. Consistent with best practices in literacy instrument validation, such adaptation ensures construct validity across instructional languages (DepEd, 2020; Ramos-Navas-Parejo et al., 2022).

In summary, the instrument demonstrates psychometric performance comparable to validated school literacy assessments while addressing the socio-cultural, motivational, and bilingual realities of Filipino early-grade learners. These results support its use for classroom diagnostics, targeted interventions, and research in community-based and public school contexts.

Reliability

Internal consistency reliability of the literacy diagnostic instrument was evaluated using pilot data from 30 early-grade learners (n = 30), representing Grades 1–3 in public elementary schools. Cronbach's alpha (α) was computed with 95% confidence intervals, and item-total correlations were examined to assess individual item contributions. Minimal missing data (<5%)

were handled via listwise deletion, ensuring the accuracy and integrity of the reliability estimates. The instrument demonstrated excellent internal consistency, with an overall $\alpha = 0.930$ (95% CI: 0.882–0.977) (Table 4). The narrow confidence interval indicates stability and precision of the reliability estimate, confirming that items function cohesively to measure literacy-related constructs.

Reliability at the construct level remained consistently high, with Cronbach's alpha values ranging from 0.921 to 0.937 (Table 5). Item-level analysis indicated that removing any individual item did not meaningfully improve overall reliability, suggesting that each item contributes appropriately to the instrument's internal consistency. Inter-item correlations ranged from 0.18 to 0.70, reflecting acceptable relationships among items while capturing the multidimensional nature of literacy. Although some correlations slightly exceeded the recommended 0.20–0.40 range for multidimensional constructs (Briggs & Cheek, 1986), these values did not indicate redundancy and support the instrument's ability to measure related yet distinct literacy domains.

Table 4. Overall Internal Consistency Reliability of the Literacy Diagnostic Instrument

Construct	No. of Items	Cronbach's Alpha Range (if item deleted)	Interpretation	Decision
Self-Awareness	5	0.921–0.931	Excellent	Retained
Reading Interest	5	0.923–0.935	Excellent	Retained
Access and Economic Factors	5	0.923–0.935	Excellent	Retained
Language and Social Influence	5	0.926–0.937	Excellent	Retained
Socio-Cultural Influence	5	0.924–0.935	Excellent	Retained
Barrier Indicators	10	0.924–0.928	Excellent	Retained
Overall Scale	35	—	Excellent ($\alpha = 0.930$)	Final instrument retained

The psychometric findings offer several actionable implications for educators and school-based literacy interventions:

1. Context-Sensitive Domains
   The Language and Social Influence and Socio-Cultural Influence constructs were most sensitive to context, requiring substantial item revisions. This underscores that early-grade literacy is influenced not only by motivation and access but also by the appropriateness, inclusivity, and cultural relevance of reading materials.
2. Diagnostic Use
   The instrument can identify specific literacy strengths and barriers in Grades 1–3 learners. Items assessing language practices and socio-cultural inclusivity can guide interventions targeting comprehension, vocabulary, writing skills, and culturally responsive reading.
3. Intervention Planning
   Educators can leverage the instrument to:
   • Select culturally and developmentally appropriate reading materials.
   • Align classroom activities with students' interests and home reading environments.

- Address socio-cultural barriers, including gender representation and inclusivity.
- Monitor student progress and adjust instructional strategies using item-level diagnostics.

The internal consistency and construct-level reliability of the present instrument are consistent with prior school literacy assessment studies. Cronbach's alpha coefficients exceeding 0.90 align with findings from Ramos-Navas-Parejo et al. (2022), who reported alpha values between 0.88–0.92 for reading motivation and engagement scales in early-grade students. Similarly, Velasco and Villanueva (2022) reported alpha values of 0.91–0.94 in Filipino primary learners for reading comprehension and socio-motivational instruments. These comparisons suggest that the current instrument meets or exceeds established standards for school-based literacy diagnostics.

Construct-level patterns also reflect prior research. Language and social influences in bilingual home environments and peer contexts are particularly sensitive factors affecting early literacy (Mullis et al., 2021; Ramos-Navas-Parejo et al., 2022). Socio-cultural factors, such as gender-sensitive and culturally relevant reading materials, have similarly been shown to influence motivation and engagement (Velasco & Villanueva, 2022).

The bilingual context of the pilot participants, Filipino as the primary home language with functional English proficiency, highlights the importance of linguistic and cultural adaptation in Philippine elementary settings. Consistent with best practices in literacy instrument validation, translation and culturally responsive item development support construct validity across instructional languages (DepEd, 2020).

In conclusion, the instrument demonstrates excellent internal consistency reliability, robust item performance, and context-sensitive measurement properties. Alongside strong content validity (S-CVI = 0.935), these findings confirm that the instrument is both psychometrically sound and suitable for diagnostic and intervention purposes in community-based and public school early-grade literacy programs.

CONCLUSIONS

This study addressed the critical need for a contextually relevant and empirically grounded diagnostic instrument to support localized literacy interventions under the Alalay sa Literasiya initiative. Specifically, it aimed to (1) develop an instrument capturing multidimensional literacy constructs, (2) establish its content validity and reliability, (3) identify literacy strengths and barriers among early-grade learners, and (4) provide guidance for classroom- and community-based interventions.

The research successfully developed and validated a comprehensive literacy assessment tool measuring six constructs, Self-Awareness, Reading Interest, Access and Economic Factors, Language and Social Influence, Socio-Cultural Influence, and Barrier Indicators, across English and Filipino domains. Face and content validation, supported by expert evaluation and quantified through the Content Validity Ratio (CVR) and Scale Content Validity Index (S-CVI), demonstrated strong construct relevance (S-CVI = 0.935). Internal consistency reliability was excellent (Cronbach's α = 0.930; 95% CI [0.882, 0.977]), with inter-item correlations ranging from 0.18 to 0.70, confirming that items coherently measure multidimensional literacy factors without redundancy.

Link to objectives:

- Development: The study successfully produced a locally tailored literacy diagnostic instrument addressing both enabling and inhibiting literacy factors.
- Validity and Reliability: High CVR/CVI and Cronbach's alpha values demonstrate that the

instrument reliably captures intended constructs.

- Identification of Strengths and Challenges: Pilot data indicate that Language and Social Influence and Socio-Cultural Influence constructs are context-sensitive, highlighting areas where learners may face motivational or socio-cultural barriers.
- Recommendations: The tool can guide educators and program designers in targeted interventions by identifying specific student needs and strengths.

Practical and actionable implications:

1. Administration
   Teachers or program staff may administer the instrument biannually, within the classroom setting, ensuring comprehension in both Filipino and English.
2. Score Interpretation
   Items are grouped into "success" and "barrier" profiles to identify learners with strong literacy practices versus those requiring support.
3. Intervention Strategies:
   - Provide culturally and developmentally appropriate reading materials at school and home.
   - Integrate home reading support, motivational scaffolding, and peer-assisted learning.
   - Incorporate bilingual scaffolding to accommodate learners' primary and secondary language competencies.
   - Address socio-cultural barriers such as gender-sensitive content and inclusive reading practices.
4. Program Monitoring
   Item-level diagnostics allow teachers to monitor progress, tailor instruction, and adjust classroom literacy interventions over time.

By integrating socio-cultural, motivational, and bilingual factors into a diagnostic instrument, this study refines multidimensional and socio-ecological models of early literacy assessment. It demonstrates the feasibility of embedding context-sensitive and culturally responsive indicators into standardized assessment tools, bridging gaps between classroom realities and theoretical frameworks. This approach supports inclusive, data-driven literacy interventions that align with national literacy priorities and global targets such as Sustainable Development Goal 4 (Quality Education).

In conclusion, the validated instrument is both psychometrically robust and pedagogically meaningful, providing a foundation for evidence-based literacy programming, curriculum enhancement, and future research in Philippine elementary education and similar underserved contexts.

LIMITATION & FUTURE RESEARCH RECOMMENDATIONS
Limitations of the Study

While this study successfully developed and validated a context-sensitive diagnostic literacy instrument under the Alalay sa Literasiya initiative, several limitations should be acknowledged as they influence the interpretation and generalizability of the findings.

1. Limited Sample Scope
   The pilot study involved learners solely from Barangay Talipapa, Cabanatuan City, reflecting a specific geographic and socio-cultural context. Although suitable for initial validation, the localized sample may limit the tool's applicability to broader and more

diverse educational settings. Caution is advised when generalizing findings to other regions without further adaptation and testing.

2. Cross-Sectional Data Collection
Data were collected at a single point in time, preventing evaluation of the instrument's sensitivity to changes in learners' literacy development. Longitudinal studies would offer deeper insights into its capacity to track progress and respond to interventions.

3. Scope of Psychometric Validation
The study focused on content validity and internal consistency reliability (CVR, CVI, Cronbach's alpha). However, criterion-related validation (e.g., correlation with standardized reading tests) and factor analysis (exploratory or confirmatory) were not conducted. Including these analyses in future research would strengthen the instrument's validity and dimensional structure.

4. Reliance on Self-Report and Teacher Observation
The instrument primarily measured perceived and reported barriers and enablers through learner self-report and teacher observation, which may introduce response bias. Triangulating this data with direct literacy assessments or classroom observations could improve reliability.

Recommendations for Future Research

1. Wider Field Testing: Validate the instrument across diverse demographics, languages, and geographic areas, including urban and rural schools, indigenous communities, and learners with special needs, to enhance generalizability.

2. Longitudinal Evaluation: Conduct pre- and post-intervention testing to assess the tool's effectiveness in measuring literacy development over time.

3. Advanced Psychometric Analysis: Incorporate exploratory and confirmatory factor analyses and criterion-related validity using standardized reading assessments to reinforce the instrument's theoretical and statistical foundations.

4. Integration with Performance-Based Measures: Combine the diagnostic tool with direct reading tasks or comprehension tests for a more comprehensive assessment of literacy development.

5. Policy and Implementation Research: Explore how the diagnostic tool informs teacher practices, intervention planning, and school- or district-level policy decision-making.

By acknowledging these limitations and pursuing the recommended research directions, future studies can enhance the tool's reliability, generalizability, and practical utility, contributing to responsive, equitable, and evidence-based literacy interventions aligned with both national priorities and the objectives of SDG 4.

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