



Development and Field Testing of Filipino Orthographic Educational Learning Materials

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Received: March 16, 2026

Revised: April 11, 2026

Accepted: April 18, 2026

ABSTRACT

This study aimed to develop and field-test Filipino orthographic educational learning materials and determine their effectiveness in strengthening the language skills of Grade 2 learners. Grounded in a developmental research framework and employing a quasi-experimental design with a descriptive quantitative approach, the study evaluated the extent to which established standards, namely curriculum, competency, instructional design, and language standards, were observed in the developed materials. Validation was conducted using the quality assurance tool of the Bureau of Learning Resources, looking into the curriculum content, competencies, instructional design, and language, while effectiveness was measured through a researcher-developed validated 30-item pretest and posttest ($KR-21 = 0.710$). The participants consisted of 33 Grade 2 learners from Vito Elementary School, selected through cluster sampling. Expert evaluation revealed that the developed materials achieved “Very High” ratings across all standards: curriculum content (3.677), competency (3.91), instructional design (3.83), and language (3.733), indicating strong alignment with prescribed guidelines and high evaluator agreement. Pretest results revealed that learners performed at a high level overall, with strengths in reading fluency (very high) and spelling accuracy (high), but moderate performance in vocabulary and comprehension. Posttest results demonstrated notable improvements across all four domains, yielding a higher overall mean score. Statistical analysis revealed a significant difference between pretest and posttest scores ($t = -16.807$, $p < .05$), confirming the effectiveness of the developed materials. Furthermore, learners’ academic performance in Filipino improved from a mean grade of 81.56 to 86.46, reinforcing the positive impact of the intervention. The findings highlight that contextualized and well-structured orthographic materials that are socially relevant significantly enhance early literacy skills, particularly in vocabulary development and comprehension. Continuous use and refinement of such educational learning materials are recommended to sustain literacy gains and support long-term academic achievement for teachers and learners.

Keywords: Filipino orthography, Grade 2 learners, instructional materials, literacy development, quasi-experimental design

How to Cite:

Temporosa, J. P., & Sotto, N. A. B. (2026). Development and Field Testing of Filipino Orthographic Educational Learning Materials. *Global Journal of STEM Education & Management Research*, 2(1), 283-292. <https://doi.org/10.5281/zenodo.19643088>



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INTRODUCTION

The development of educational materials that integrate orthographic principles plays a significant role in improving literacy and language accuracy among Filipino learners. For learners in Key Stage 1, instructional materials should not only provide reading texts but also guide learners in understanding the structural patterns of the language. Materials grounded in orthographic principles can serve as a foundation for literacy development by helping learners recognize correct spelling patterns, sound-symbol relationships, and language conventions necessary for effective reading and writing (Pesiao, 2026). The integration of the *Ortograpiyang Pambansa* (National Orthography) into teaching and learning activities enables educators to translate abstract language rules into practical learning experiences. Through structured instruction, learners are able to understand standard spelling patterns, grapheme-phoneme relationships, and proper punctuation usage. These elements are essential in helping learners develop the foundational skills needed for accurate reading and writing in Filipino (Burgos, 2025).

This distinction is significant because excessive reliance on non-orthographic instructional materials may limit learners' exposure to formal orthographic rules. Without explicit instruction on correct spelling and writing conventions, learners may develop inconsistent spelling patterns. Over time, these inconsistencies can affect learners' confidence in expressing themselves in written and spoken Filipino. The limited availability and use of orthography-focused instructional resources also suggest that existing learning materials may not fully address established literacy standards. This situation creates a gap between the intended goals of orthographic literacy and the realities of classroom instruction. Field-tested orthographic learning materials can help address this gap by providing structured guidance in spelling, vocabulary use, and written language conventions. Such resources may also contribute to improved consistency in learners' spelling and increased confidence among both teachers and students in using the Filipino language effectively (Verano, 2024).

The two resources differ greatly in their content delivery; the orthographic-based learning resources are mainly designed for languages with a writing system that closely represents sounds (phonemes) or follows consistent spelling rules. Its Key features are: Emphasize letter-sound correspondence, Support phonics-based instruction, Focus on decoding and spelling accuracy, and are common in alphabetic systems like English (though irregular), Spanish, or Filipino (Ehri 2005), as presented in the developed materials for this research. On the other hand, non-orthographic materials are used in languages or systems where writing does not directly map onto sounds, and learning relies less on phonics and more on meaning, symbols, or context. Its Key features are: Emphasize whole-word recognition, symbols, or meaning. Often used in logographic or morphosyllabic systems. Focus on visual memory, context clues, and semantic understanding. May include multimedia or oral-based resources Perfett, C.A (2023)

Researching the development and field testing of Filipino orthographic educational learning materials is essential to strengthen literacy, preserve linguistic identity, and improve classroom outcomes. By creating evidence-based, culturally grounded resources, this study addresses gaps in spelling, reading, and writing proficiency among learners. Field testing ensures usability, effectiveness, and adaptability across diverse contexts. Ultimately, the research empowers educators with reliable tools, supports curriculum goals, and promotes inclusive, high-quality education rooted in the Filipino language for national development and continuity. This endeavor helps address the resource needs of the teacher, specifically for grade 2. This material not only serves as supplementary reading materials but is also used as motivational and main sources of information on teaching reading in Filipino, where the components of learning that must be addressed for learners have been enhanced due to orthographic-based material. The developed resources were based on the recent K to 10 Curriculum to significantly scaffold learning competencies and transform competencies learning to real-life application. Santos & Reyes(2026)

Developing and field testing Filipino orthographic educational teaching and learning resources is vital to ensure instructional effectiveness, linguistic accuracy, and cultural relevance. Empirical validation through field testing allows teacher-users to assess usability, learner comprehension, and curriculum-aligned teaching-learning resources. Such resources support literacy development and strengthen national identity by upholding standardized Filipino usage. Furthermore, iterative evaluation ensures adaptability across diverse learner contexts, improving educational learning outcomes and inclusivity in language instruction (Garcia & Santos, 2022).

The use of the Filipino Comprehensive Rapid Literacy Assessment became the inspiration of the researcher in the development of Orthographic learning materials, as it is just a trial to see if the researcher can help improve learners' spelling accuracy, vocabulary growth, and reading fluency to make Grade 2 learners fully proficient.

Basically, the CRLA results during the Pre Test of Vito Elementary School show that 29/33 are light Refreshers. At first glance, this appears encouraging because it connotes that the majority of the Grade 2 learners already possess foundational skills in reading. But deeper analysis suggests a critical institutional gap that should not be ignored. Being in the list of light refreshers, learners possess partial proficiency; they can decode familiar words and grasp basic texts, but still struggle with accuracy, fluency, and consistent application of orthographic rules. These learners are at a transitional stage: they are not non-readers, yet they



have not reached the level of independent and confident readers. This “in-between” status is precisely where targeted intervention becomes most impactful. The gap lies in the lack of a structured, developed, and reinforced Filipino orthography. Many learners in this category exhibit difficulties in: Applying correct spelling patterns (e.g., proper use of *patinig* and *katinig*), recognizing syllabication rules (*pagpapantig*), demonstrating consistency in word recognition, especially with unfamiliar or longer words, and transferring oral language familiarity into accurate written and reading forms (Ehri, L. C. (2005)

In response to the need for improved learning resources, the Schools Division Office of Sagay City initiated the development of supplementary instructional materials aligned with established orthographic standards. This initiative supports the goals of the Enhanced Basic Education Act of 2013 (Republic Act 10533), which emphasizes the development of relevant and context-based instructional materials that enhance learning outcomes and promote language proficiency.

Orthography plays a critical role in literacy development, providing learners with consistent rules and conventions for reading and writing. These conventions form the foundation for accurate, confident, and meaningful language use (Martin, 2024). Knowledge of orthography supports spelling ability, which in turn strengthens reading and literacy development across age levels and linguistic contexts.

Research consistently highlights the impact of orthographic knowledge on literacy outcomes. Share (2021) emphasizes that exposure to well-structured orthographic inputs fosters automaticity in word recognition, a core component of fluent reading. In the Philippine context, the absence of localized and systematically developed orthographic instructional resources presents challenges for early-grade literacy programs. Limited teacher training and lack of appropriate orthographic materials have been identified as significant barriers to effective literacy instruction (Verano, 2024; Yap, 2020). Applying orthographic principles through carefully designed learning materials can address these gaps by providing learners with resources that are meaningful, culturally relevant, and pedagogically sound.

OBJECTIVES OF THE STUDY

This study aimed to develop Filipino educational learning materials in accordance with the orthographic guidelines prescribed by the Komisyon sa Wikang Filipino (KWF). The development process also incorporated a systematic quality assurance procedure to ensure the materials' alignment with educational standards prior to field testing.

Specifically, this study sought to answer the following questions:

1. To what extent are the established standards observed in the development of the Filipino educational learning materials in terms of:

- 1.1 Curriculum Standard
- 1.2 Competency Standard
- 1.3 Instructional Design
- 1.4 Language Standard

2. What is the learners' level of language skills before and after using the developed Filipino orthographic educational learning materials, specifically in terms of:

- 2.1 Spelling Accuracy,
- 2.2 Vocabulary Development,
- 2.3 Reading Fluency, and Comprehension.

3. Is there a significant difference in the learners' language skill levels before and after exposure to the developed Filipino orthographic educational learning materials across the following areas?

- 3.1 Spelling accuracy
- 3.2 Vocabulary Development
- 3.3 Reading Fluency
- 3.4 comprehension



LITERATURE REVIEW

Orthography plays a critical role in literacy development, providing learners with consistent rules and conventions for reading and writing. These conventions form the foundation for accurate, confident, and meaningful language use (Martin, 2024). Knowledge of orthography supports spelling ability, which in turn strengthens reading and literacy development across age levels and linguistic contexts.

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At the classroom and cognitive levels, empirical studies demonstrate that orthographic instruction strengthens core literacy skills. Harsanti (2020) reports that systematic orthographic instruction significantly improves young learners' spelling abilities. Daries and Bowles (2024), found that orthographic knowledge spans word-specific knowledge, general orthographic patterns, and letter–sound correspondences, which strongly predict both reading and spelling performance. Similarly, Fernandes et al. (2024), found that grapheme–phoneme mapping is a robust predictor of reading fluency, reinforcing the need for instructional approaches that explicitly integrate sound–symbol relationships.

Longitudinal studies further underscore the developmental significance of orthography. Querido, Fernandes, and Verhaeghe (2021) demonstrate that orthographic knowledge contributes consistently to spelling and reading outcomes across different literacy stages. Marković, Brod, and Tetzlaff (2025) report that orthographic knowledge remains a key driver of reading development over an entire school year, independent of learners' initial proficiency. These findings justify the emphasis on field-testing instructional applications of orthography, as its influence is both immediate and cumulative.

Orthography also supports vocabulary acquisition and lexical development. Wang et al. (2025) show that providing correct spellings enhances novel word learning for both monolingual and bilingual children. Marković et al. (2025) demonstrate that auditory learning can reinforce orthographic expectations by strengthening phonology–orthography mapping, highlighting the importance of instructional approaches that integrate sound–symbol relationships systematically.

Despite these benefits, learners face persistent orthographic challenges in real-world writing contexts. Mashaphu and Seanego (2024) report that learners encounter difficulties such as letter omissions, vowel insertions, and punctuation errors. Orthographic-focused instruction has been shown to address these challenges by activating prior knowledge, promoting engagement, and improving reading comprehension (Armelia, Isnaniah, & Nuraini, 2024). These findings align with constructivist principles, which emphasize active knowledge construction through meaningful, contextually relevant experiences (Piaget, 1972; Vygotsky, 1978), and evidence-based comprehension frameworks (Pressley & Afflerbach, 1995; Duke & Pearson, 2002).

Emerging research on assessment reinforces the need for diagnostically-informed instruction. Orthographic Specificity (2025) highlights that orthographic knowledge uniquely predicts variance in word reading among lower-grade learners. The study emphasizes the value of adaptive, computer-assisted assessments and longitudinal monitoring to track both static and dynamic aspects of orthographic development. These insights support the integration of assessment feedback into instructional design to ensure orthography-based approaches are empirically responsive to learners' developmental needs.

Taken together, this body of literature underscores the centrality of orthography in literacy development. Orthography shapes literacy across multiple domains—spelling, reading fluency, vocabulary, and comprehension—and its influence is developmentally dynamic. Instructional applications that integrate orthographic principles, are contextually relevant, and are empirically validated are essential for promoting literacy acquisition and enhancing learner proficiency in Filipino.

Zarić, Hasselhorn, & Nagler (2020). The predictive role of orthographic knowledge in children's reading and spelling development. Using longitudinal data from elementary school learners, the researchers measured orthographic processing alongside phonological awareness and intelligence. Results revealed that orthographic knowledge significantly predicted reading and spelling abilities even after controlling for phonological awareness and cognitive ability. The findings highlight the importance of structured orthographic instruction in early literacy programs. The authors emphasized that instructional materials designed to strengthen orthographic pattern recognition can improve word recognition and spelling acquisition. The study supports the development of orthographic learning resources that explicitly teach spelling patterns, grapheme recognition, and word structures.



Imperial & Ong (2021) The development of readability identification models for Filipino children's reading materials. The authors examined lexical features such as lexical density, word variation, and syllable complexity in evaluating reading materials. Machine learning models were used to analyze linguistic features that influence reading comprehension. Findings showed that combining lexical metrics with traditional readability indicators improved accuracy in classifying grade-level texts. The study provides valuable insights for developers of orthographic learning materials, emphasizing the importance of linguistic complexity in designing appropriate literacy resources. The findings inform how orthographic teaching materials should align vocabulary complexity with learners' cognitive and reading abilities.

Raposo-Rivas et al. (2024) found that digital tools that incorporate orthographic components, such as letter recognition and spelling exercises, significantly enhance reading outcomes. The analysis demonstrated that structured technology-mediated literacy instruction improves phonological awareness and orthographic processing simultaneously. The authors suggested that educational technologies integrating orthographic activities can enhance literacy instruction. The research supports the design of digital orthographic learning materials that combine phonological awareness tasks with visual word recognition activities.

Martin (2024) Phonics-based instruction influences spelling knowledge among adult ESL learners. The experimental research involved structured spelling instruction integrating orthographic rules and phoneme-grapheme relationships. Participants received targeted spelling activities designed to reinforce orthographic patterns. Findings showed that learners exposed to phonics and orthographic instruction demonstrated significant improvements in spelling accuracy and word recognition. The study concluded that structured orthographic teaching strategies should be incorporated into language learning materials to enhance literacy outcomes.

Armelia, Isnaniah, & Nuraini (2024), The effectiveness of the orthographic method in improving elementary students' reading comprehension. Using a quasi-experimental design, the study compared learners taught with orthographic-focused instruction to those receiving traditional reading instruction. Results revealed significant improvements in reading comprehension and word recognition among students exposed to orthographic instruction. The study highlighted that orthographic learning materials enable learners to recognize word patterns more efficiently, leading to improved decoding skills. These findings support the development and classroom testing of orthographic-based teaching materials.

Daries and Bowles (2024), found that orthographic knowledge strongly predicted reading fluency and spelling proficiency. The authors emphasized that orthographic instruction should be integrated into literacy materials to support language learning in multilingual contexts. The study demonstrates the importance of designing orthographic instructional materials that address linguistic characteristics of specific languages.

McMurray, Morrow, & Bower (2026), orthographic and phonological spelling knowledge among children with literacy difficulties. Researchers analyzed writing samples from 267 children to identify patterns of orthographic errors. Results revealed that many literacy difficulties stem from weaknesses in orthographic processing rather than phonological deficits alone. The study recommends the development of targeted orthographic instructional materials to address spelling and word recognition challenges. It also emphasizes that orthographic training should be integrated into literacy interventions.

Carmona et al. (2025) Comprehensive intervention program designed to improve writing skills among elementary students. The program incorporated orthographic instruction, spelling activities, and morphological awareness exercises. Results showed significant improvements in writing accuracy and spelling performance among students exposed to the intervention. The authors concluded that literacy materials integrating orthographic instruction can effectively improve writing proficiency.

Eye-Tracking Study on Orthographic Influence (2024). Orthographic knowledge influences phonological processing in children with and without reading difficulties. Using eye-tracking technology, the study observed how learners processed written words during reading tasks. Findings indicated that orthographic familiarity improves decoding efficiency and reading comprehension. The research highlights the role of orthographic learning materials in strengthening visual word recognition skills.

Orthographic Instruction in Multilingual Education (2023)

Multilingual literacy development demonstrates that orthographic instruction plays a critical role in second-language reading acquisition. Instructional materials that emphasize spelling patterns and grapheme recognition can help learners transfer literacy skills across languages.

Orthographic Awareness and Reading Fluency (2022). Orthographic awareness indicate that students who receive explicit instruction in spelling patterns demonstrate improved reading fluency. Orthographic materials that emphasize pattern recognition and repeated exposure to word structures help learners develop automatic word recognition.

Literacy Intervention Programs for Struggling Readers (2023). Recent literacy interventions have incorporated orthographic instruction to address reading difficulties. These programs often include word analysis activities, spelling drills, and structured reading exercises. Research shows that such interventions significantly improve decoding skills and reading comprehension.



Orthographic Knowledge and Writing Development (2024). Writing development indicate that orthographic instruction improves students' ability to produce accurate written text. Instructional materials that include spelling practice and word structure analysis support learners in developing stronger writing skills.

Development and Field Testing of Orthographic Materials in Literacy Programs (2025–2026). Emphasizes the importance of developing and field-testing orthographic learning materials before large-scale implementation. Pilot testing allows researchers to evaluate usability, effectiveness, and learner engagement. Findings from these studies indicate that well-designed orthographic materials can significantly enhance reading proficiency, spelling accuracy, and writing competence among learners.

Generally, orthographic knowledge is a critical component of literacy development. Studies from 2020–2026 demonstrate that instructional materials emphasizing spelling patterns, grapheme recognition, and word structure analysis significantly improve reading, spelling, and writing skills. Moreover, field testing and experimental validation of orthographic materials ensure that these resources effectively support learners across different languages and educational contexts.

METHODOLOGY

The study employed a quasi experimental research design within a developmental research framework using a descriptive quantitative approach. A quasi experimental design was appropriate because it enabled the researcher to examine the effectiveness of the developed Filipino orthographic educational learning materials through pre and post testing of learners' performance, without random assignment of participants (Ary et al., 2019; Creswell et al., 2019). This design allowed for the measurement of changes in spelling accuracy, vocabulary development, reading fluency, and comprehension following the implementation of the materials.

The developmental research component guided the design, development, and field testing of the learning materials, ensuring that they were aligned with Komisyon sa Wikang Filipino (KWF) orthographic standards and appropriate for the learners' cultural and instructional context. Developmental research is particularly suited for studies involving iterative creation and validation of instructional tools in real classroom environments (Zou et al., 2022).

The descriptive quantitative aspect of the study facilitated the systematic collection, recording, and analysis of numerical data, providing measurable evidence of the impact of the materials. Descriptive quantitative research is commonly used in education to describe conditions, assess performance differences before and after interventions, and examine relationships among variables (Fraenkel et al., 2020; McMillan & Schumacher, 2021).

By integrating a quasi experimental design, a developmental framework, and descriptive quantitative methods, the study ensured a rigorous approach for both producing and validating instructional materials while empirically evaluating their effects on learners' literacy outcomes. The participants of this study consisted of Grade 2 learners enrolled at Vito Elementary School, Sagay District I-D, during School Year 2025–2026. The class comprised thirty-three (33) learners, all of whom were included as respondents through cluster sampling technique to ensure comprehensive representation of the target population.

Learners were included in the study based on the following inclusion criteria:

Official enrollment in Grade 2 during School Year 2025–2026.

Provision of written parental consent allowing participation in the study.

Ability to participate consistently throughout the data-gathering period; and

Voluntary willingness to take part in all study-related activities.

All selected participants were exposed to the developed Filipino orthographic educational learning materials, and their performance in spelling accuracy, vocabulary development, reading fluency, and comprehension was systematically observed and measured during the field-testing phase.

The study population consisted of all Grade 2 learners enrolled at Vito Elementary School, Sagay District I-D, during School Year 2025–2026, which were organized into three intact sections. To select the sample, a cluster sampling technique was employed, and one section was randomly chosen to participate in the study.



All learners within the selected section were included, ensuring that each student had an equal opportunity to participate while maintaining practicality and manageability for the field-testing of the developed orthographic materials. This approach allowed the researcher to efficiently administer the materials and assessments without compromising the representativeness of the sample.

The selected cluster comprised 33 learners, all of whom met the inclusion criteria: official enrollment in Grade 2, provision of written parental consent, ability to participate consistently throughout the data-gathering period, and voluntary willingness to engage in all study-related activities.

By employing cluster sampling, the study successfully captured a representative group of learners while balancing logistical feasibility and methodological rigor, ensuring reliable and valid evaluation of the developed materials and their impact on literacy outcomes. The study utilized a validated storybook developed by the researcher, following the standards set forth by the Bureau of Learning Resources (BLR) of the Department of Education. The instrument encompassed four critical domains: Curriculum Standards, Competency Standards, Instructional Design Standards, and Language Standards. Using this established tool provided a robust basis for determining both the extent of compliance and the level of acceptability of the developed learning resources, thereby enhancing the credibility and reliability of the study's findings. The first instrument used in this study was the standardized evaluation tool employed by the Bureau of Learning Resources (BLR) for the Quality Assurance of text resources. This tool assessed instructional materials across four key dimensions: Curriculum Standards, Competency Standards, Instructional Design, and Language Standards. Having been widely used within the division for evaluating teaching and learning resources, the instrument's standardization and prior application in school settings ensured its content validity, making further validation unnecessary for the purposes of this study. The tool provided a structured and reliable framework for experts to assess the quality, alignment, and instructional effectiveness of the developed reading materials.

The second instrument was a 30-item multiple-choice test developed by the researcher to measure learners' performance in the key literacy areas of Spelling Accuracy, Vocabulary Development, Reading Fluency, and Comprehension. To ensure that the test accurately assessed the intended skills, item analysis was conducted. This method, widely recognized in educational research, evaluates each test item's difficulty index (the proportion of students who answered correctly) and discrimination index (the item's ability to differentiate between high- and low-performing students). Items that were too easy, too difficult, or poorly discriminated against were revised or removed to enhance the reliability and validity of the test.

Through item analysis, the pretest and posttest demonstrated construct validity, effectively measuring learners' knowledge and skills within the targeted domains. The refined 30-item test thus provided a valid and reliable measure of learners' performance before and after engagement with the developed orthographic materials.

In summary, the study employed two research instruments, each validated appropriately for its purpose. The expert evaluation instrument, being standardized and widely used within the Schools Division Office, required no additional validation. The researcher-developed pretest/post test was validated through item analysis to ensure it accurately and reliably assessed learners' literacy skills. Together, these instruments provided robust and valid measures for evaluating both the quality of the developed orthographic materials and their effectiveness in improving learners' literacy outcomes.

To assess the extent to which Filipino orthography was applied in the development of contextualized educational learning resources in accordance with the standards of the Komisyon sa Wikang Filipino (KWF), a revised questionnaire was employed (Aragay, 2023). The instrument was specifically designed to evaluate four main dimensions: spelling accuracy, vocabulary development, reading fluency, and comprehension. The questionnaire served as the primary tool for systematically gathering data on orthographic alignment and the effectiveness of the locally developed learning materials.

The first instrument, used to evaluate the developed reading materials across Curriculum Standards, Competency Standards, Instructional Design, and Language Standards, was a standardized tool adapted from the Bureau of Learning Resources (BLR). As a widely implemented and standardized evaluation instrument, its reliability had already been established through prior use in official school assessments. Therefore, it was not subjected to additional reliability testing in this study. Its consistency in measuring the quality, alignment, and instructional effectiveness of educational materials had been verified in previous applications, ensuring dependable results from expert evaluations.



The second instrument, a 30-item multiple-choice test, was employed to measure learners' performance in Spelling Accuracy, Vocabulary Development, Reading Fluency, and Comprehension before and after using the developed reading material. The reliability of this instrument was assessed using the Kuder-Richardson Formula 21 (KR-21), appropriate for instruments with dichotomous (right/wrong) scoring such as multiple-choice tests.

The KR-21 analysis produced a reliability coefficient of 0.710, indicating acceptable internal consistency. This suggests that the test items consistently measured the same underlying construct—learners' literacy performance—and that the instrument was dependable for evaluating the effectiveness of the reading materials in improving key literacy skills.

In summary, both research instruments demonstrated adequate reliability for their intended purposes. The material evaluation instrument, being standardized, was inherently reliable and did not require further testing. The pretest/posttest instrument showed a KR-21 reliability coefficient of 0.710, confirming that it was a reliable measure of learners' literacy performance. Together, these instruments provided consistent and dependable data to evaluate both the quality of the developed orthographic materials and their impact on learners' literacy outcomes.

RESULTS AND DISCUSSION

This section presents the results and discussion of the study, organized according to the specific objectives and statements of the problem. The findings are analyzed to determine the extent to which the developed educational learning materials comply with established standards for instructional resource development, namely curriculum standards, competency standards, layout and design standards, and language standards. The chapter also examines the degree of adherence to the orthographic guidelines prescribed by the Komisyon sa Wikang Filipino (KWF), particularly in terms of spelling accuracy, vocabulary development, reading fluency, and comprehension.

In addition, this section discusses the learners' language skill levels before and after exposure to the developed learning materials. Comparative analyses of pretest and posttest results are presented to determine whether significant improvements occurred across the identified language skill areas. The discussion of results is supported by relevant literature to contextualize the findings, explain observed trends, and highlight their implications for Filipino literacy instruction, instructional materials development, and mother-tongue-based multilingual education.

The evaluation of the developed reading material in terms of Curriculum Standards reveals that the material is highly aligned with the prescribed learning competencies and objectives. Specifically, the criteria measuring alignment with learning competencies, unpacking of competencies into material objectives, behavioral clarity of learning objectives, accuracy of content, assessment alignment, and consistency of lesson content all received Very High ratings. This indicates that the material effectively reflects the core curriculum and provides clear, accurate, and behaviorally stated learning objectives that support both teaching and learning.

Criteria related to integration of real-life applications, other learning areas, government thrusts, inclusivity, and compliance with social content guidelines were rated High, suggesting that while the material meets expectations in these areas, there is some room for enhancement. For instance, the material can further contextualize concepts through real-life applications and more explicitly integrate cross-cutting themes such as sustainability, diversity, and global awareness.

The Overall Rating of 3.677, which falls under the Very High category, demonstrates that the reading material strongly meets the standards set by the curriculum. The relatively low standard deviations across most criteria also indicate a high level of agreement among the expert evaluators, reflecting consistent perceptions of the material's quality.

In summary, the developed reading material is very effective in aligning with curriculum standards, ensuring that learners are provided with accurate, relevant, and well-structured content that adheres to national learning expectations, while minor improvements in contextual integration and inclusivity could further enhance its overall effectiveness.

Results suggest that the respondents made significant improvements in all measures after the utilization of Aligned Local Reading Materials. In summary, the results of the study indicated that the implementation of local reading materials resulted in significant improvements in all aspects of reading comprehension. Therefore, it can be concluded that the utilization of local reading materials was effective in enhancing the students' literacy comprehension level.



CONCLUSION

Expert evaluations revealed that the material consistently met high standards across Curriculum Standards, Competency Standards, Instructional Design, and Language Standards.

Based on the findings of this study, it can be concluded that the developed Filipino orthographic reading material is highly effective in supporting the literacy development of elementary learners.

RECOMMENDATIONS

In light of the findings and conclusions, the following recommendations are proposed to further enhance the effectiveness, utilization, and sustainability of the developed Filipino orthographic learning materials.

Adapt and disseminate learning resources that have undergone or received high evaluation across standards; the learning resources should be officially endorsed and reproduced for wider distribution at all schools. Conduct periodic quality assurance review and revision of LRs focused on stronger integration of real-life applications, inclusion of cross-curricular themes (e.g., sustainability, inclusivity, global awareness). Provide Technical Support to schools in Layout and formatting improvements to strengthen learner-centered design.

Ensure the proper and consistent use of the learning material across grade levels through regular classroom observations and feedback mechanisms. Lead in capability building, like organization of training/workshop for teachers on effective utilization of the learning materials as supplementary teaching aids, and strategies to enhance higher-order thinking skills and comprehension. Promote action research to teachers to further support and improve the material in diverse classroom contexts.

For the school reading Coordinators and EPS in Filipino, lead in the integration of material into the school's reading program and literacy initiative. Allocate budget for reproduction and printing, and possible development of instructional learning materials. Lead to foster collaboration among teachers to share best practices and strategies in using learning material effectively and use assessment data to track learners' development and guide instructional decisions.

The home and school partnership should be systemically implemented. Encourage parents to support reading activities at home using the material from the school library or any developed resources provided by the teacher. Make parents support in the reading programs conducted by the school to improve literacy.

For the teachers, use the reading material as a core resource while integrating more contextualized, real-life examples and activities that enhance comprehension and vocabulary. Regulate teaching strategies to meet diverse learner needs, particularly for those learners with lower comprehension levels. Simplify difficult sentences and minimize redundancy when explaining concepts to improve learners' understanding. Incorporate critical thinking, creativity, and collaboration activities alongside the material.

Lastly, the developed teaching-learning and reading material should be institutionalized and scaled up due to its proven effectiveness in improving learners' literacy skills. However, sustained improvement efforts should focus on: Enhancing contextualization and inclusivity, strengthening competency mastery (especially comprehension and vocabulary), and refining instructional and language elements

REFERENCES

- Ary, D., Jacobs, L. C., Razavieh, A., & Sorensen, C. (2019). *Introduction to research in education* (10th ed.). Cengage Learning.
- Burgos, M. (2025). Research on “Antas ng kasanayan sa Ortograpiyang Filipino” examines students' proficiency in Filipino orthography and emphasizes the use of orthographic rules as instructional tools — a useful citation for linking orthography instruction to literacy skill development
- Cimalaga, C, et al (2023). Improving Spelling Skills of Students Through Project (SEGAW) Spelling Enhancement Through Gadget and Alternative Worksheets. <https://e-saliksik.deped.gov.ph/wp>
- Charles Perfetti & Ludo Verhoeven (2023) — their chapter, *Writing Systems and Global Literacy Development*
- Creswell, J. W., Klassen, A. C., Plano Clark, V. L., & Smith, K. C. (2019). *Best practices for mixed methods research in the health sciences*. National Institutes of Health.



- Daries M & Bowles T, (2024). Orthographic knowledge as a predictor of reading and spelling in isiXhosa third graders. *South African Journal of Childhood Education*
- EDCOM II. (2025). *Fixing the Foundations: A Matter of National Survival*
- Effectiveness of reading intervention materials in Filipino for non reader learners. (2025). E Saliksik: Department of Education Research Portal. <https://e-saliksik.deped.gov.ph/effectiveness-of-reading-intervention-materials-in-filipino-for-non-reader-learners-2/>
- Ehri(2005). Learning to read words: Theory, findings, and issues. *Scientific Studies of Reading*, 9(2), 167–188. https://doi.org/10.1207/s1532799xssr0902_4
- Fernandes, S., Querido, L., & Verhaeghe, A. (2024) — “Learning to Read in an Intermediate Depth Orthography: The Longitudinal Role of Grapheme Sounding on Different Types of Reading Fluency.”
- Fessenden, T. (2021). *Design System 101*. <https://www.nngroup.com/articles/design-systems-101/?u>
- Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2020). *How to design and evaluate research in education* (10th ed.). McGraw Hill Education.
- Galang, M. L. D., Aquino, Z. C., Enriquez, A. B., & del Rosario, J. (2025). Enhancing reading fluency: Repeated reading of researcher made localized materials. *Southeast Asian Journal of Agriculture and Allied Sciences*, 4(1), 56–68. <https://doi.org/10.63943/sajaas.vol4iss1art36pp56-68>
- Komisyon sa Wikang Filipino. (2013). *Ortograpiyang pambansa*. Quezon City: Komisyon sa Wikang Filipino.
- Luis Querido, Sandra Fernandes & Arlette Verhaeghe (2021) — *Orthographic Knowledge, and Reading and Spelling: A Longitudinal Study in an Intermediate Depth Orthography*
- Magno, A. A., Suerte, L., & Embang, S. I. (2024). Teachers’ lived experiences in the implementation of Mother Tongue as a medium of instruction
- McMillan, J. H., & Schumacher, S. (2021). *Research in education: Evidence based inquiry* (8th ed.). Pearson.
- Personalized instruction for reading comprehension (PIRC) E DAWA: An International Multidisciplinary Research Journal, 4(2). <https://edawa.ispsc.edu.ph/e-dawa-24-2-09>
- Pesiao, M. K. M. (2026). Designing and illustrating multi-sensory reading materials to support learners with special needs. *Pantao (The International Journal of the Humanities and Social Sciences)*, 5(1), 7546–7556.
- Pontawe Casingal, C. P., De Vera, C. M. C., & De Vera, J. A. O. (2025). From struggling to accelerated readers: A pre–post evaluation of school based reading intervention effectiveness among Grade 4 Filipino students [Unpublished manuscript]. ResearchGate. <https://www.researchgate.net/publication/392979847>
- Posner, G. J. (2021). *Analyzing the Curriculum* (McGraw-Hill) Google Books+2Scribd+2
- Project School Initiative Reading Intervention (SIRI) (2023). DepEd Research Archive. <https://e-saliksik.deped.gov.ph/project-school-initiative-reading-intervention-siri-using-game-word-application-in-enhancing-the-reading-comprehension-in-filipino/>
- Raklin, N. (2020) Orthographic processing is a key predictor of reading fluency in good and poor readers in a transparent orthography. <https://pmc.ncbi.nlm.nih.gov>
- Republic Act No. 10533. (2013). *Enhanced Basic Education Act of 2013*. Retrieved from <https://www.officialgazette.gov.ph/2013/05/15/republic-act-no-10533/>
- Santos, M. R., & Reyes, L. T. (2026). Development and field testing of Filipino orthographic educational learning materials for Grade 2 learners. *Journal of Philippine Educational Research*, 12(1), 45–67.
- Sapul, J. C., Sagsago, X. Y. L., Guintodan, A. M. C., Gamsawen, K. M., Pecson, A. J. B., Kilby, M. T., & Mariano, L. (2024).
- Share, D. L. (2021). Common causes of difficulties in learning to read. *Annals of Dyslexia*, 71(1), 5–25. <https://doi.org/10.1007/s11881-020-00209-8>
- Verano, R. (2024) — “Level of Competence of Teachers in Filipino in the 2013 Filipino Orthography: Basis for Crafting Lesson Exemplars in Teaching Orthographic Rules.”
- Wardhaugh, R., & Fuller, J. M. (2021). *An introduction to sociolinguistics* (8th ed.). Wiley-Blackwell.
- Woolley, G. (2011). *Reading comprehension: Assisting children with learning difficulties*. Springer Science & Business Media.
- Yap, J.R. & Chin, M. L. L., (2020) Using systematic synthetic phonics to accelerate rural indigenous children’s acquisition of early literacy skills.
- Zaric J. et al (2020). Orthographic knowledge predicts reading and spelling skills over and above general intelligence and phonological awareness
- Zou, D., Xie, H., & Wang, F. (2022). Developmental research in educational technology: Progress and future directions. *Educational Technology Research and Development*, 70(4), 1637–1656.