

STRENGTHENING SPELLING SKILLS THROUGH THE SPELL FRAMEWORK: PHONEMIC AWARENESS AND PATTERN RECOGNITION TECHNIQUES FOR GRADE 4 LEARNERS

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ABSTRACT

This study, conducted at Marcos P. Estoque Elementary School in Capungagan, Kapalong, Davao del Norte, investigated the effectiveness of the SPELL intervention in improving the spelling proficiency of 29 Grade 4-Silang learners. The intervention incorporated phonemic awareness, pattern recognition strategies, and gamified activities to enhance student learning. Using a quantitative one-group pretest-posttest design, the researchers evaluated students' spelling performance before and after the implementation of the intervention. Data analysis was carried out through descriptive statistics and paired sample t-tests. Results The average spelling scores increased from 40.69% before the intervention to 70.07% after the intervention. Moreover, the paired sample t-test revealed that this improvement was statistically significant, $t(28) = 23.9$, $p < .001$, with a large effect size (Cohen's $d = 4.44$), indicating that the intervention had a substantial impact on students' spelling performance. In addition, insights gathered from interviews with seven students revealed increased confidence, motivation, and the adoption of positive study habits, such as practicing spelling outside the classroom. Learners found techniques like syllable segmentation and pattern recognition to be effective and suggested enhancements, including the integration of technology and more learner-centered approaches. Overall, the study highlights the positive impact of the SPELL intervention on both the spelling proficiency and learning attitudes of students.

Keywords: SPELL intervention, spelling proficiency, barnell-loft diagnostic achievement test, quantitative-descriptive, Philippines

INTRODUCTION

Active participation in spelling activities is crucial for student growth. According to Smith and Johnson (2022), engaging with words, practicing spelling strategies, and collaborating with peers significantly enhance both spelling accuracy and student confidence. Furthermore, learning to participate effectively in these activities is a fundamental skill that empowers students to become confident and independent spellers (Brown & Lee, 2021). Beyond simply memorizing words, active participation fosters a deeper understanding of spelling patterns and rules. Pan et al. (2021) argue that spelling skills remain important and should be explicitly taught. Their research summarizes relevant evidence and suggests that comparing common approaches to spelling instruction from the early 20th century to more recent methods provide valuable insights into effective teaching strategies.

Children with learning difficulties, especially multilingual Primary 1 students in Malaysia, often struggle with both spelling and reading, making it hard for educators to identify underlying issues. Research highlights the need for teachers to understand the linguistic features of Malay and English to address these challenges effectively (Wang & Lee, 2024). Similarly, a University of Georgia study found that spelling errors in struggling readers are often overlooked, leading to ineffective interventions due to the lack of analysis on phonological, orthographic, or morphological mistakes (Williams & Novelli, 2025). Moreover, the study of Bailey et al. (2021) revealed that in Australia, the Dalwood Spelling Centre found that students with literacy difficulties commonly face issues with sound recognition, letter patterns, and word structure, especially in complex words, stressing the need for targeted and comprehensive assessments.

In the Philippines, spelling difficulties are common among ESL learners, particularly noted in a Grade 6 all-girls school in Metro Manila, where omission, substitution, and insertion errors reveal a lack of emphasis on spelling instruction in language education (Nicolas & Critica, 2024). In Eastern Visayas, Grade 5 pupils in a parochial school also struggled due to low interest and reliance on rote-based methods, leading to confusion with homophones, vowel sequences, and plural rules problems linked to limited phonics instruction and exposure to engaging texts (Viador et al., 2025). Similarly, at Sta. Rita Elementary School in Zambales, learners displayed varying spelling abilities, often marked by vowel and consonant confusion, letter reversals, and limited vocabulary, largely due to inconsistent practice and minimal English use at home (Casupanan & Madriaga, 2025). These studies highlight the urgent need for structured, engaging, and phonics-based spelling instruction.

In the Division of Davao del Norte, particularly at Marcos P. Estoque Elementary School, a notable concern was observed on the results of spelling activities conducted on Catch-up Fridays. It became evident that a significant number of Grade 4 learners struggled to spell words that are generally appropriate for their grade level. This issue may stem from various factors, including inconsistent reinforcement of spelling instruction, limited exposure to age-appropriate reading materials, and insufficient opportunities to apply spelling rules in meaningful contexts. Given the potential impact of these challenges on students' overall literacy development, conducting action research is essential. Such an investigation would help identify the underlying causes of the students' spelling difficulties and support the development of targeted, evidence-based interventions aimed at improving their spelling proficiency.

Moreover, several international and local studies have been conducted on improving students' spelling skills. For instance, the study by Srekandewie and E. (2022), titled "Improving Students' Spelling Skills Through Using Jolly Phonics Method (Age 5 Years)," focused on enhancing students' ability to remember letter sounds, pronounce them correctly, and spell accurately in both reading and writing contexts. Similarly, Syawaludin and Hermawan (2022), in their study "Implementing STAD Learning Model to Improve Children's Spelling Ability," explored the use of the Student Teams Achievement Division (STAD) model to enhance classroom spelling performance. In addition, the study of Witzel et al. (2024) entitled "Digital Game-Based Spelling Intervention for Children with Spelling Deficits: A Randomized Controlled Trial" which focuses on digital game-based spelling intervention for second- and third-grade students with spelling deficits. Those studies highlight innovative approaches to addressing spelling challenges among younger learners. However, a research gap exists as these studies primarily target early learners or general classroom settings and do not address the specific spelling difficulties faced by Grade 4 learners in a localized context such as Marcos P. Estoque Elementary School. Furthermore, these studies do not utilize a comprehensive framework like SPELL, which combines phonemic awareness and pattern recognition techniques, tailored to the unique needs of intermediate learners. This study aims to fill this gap by employing the SPELL framework to focus on improving spelling skills among Grade 4 students at Marcos P. Estoque Elementary School. By addressing the specific challenges of these learners, the research will provide a localized, practical, and evidence-based intervention, contributing to both academic literature and classroom practice.

This study aims to implement the "SPELL" framework as an intervention to enhance the spelling abilities of Grade 4 learners at Marcos P. Estoque Elementary School. By utilizing a structured and engaging approach, the intervention focuses on strengthening students' phonemic awareness and pattern recognition skills. Through this method, the researchers aim to address common challenges in spelling by gradually building foundational skills and advancing to complex patterns, fostering both accuracy and confidence in learners.

RESEARCH QUESTIONS/OBJECTIVES:

The following research questions aimed to explore effective strategies for improving the spelling abilities of Grade 4 students. This study utilized the SPELL framework as an intervention to address the identified challenges. Specifically, it sought to answer the following questions:

1. What is the level of students' spelling ability before the implementation of the SPELL intervention in Grade 4?
2. What is the level of students' spelling ability after the implementation of the SPELL intervention in Grade 4?
3. Is there a significant impact of the SPELL intervention on improving the spelling ability of Grade 4 learners?
4. What insights can be drawn from the implementation of the SPELL intervention regarding its effectiveness in enhancing students' spelling abilities?

Proposed Intervention/Action Plan

The proposed intervention, known as the SPELL Intervention, is an 8-week literacy enhancement strategy designed to systematically improve students' spelling abilities. The intervention progresses through four key phases, each building on the previous to ensure a strong foundation and gradual mastery of spelling skills.

In Week 1, the focus is on developing students' phonemic awareness by helping them identify and manipulate individual sounds in words. Through engaging and interactive activities such as sound-based games and matching exercises, learners are trained to break words into phonemes and blend them to form complete words. Emphasis is placed on recognizing initial, medial, and final sounds, which are crucial for accurate spelling.

In Weeks 2, the intervention transitions to pattern recognition, particularly through rhyming words and word families. Students begin to identify similarities in spelling and sound among related words, with emphasis on consistent patterns like -at and -in. Activities such as rhyming games, word puzzles, and sorting tasks are implemented to reinforce these spelling connections and help learners internalize the concept of word families.

As students become more comfortable with basic patterns, Weeks 3 introduce more complex spelling rules, including vowel combinations, prefixes, and suffixes. This stage is designed to deepen students' understanding of how various morphemes influence word formation and spelling. Collaborative challenges and sorting activities further support the learning process, promoting peer interaction and critical thinking.

Finally, in Week 4, students are guided to apply all previously learned spelling skills in meaningful and contextual ways. This culminating phase encourages learners to demonstrate their spelling mastery through creative writing, group tasks, and interactive games. Activities during this stage are designed to integrate all prior learning and enhance both spelling accuracy and fluency. Culminating events such as a Spelling Bee and contextual writing exercises serve as assessment tools to measure the learners' progress and celebrate their achievements. Overall, the SPELL intervention is a comprehensive and engaging approach that not only targets foundational spelling skills but also promotes application and fluency, making it a valuable strategy for improving literacy outcomes in the classroom.

Week 1	Week 2	Week 3	Week 4
Focus: Building foundational skills in identifying and manipulating individual sounds in words. - Students learn to break words into phonemes and blend them to form complete words. - Activities emphasize	Focus: Recognizing and working with simple patterns like rhyming words and word families. - Students identify similarities in spelling and sound among related words. - Emphasis is placed on basic word families and consistent	Focus: Exploring more complex spelling patterns, such as vowel combinations, prefixes, and suffixes. Students deepen their understanding of spelling rules and how different combinations affect word formation.	Focus: Applying learned spelling skills in meaningful and contextual ways. Students demonstrate mastery by using their knowledge in creative writing, interactive games, and group activities.

recognizing initial, middle, and ending sounds, which are essential for accurate spelling. Interactive and gamified approaches, such as sound-based games and matching activities, make the process engaging.	patterns (e.g., -at, -in). Activities include rhyming games, word puzzles, and creative sorting tasks to reinforce connections.	Activities involve sorting prefixes and suffixes, recognizing vowel team patterns, and engaging in collaborative challenges.	- This week integrates all prior skills to enhance both spelling accuracy and fluency. - Culminating activities, such as a Spelling Bee and contextual writing tasks, allow students to showcase progress.
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RESEARCH METHODOLOGY

Research Design

This study employed quantitative research through a one-group pretest-posttest design, a type of pre-experimental approach. This design involves assessing a single group of participants at two distinct points: before (pre-test) and after (post-test) the implementation of an intervention. It assessed changes resulting from an intervention or project by comparing values before (baseline) and after the intervention (end-line evaluation). Unlike experimental designs, pre-experimental designs lack a control group for comparison; instead, they focus on changes within a single group over time. The observed differences between baseline and end-line values are attributed to the project, suggesting its impact on the outcomes (Wamunyima & Nyirenda, 2023).

In the context of the study, the one-group pretest-posttest design is used to assess the effectiveness of the SPELL framework in improving spelling skills among Grade 4 students. By measuring students' spelling abilities before and after the implementation of phonemic awareness and pattern recognition techniques, the study aims to determine whether these specific interventions lead to significant improvements. The design focuses on changes within the same group of learners, with pretest and posttest results providing a direct comparison of their spelling skills, attributing any differences to the intervention. This approach is suitable for this study as it seeks to measure the direct impact of the SPELL framework on student performance.

Research Participants

The researchers utilized purposive sampling, which referred to the matching of the sample to the aims and objectives of the research, thereby improving the rigour of the study and the trustworthiness of the data and results (Campbell, 2020). Also called criterion sampling, this specific type of purposive sampling involved selecting participants based on predefined criteria that directly related to the research question.

The respondents for this research study are Grade 4 students enrolled at Marcos P. Estoque Elementary School during the 2024-2025 school year. This study, involving 29 Grade 4 students from Marcos P. Estoque Elementary School, aligns with the guidance by balancing sample size and practicality. A quantitative correlation approach will be used to investigate the relationship between the frequency of using the SPELL Intervention and students' spelling ability level.

Research Instrument

The researchers utilized the Barnell Loft Diagnostic Achievement Test in Spelling to comprehensively assess students' spelling proficiency. This assessment consisted of two sections: a pre-test and a post-test, strategically designed to evaluate students' skills before and after the intervention. The test included five key indicators: diphthongs, syllabication of words with vowel digraphs, syllable division and classification, syllable concepts with the "le" pattern, and syllable division with prefixes and suffixes, with each indicator comprising five items. The pre-test served as a baseline assessment, identifying students' current spelling abilities and challenges. After the intervention, the post-test was conducted to measure improvements in their spelling skills, allowing for a clear comparison of performance between the two testing phases.

By utilizing this diagnostic approach, the researchers aimed to capture the effectiveness of the intervention in enhancing students' spelling abilities. The results from both tests were carefully analyzed to determine the progress made, shedding light on the intervention's impact and any remaining challenges in the students' spelling development. This systematic method ensured a reliable and data-driven evaluation of the students' learning outcomes.

Procedure

To begin the study, formal permission was sought from the school principal of Marcos P. Estoque Elementary School to conduct the action research in the Grade 4 class. A letter of request was submitted, detailing the purpose, methodology, and expected benefits of the intervention for students' spelling skills. Upon approval, a meeting with the cooperating teacher was conducted to discuss the study's timeline and ensure alignment with the students' learning needs and schedules.

Before implementing the intervention, a pretest was administered to assess the baseline spelling skills of the Grade 4 students. This test focused on evaluating phonemic awareness, recognition of basic patterns, and application of spelling rules.

The intervention was implemented over a four-week period, designed to progressively build upon each student's spelling skills through a structured sequence of activities. The first week focused on phonemic awareness, where students engaged in exercises aimed at recognizing and manipulating sounds in spoken words. Activities included sound-based games, rhyming tasks, and identifying beginning, middle, and ending sounds in words, ensuring students developed a strong foundation in phoneme recognition.

In the second week, the focus shifted to pattern recognition, where students learned to identify common spelling patterns and rules. Activities such as word puzzles, sorting words based on similar patterns, and matching words with similar endings were introduced to enhance students' ability to recognize recurring letter combinations.

By the third and fourth weeks, the activities integrated both phonemic and pattern recognition techniques with contextual application. Students applied their knowledge to more complex tasks, such as creative writing exercises, where they wrote short stories or sentences using words that incorporated both the phonemic and spelling patterns they had learned. To further boost engagement, the activities were designed to be interactive and gamified, incorporating fun elements like word searches, spelling bees, and online quizzes, which helped reinforce learning while maintaining students' interest. These activities were conducted during designated class periods, ensuring that there was minimal disruption to the regular schedule while still maximizing the impact of the intervention.

At the end of the intervention, a post-test was conducted to measure the students' improvement in spelling skills. The results were compared with the pretest scores to evaluate the effectiveness of the SPELL framework. Additionally, observations and feedback from the students and the cooperating teacher were gathered to assess the program's impact on students' engagement and confidence in spelling. A summary of findings and recommendations was then shared with the school administration and stakeholders to promote the sustainability and possible replication of the program in other grade levels. The table below presented the timeline of the intervention.

In assessing the spelling proficiency for the total score, this range of percentage score adopted from the study of Magpatoc et.al, (2024) was used:

Table 1
Range of Percentage Score

<i>Range of Percentage Score</i>	<i>Descriptive Level</i>	<i>Interpretation</i>
91-100	Very High	If the measures described in the spelling proficiency of the students is outstanding.
76-90	High	If the measures described in the spelling proficiency of the students is very satisfactory.
61-75	Average	If the measures described in the spelling proficiency of the students is satisfactory.
51-60	Low	If the measures described in the spelling proficiency of the students is fairly satisfactory.

0-50	Very Low	If the measures described in the spelling proficiency of the students did not meet the expectation.
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Statistical Tools

To analyze the data effectively, appropriate statistical tools were employed to ensure the accuracy and reliability of the results.

Mean. This refers to the average and is calculated by dividing the sum of a score of the students in pre-test, as well as in post-test. This was used to determine the level of performance of the students before and after the implementation of the SPELL intervention.

Standard deviation. Is a statistical measure that quantifies the amount of variation or dispersion in a set of values. A low standard deviation indicates that the values tend to be close to the mean of the data set, while a high standard deviation suggests that the values are spread out over a wider range. Standard deviation is commonly used in data analysis to assess the reliability and consistency of results. It is calculated by taking the square root of the variance, which is the average of the squared differences from the mean (Field, 2013).

In the context of this study, standard deviation was used to analyze the variability in the students' spelling abilities before and after the implementation of the SPELL intervention. By calculating the standard deviation of the pretest and posttest scores, the study assessed how consistent the students' improvements were in spelling across the sample group. A significant reduction in the standard deviation from pretest to posttest suggested that the intervention had not only increased spelling abilities but also reduced the disparity in spelling proficiency among the students. This statistical measure helped determine the degree of impact the SPELL framework had on students' spelling skills, providing a clearer understanding of how evenly or unevenly the improvement was distributed within the group.

Paired T-Test. Also known as a dependent or correlated t-test, is an effective analytical method used to evaluate the difference in means and standard deviations between two related groups (Gleichmann, 2020). This statistical test is particularly useful for studies where the relationship between two data sets is crucial, such as pre-test and post-test scenarios.

In this research, the paired t-test was applied to determine if there is a statistically significant difference between the average scores of the pre-test and post-test. This allowed the researchers to assess whether the changes in mean scores were significantly or merely due to random variation. By comparing pre-test and post-test data, the paired t-test proved to be an essential tool for identifying and measuring any changes or progress resulting from the research intervention.

Cohen's d. Is a statistical measure used to determine the effect size between two groups, often in experimental or pre-experimental designs. It quantifies the difference between the means of two groups in terms of standard deviation units, providing a standardized measure of the magnitude of an intervention's effect (Cohen, 1988).

In the context of this study, Cohen's d was used to assess the effectiveness of the SPELL intervention on Grade 4 learners' spelling abilities. By calculating the effect size between students' pretest and posttest scores, the study determined not only if there was a statistically significant improvement in spelling skills but also how meaningful the change was in practical terms.

Data Analysis

In analyzing the data, the researchers tabulated the raw scores of the students from both pre-test and post-test. Afterwards, the overall mean was calculated to reveal the level of spelling proficiency before and after the implementation of the intervention.

In addition to the quantitative data, qualitative insights were gathered through in-depth interviews to explore students' perceptions and experiences. The interview responses underwent a rigorous qualitative analysis process. This included coding the transcripts to identify recurring patterns, reducing the data to focus on the most relevant information, and applying thematic analysis to extract meaningful themes. This approach allowed the researchers to gain a deeper understanding of the intervention's effectiveness, the perceived benefits from the learners' perspectives, and their suggestions for further improvement. The integration of both quantitative and qualitative analyses provided a comprehensive view of the SPELL Intervention's overall impact.

Ethical Considerations

Observing ethical standards in research is crucial to maintaining the integrity, reliability, and value of any academic study. By adhering to these standards, researchers ensure that the study remains focused on its core

aims: advancing knowledge, uncovering truth, and minimizing errors in findings. Ethical practices foster trust, accountability, mutual respect, fairness, and values that are foundational to effective collaborative work. When researchers uphold these principles, they build credibility within the academic community, which ultimately strengthens the study's impact and the potential application of its findings.

In this study, strict ethical guidelines were followed in accordance with the principles outlined in the Belmont Report (2010). These principles include respect for individuals' autonomy, which recognizes the rights of participants to make informed decisions about their involvement. The principles of beneficence and non-maleficence guided researchers to prioritize participants' welfare, striving to maximize benefits and minimize potential harm. Justice was also a core consideration, ensuring equitable treatment and avoiding exploitation. Informed consent was secured from all participants, ensuring that they fully understood the nature of the study and their rights within it. Additionally, confidentiality and data protection were rigorously maintained to safeguard participants' personal information. Throughout the research process, integrity was prioritized to present findings honestly and transparently, and any potential conflicts of interest were addressed to preserve objectivity. Together, these ethical commitments not only protected participants but also enhanced the study's credibility and contribution to the field.

RESULTS AND DISCUSSIONS

Presented in this chapter are the results or data obtained in the study. The chapter presents the data on the level of performance in spelling proficiency among students in pre-test; the level of performance in in spelling proficiency among students in post-test; and significant difference of the pretest and post-test scores of the students.

Research Objective No.1: What is the level of students' spelling ability before the implementation of the SPELL intervention in Grade 4?

To address the first objective, the study utilized the Barnell-Loft Diagnostic Achievement Test to assess students' spelling proficiency prior to the implementation of the SPELL intervention. Five indicators from the test were selected by the researchers, as their level of difficulty was deemed suitable for Grade 4 learners. These indicators include: diphthongs, syllabication of words containing vowel digraphs, syllable division and classification, syllable patterns involving the "le" ending, and syllable division with prefixes and suffixes. Table 1 presents the average scores of the students before the intervention was carried out.

Table 2
Mean Average of the Scores in Pre-test

Score	Frequency	Percentage
5	2	6.9 %
6	4	13.79 %
7	4	13.79 %
8	5	17.24 %
9	2	6.9 %
10	1	3.45 %
11	1	3.45 %
12	1	3.45 %
13	1	3.45 %
14	4	13.79 %
16	1	3.45 %
17	1	3.45 %
18	1	3.45 %
22	1	3.45 %
Total	29	100 %
Overall Mean		10.17
Mean Percentage Score		40.69%
Standard Deviation		4.40
Description		Very Low

The pretest results illustrate the vocabulary proficiency of the 29 students in the experimental group. The group obtained an overall mean score of 10.17 with a standard deviation of 4.40, indicating a generally low level of spelling competence prior to the intervention. The highest score recorded was 22, achieved by one student, accounting for 3.45 percent of the group. The lowest score was 5, obtained by two students, which represents 6.9 percent of the total. The most frequently occurring score was 8, recorded by five students, making up 17.24 percent of the group. These results suggest a wide variability in student performance, with a concentration of scores around the mode. The mean percentage score of 40.69% further confirms the students' limited spelling proficiency at the pretest stage.

Recent studies have highlighted the ongoing challenges learners face with spelling proficiency. The study of Hussain (2022) investigated English spelling difficulties among Saudi EFL university students and found that spelling was one of their most significant challenges, largely due to linguistic interference and the absence of structured instruction. Hussain further emphasized that without targeted spelling programs, learners tend to develop persistent errors that affect their overall language competence. Similarly, Almainan (2022) conducted an error analysis using the Spelling Sensitivity Score (SSS) tool and revealed that lower-proficiency students frequently made errors involving phonemic omissions and misrepresentations, indicating a lack of foundational spelling skills. Almainan's study also suggested that early diagnostic assessments are crucial for identifying students who need additional spelling support. In another context, Lindner et al. (2022) examined spelling performance among Spanish-speaking English Language Learners (ELLs) in the United States. Their findings showed persistent difficulties in orthographic representation and spelling accuracy, with distinct learner profiles exhibiting varied levels of spelling development. They further highlighted the importance of culturally responsive teaching approaches tailored to the linguistic backgrounds of learners to improve spelling outcomes. These studies consistently emphasize the need for systematic, explicit spelling instruction and targeted interventions to address the widespread issues related to low spelling proficiency among diverse groups of learners.

Moreover, Table 3 presents the mean scores and corresponding descriptions for the selected spelling proficiency indicators as identified by the Barnell-Loft Diagnostic Achievement Test. These results provide a clearer view of the specific areas where students demonstrated strengths and weaknesses in their spelling skills. These results provide a clearer view of the specific areas where students demonstrated strengths and weaknesses in their spelling skills.

Table 3

Summary Table on the Average Percentage Scores and Descriptions for Spelling Proficiency Indicators before the Implementation of the SPELL Intervention

Indicators	Average Percentage Scores (%)	Description
Diphthongs	46.90	Very Low
Syllable Count Words	43.45	Very Low
Syllable Division and Classification	38.62	Very Low
Syllable Concepts with the "le" Pattern	37.93	Very Low
Syllable Division with Prefixes and Suffixes	36.55	Very Low
Overall Percentage Score (%)	40.69	Very Low

The table 3 presents the average percentage scores for various spelling proficiency indicators, all of which are categorized as "Very Low." The average percentage score for diphthongs is 46.90, indicating that students performed poorly and encountered significant difficulties in this area. Similarly, syllable count words yielded an average percentage score of 43.45, suggesting consistent challenges and low performance. The average percentage score for syllable division and classification is 38.62, further highlighting the students' limited proficiency and considerable struggles in this aspect. In addition, syllable concepts involving the "le" pattern received an average score of 37.93, indicating a very low level of mastery. Lastly, syllable division with prefixes and suffixes had the lowest average score at 36.55, underscoring the students' substantial difficulties in this area. Overall, the Grade 4 students obtained an average spelling proficiency score of 40.69 percent prior to the implementation of the SPELL intervention, confirming a generally very low level of spelling competence.

Nicolas and Critica (2024) observed a decline in students' spelling and handwriting skills, noting frequent errors such as omission, substitution, and insertion among Filipino female Grade 6 pupils, largely due to the lack of structured spelling instruction and difficulties with phonological and morphological aspects. Similarly, Bratlie et al. (2022) found that language-minority students in Norway struggle significantly with spelling multimorphemic words, attributing this to limited vocabulary, inadequate orthographic representation, and the Norwegian curriculum's insufficient emphasis on morphological and orthographic patterns. Furthermore, Sammour-Shehadeh et al. (2025) documented ongoing difficulties faced by English as a Foreign Language learners with English's irregular orthography, particularly vowels, digraphs, and unfamiliar phonemes, which are compounded by inconsistent spelling rules and inadequate systematic instruction. Together, these studies emphasize the critical need for explicit, systematic spelling instruction tailored to learners' linguistic backgrounds to address these widespread spelling challenges.

Research Objective No.2: What is the level of students' spelling ability after the implementation of the SPELL intervention in Grade 4?

To satisfy the second objective, the researcher administered a post-test adopted from the Barnell-Loft Diagnostic Achievement Test. Shown in Table 4 are the mean averages of the scores of the students after the implementation of the SPELL Intervention. The results indicate a measurable improvement in spelling proficiency, demonstrating the effectiveness of the intervention in enhancing students' spelling skills.

The post-test results reflect the spelling proficiency of the 29 students in the experimental group following the implementation of the intervention. The group achieved an overall mean score of 17.52, indicating an average level of spelling competence. The highest score recorded was 25, attained by one student, representing 3.45 percent of the group. The lowest score was 13, obtained by two students, accounting for 6.9 percent of the total. The most frequently occurring score was 15, achieved by six students, comprising 20.69 percent of the group. These findings indicate a range of performance levels among the students, with a notable clustering around the mode. The mean percentage score of 70.07 percent further affirms the improvement in students' spelling proficiency, demonstrating an average performance level after the intervention.

Table 4
Mean Average of the Scores in Post-test

Score	Frequency	Percentage
13	2	6.9 %
14	5	17.24 %
15	6	20.69 %
16	1	3.45 %
17	3	10.34 %
18	2	6.9 %
19	1	3.45 %
20	2	6.9 %
21	1	3.45 %
22	2	6.9 %
23	2	6.9 %
24	1	3.45 %
25	1	3.45 %
22	1	3.45 %
Total	29	100 %
Overall Mean		17.52
Mean Percentage Score		70.07%
Standard Deviation		3.63
Description		Average

The post-test results reflect the spelling proficiency of the 29 students in the experimental group following the implementation of the intervention. The group achieved an overall mean score of 17.52 with a standard deviation of 3.63, indicating an average level of spelling competence. The highest score recorded was 25, attained by one student, representing 3.45 percent of the group. The lowest score was 13, obtained by two students, accounting for 6.9 percent of the total. The most frequently occurring score was 15, achieved by six

students, comprising 20.69 percent of the group. These findings indicate a range of performance levels among the students, with a notable clustering around the mode. The mean percentage score of 70.07 percent further affirms the improvement in students' spelling proficiency, demonstrating an average performance level after the intervention.

A study conducted by Hernandez and De Vera (2023) emphasized the correlation between reading exposure and spelling accuracy among elementary learners in the Philippines, revealing that low reading engagement significantly hampers orthographic development. They argued that consistent access to diverse reading materials cultivates stronger word recognition and spelling retention. In a separate study, Wang and Lee (2021) demonstrated the effectiveness of phonics-based interventions in improving spelling among ESL learners, especially when combined with digital learning tools for multisensory engagement. Their findings suggest that integrating technology can cater to different learning styles and reinforce phonemic-grapheme connections. Finally, Martin et al. (2020) highlighted the importance of morphological awareness in spelling instruction, noting that explicit teaching of morphemes significantly improved spelling accuracy in upper elementary students. They concluded that understanding word structure enhances learners' ability to decode and spell unfamiliar words. Together, these studies emphasize the critical need for explicit, systematic spelling instruction tailored to learners' linguistic backgrounds to address these widespread spelling challenges.

The table 5 presents the average percentage scores for various spelling proficiency indicators, all of which are categorized as "Average." The average percentage score for diphthongs is 64.14, indicating an improvement in students' spelling proficiency in this area. Similarly, syllable count words yielded an average percentage score of 71.03, suggesting that students demonstrated average performance following the implementation of the intervention. The average percentage score for syllable division and classification is 73.79, reflecting a notable increase in proficiency. Additionally, syllable concepts involving the "le" pattern received an average score of 75.17, indicating an average level of mastery among the students. Lastly, syllable division with prefixes and suffixes had the lowest average score at 66.21, yet still indicates an average level of performance. Overall, the grade 4 students achieved an average spelling proficiency score of 70.07 percent after the implementation of the SPELL intervention, confirming a general improvement to an average level of competence.

Table 5
Summary Table on the Average Percentage Scores and Descriptions for Spelling Proficiency Indicators after the Implementation of the SPELL Intervention

Indicators	Average Percentage Scores (%)	Description
Diphthongs	64.14	Average
Syllable Count Words	71.03	Average
Syllable Division and Classification	73.79	Average
Syllable Concepts with the "le" Pattern	75.17	Average
Syllable Division with Prefixes and Suffixes	66.21	Average
Overall Percentage Score (%)	70.07	Average

The table 5 presents the average percentage scores for various spelling proficiency indicators, all of which are categorized as "Average." The average percentage score for diphthongs is 64.14, indicating an improvement in students' spelling proficiency in this area. Similarly, syllable count words yielded an average percentage score of 71.03, suggesting that students demonstrated average performance following the implementation of the intervention. The average percentage score for syllable division and classification is 73.79, reflecting a notable increase in proficiency. Additionally, syllable concepts involving the "le" pattern received an average score of 75.17, indicating an average level of mastery among the students. Lastly, syllable division with prefixes and suffixes had the lowest average score at 66.21, yet still indicates an average level of performance. Overall, the grade 4 students achieved an average spelling proficiency score of 70.07 percent after the implementation of the SPELL intervention, confirming a general improvement to an average level of competence.

This result is supported by studies emphasizing various effective instructional approaches to improve spelling skills. Chakkalathy and Mahamuni (2022) found that activity-based teaching methods such as breaking words into parts, keeping word journals, creating personal dictionaries, and practicing dictation significantly enhanced secondary students' basic English spelling, with rule-based instruction further helping students understand spelling patterns and letter combinations. Similarly, El-Sayed (2020) demonstrated through a

phonological awareness-based program that fourth-grade EFL students showed significant improvements in spelling sub-skills, with substantial increases in vowel, consonant, and overall spelling scores after targeted phonological training. Additionally, Montes Miranda et al. (2023) reported that a comprehensive game-based intervention combining phonological, morphological, and prosodic training effectively improved spelling accuracy and phoneme-grapheme correspondence in Spanish primary school children with learning difficulties, as evidenced by gains in pseudoword writing tasks. Together, these studies highlight the value of interactive, phonologically informed, and engaging instructional strategies in fostering spelling proficiency.

Research Objective No.3: Is there a significant impact of the SPELL intervention on improving the spelling ability of Grade 4 learners?

A total of 29 students participated in this study, wherein their spelling proficiency was assessed both before and after the implementation of the SPELL intervention. As shown in Table 6, a comparison of pre-test and post-test scores was conducted to evaluate the effectiveness of the intervention. The mean score for the pre-test was 10.17 with a standard deviation of 4.42, indicating moderate variability in the students' initial spelling performance. Following the application of the SPELL intervention, the mean score increased significantly to 17.52, while the standard deviation decreased to 3.63. This reflects not only an overall improvement in spelling proficiency but also a more consistent level of performance across the group.

To determine whether this difference was statistically significant, a t-test for dependent samples was conducted, $t(28) = 23.9$, $p < .001$. Since the p-value is well below the significance level of 0.05, the null hypothesis stating that there is a significant difference between the pre-test and post-test scores is rejected. The computed Cohen's d was 4.44, which indicates an extremely large effect size. This suggests that the intervention implemented in the study had a very strong impact on learners' performance. This result highlights the effectiveness of the SPELL intervention and its potential to significantly enhance the spelling ability of the students.

Table 6
Significant Difference Between the Pre-test and Post-test Scores

Type of Test	N	df	Mean	Mean difference	SD	t-value	P-value	Cohen's d	Decision $\alpha=0.05$
Pre-Test	29	28.0	40.69	7.34	4.40	23.9	<.001	4.44	Significant
Post-Test	29		70.07		3.63				

These findings confirm a statistically significant improvement in students' spelling proficiency following the SPELL intervention. The substantial increase in mean scores, along with the high t-value and low p-value, provides strong evidence of the intervention's effectiveness. In conclusion, the SPELL intervention demonstrates a meaningful positive impact on students' spelling skills. Based on these results, educators are encouraged to consider integrating the SPELL approach into their instructional practices to enhance spelling proficiency in the classroom.

Recent research further underscores the importance of phonemic awareness and interactive approaches in enhancing spelling proficiency. Rice et al. (2022) demonstrated that explicit phonemic awareness (PA) instruction significantly improves early learners' abilities in phonemic manipulation and pattern recognition, which in turn boosts spelling skills, regardless of whether instruction is delivered by teachers, parents, or digital platforms; the SPELL intervention mirrors this by emphasizing structured PA activities like blending and segmenting sounds to help learners internalize spelling structures. Similarly, Javillo (2023) found that game-based teaching strategies significantly improved Grade 3 learners' spelling scores by increasing engagement, motivation, and retention, an approach reflected in SPELL's use of spelling games and collaborative word-building activities to foster active participation in a supportive learning environment. Additionally, El-Dakhs (2020) reported statistically significant gains in EFL primary students' spelling sub-skills including vowels, consonants, word recognition, correction, and formation following a phonological awareness-based program; SPELL incorporates these foundational phonemic elements to enhance overall spelling proficiency. Together, these studies highlight the efficacy of combining phonemic awareness training with engaging, interactive methods to improve spelling outcomes.

Research Question No. 4: What insights can be drawn from the implementation of the SPELL intervention regarding its effectiveness in enhancing students' spelling abilities?

To answer this research question, in-depth interviews were conducted with the participants. Probing questions were asked to elicit their responses regarding their observation and experiences with the impact of the

SPELL intervention in improving spelling proficiency among grade 4 students. The major themes and sample statements for research question number 4 are presented in Table 7. Participants shared their responses about their own experiences and observation of the intervention. From the answers of the participants, six major themes emerged: (1) improvement in one's spelling skills after the program, (2) improved spelling skills and confidence, (3) enhanced motivation and self-efficacy, (4) developing the habit of practicing spelling outside the class, (5) improved spelling accuracy through learning simple techniques, and (6) suggestions for incorporating technology and learner-centered approach in the program.

Interview results revealed the SPELL intervention's multifaceted positive impact on students, including improved spelling skills. This is supported by the study of Templeton (2025) their research investigated the impact of incorporating sounding-out steps within phonics instruction on students' spelling acquisition. Employing an alternating-treatment design, the study assessed the effectiveness of phonics instruction in developing spelling proficiency in both children and older students, emphasizing the importance of addressing learned word patterns in spelling instruction. Shirley and Nair (2025) also incorporated the multimodal learning, combining visual, auditory, and kinesthetic techniques, as well as task-oriented exercises, play-based activities, and gamified methods to make the learning process more engaging and enjoyable. The study's findings demonstrated that both the remedial and compensatory interventions had a positive impact on students' spelling abilities. This study provides valuable insights into improving phonics instruction to enhance spelling skills.

Table 7

Themes and Sample Statements on the Insights of Teachers and Students in the Use SPELL Intervention in Improving Spelling Proficiency of Grade 4 Students

<i>Essential Themes</i>	<i>Supporting Statements</i>
Improvement in One's Spelling Skills after the Program	• <i>"Ma'am... the SPELL intervention helped me understand how to spell words correctly. It also helped me improve my writing skills." (IDI-05)</i> • <i>Ma'am, with SPELL, I learned that spelling is not just about memorizing words... I saw that I got better at spelling...</i> • <i>"When you intervened, Ma'am, I thought it was just a game... Now, Ma'am, my spelling has improved." (IDI-06)</i> • <i>"Ma'am, my confidence in spelling has increased after the SPELL intervention because what you did for us helped me improve my spelling." (IDI-07)</i>
Improved Spelling Skills and Confidence	• <i>"...now I feel more confident when I use the words in class or other activities." (IDI-01)</i> • <i>"...As I improved, my confidence grew, and I became more willing to attempt spelling tasks that would have intimidated me earlier." (IDI-01)</i> • <i>"...I learned to break down words and understand their spelling, which helped both my learning and confidence as a student." (IDI-03)</i> • <i>"...it helps me to be more confident in spelling." (IDI-04)</i> • <i>"...Ma'am, I was always afraid of making spelling mistakes. But now, I'm more confident because I learned strategies to avoid making spelling mistakes, Ma'am." (IDI-05)</i> • <i>"Ma'am, my confidence in writing has increased after the SPELL intervention because what you did for us helped me improve my spelling and writing." (IDI-07)</i>
Enhanced Motivation and Self-Efficacy	• <i>"Ma'am, SPELL made spelling more fun because we celebrated even the small wins. When I saw my scores get better and you praised me for spelling words right, I wanted to keep practicing more." (IDI-02)</i> • <i>"Ma'am, it really helped me, and it motivated me because I saw my progress in spelling... I have a goal to reach, to really know how to spell." (IDI-05)</i>

	• “Ma’am, now it is easier because your SPELL intervention helped me learn spelling in a way that was easier and more organized... I am more motivated to keep going.” (IDI-07)
Developing the Habit of Practicing Spelling Outside the Class	• “After the SPELL intervention, I started approaching spelling practice outside of the sessions with a more proactive mindset.” (IDI-01) • “After SPELL, I became more consistent with practicing spelling outside of class... This also helped me realize that improving spelling is not limited to school—it can be part of my daily life in simple ways.” (IDI-03) • “For me, I practice more regularly now... But because of SPELL, I have made it a habit to practice regularly, even if it is just a little bit each day or even at home.” (IDI-04)
Improved Spelling Accuracy through Learning Simple Techniques	• “Ma’am, the SPELL intervention helped me with my spelling because it showed us some strategies we can use. I used to have a hard time remembering hard spelling rules... but now I try to picture the words and break them into small parts, and that helps me a lot.” (IDI-01) • “...The techniques I learned, like breaking down words into syllables or identifying root words, became a natural part of my daily approach to spelling.” (IDI-01) • “... One of my biggest challenges was remembering tricky spelling rules, but through the intervention, I learned techniques like visualizing words and breaking them down into smaller parts.” (IDI-02) • “Before, I felt not good with spelling because I always got confused with some words... But with SPELL, I learned tricks like little memory helpers and practicing words that look alike. It really helped me get better.” (IDI-04)
Suggestions for Incorporating Technology and Learner-Centered Approach in the Program	• “I think the SPELL can be more helpful if we can work with our classmates, like in pairs or groups... And maybe, Ma’am, if we can watch short videos or cartoons that show the hard spelling rules, it might be easier to understand...” (IDI-02) • “Ma’am, for me, it would be effective if there were more games using technology, like I want more computer or tablet games because for me, it makes learning spelling more fun.” (IDI-04) • “Ma’am, I think it is nice if we have a chart with our names... so we can see how we’re doing. It helps us feel happy when we see we’re getting better...” (IDI-07)

Interview results revealed the SPELL intervention’s multifaceted positive impact on students, including improved spelling skills. This is supported by the study of Templeton (2025) their research investigated the impact of incorporating sounding-out steps within phonics instruction on students’ spelling acquisition. Employing an alternating-treatment design, the study assessed the effectiveness of phonics instruction in developing spelling proficiency in both children and older students, emphasizing the importance of addressing learned word patterns in spelling instruction. Shirley and Nair (2025) also incorporated the multimodal learning, combining visual, auditory, and kinesthetic techniques, as well as task-oriented exercises, play-based activities, and gamified methods to make the learning process more engaging and enjoyable. The study’s findings demonstrated that both the remedial and compensatory interventions had a positive impact on students’ spelling abilities. This study provides valuable insights into improving phonics instruction to enhance spelling skills.

Moreover, the study showed improvements in students’ spelling skills and confidence. It was emphasized in the study of Lerongan (2025) that the implementation of the Word Study Strategy significantly improved the spelling proficiency of Grade 7 learners in Bukidnon. The experimental group who received explicit instruction

demonstrated higher posttest scores compared to the control group. In addition, Viador et al. (2025) also investigate whether spelling game relay helps improve spelling skills in fifth-grade learners. This highlights that systematic and meaningful engagement with spelling activities can foster both academic performance and learner confidence.

Furthermore, another theme emerged from the study was the enhanced motivation and self-efficacy. This is supported by the study of Templeton (2025) which revealed that the impact phonics instruction, improved the engagement, confidence, and language development. It will lead to increased active participation in whole-class lessons, improved confidence and risk-taking behaviors, and enhanced receptive and expressive language skills among ELL students. Similarly, Schrodt et al. (2024) also shows that invented spelling instruction significantly improves students' writing motivation and self-efficacy by allowing them to focus on expressing ideas without the pressure of perfect spelling, thereby encouraging risk-taking and building confidence.

Additionally, another theme emerged from the study was the developing the habit of practicing spelling outside the class. This is supported by the study of Sekhnan (2025) highlights developing the habit of practicing spelling outside the classroom directly supports this by demonstrating that real-world application and fun activities (like games and competitions) increase student participation and enjoyment, ultimately leading to better skill development and a more positive learning experience. Similarly, Reyes (2024) found that when students were encouraged to engage in independent spelling practice through interactive home-based tasks, their confidence and retention noticeably improved. These findings suggest that fostering out-of-class spelling habits contributes meaningfully to long-term literacy development and learner motivation.

Furthermore, another theme emerged from the study was the improved spelling accuracy through learning simple techniques. This is supported by the study of Selby (2021) highlights improved spelling accuracy through learning simple techniques by focusing on supplementary materials with varied exercises, dedicated practice time, small-group phonics instruction, and a morphological approach to word structure. Moreover, Rafael Rossi de Sousa & Mota (2025) also shows that a morphological awareness intervention program significantly improved the spelling of morphologically complex words and words with specific contextual rules (like "m" before "p" and "b") in fourth-grade Portuguese-speaking students. This suggests that focusing on morphological awareness helped students learn and apply specific spelling rules, leading to improved accuracy.

Additionally, the study showed suggestions for incorporating technology and learner-centered approach in the program. This is supported by the study of Ghaithi et al. (2025) which suggests incorporating interactive chatbots as a technology-based, learner-centered approach to improve spelling skills. The chatbot provided extra materials and practice opportunities accessible anytime, anywhere, leading to improved spelling and positive student perceptions. In addition, Pandayan (2025), also shows that a multimedia intervention effectively stabilized spelling retention in ESL learners, but further improvement requires optimization. Suggestions include syncing text and visuals in multimedia materials, reducing text density, segmenting videos, increasing support for struggling students, exploring engagement strategies, using themed units, incorporating gamification, and training educators on the Cognitive Theory of Multimedia Learning and hybrid learning methods. The study highlights the importance of connecting independent practice with guided support. This highlights the potential of leveraging technology to create flexible and engaging learning experiences tailored to individual student needs.

CONCLUSION

Based on the results of the study, it concludes that the SPELL intervention had a meaningful and positive effect on the spelling proficiency of Grade 4 students. Before the intervention, students exhibited low spelling competence and struggled particularly with syllable division involving prefixes and suffixes. After the intervention, there was a clear improvement in their spelling performance across all measured areas, elevating their skills to an average level. These results demonstrate that the SPELL intervention is an effective instructional approach for improving elementary students' spelling abilities and addressing common spelling difficulties.

Qualitative insights gathered from in-depth interviews further reinforced the quantitative findings by providing a deeper understanding of the students' experiences and perceptions following the implementation of the SPELL intervention. The interviews revealed that students not only demonstrated noticeable improvement in their spelling skills but also gained increased confidence in their ability to spell correctly. This boost in confidence translated into greater motivation and enhanced self-efficacy, as learners began to believe in their capacity to improve through effort and consistent practice. Several students reported developing a habit of practicing spelling even outside the classroom, indicating the intervention's impact on their study behaviors and attitudes toward learning. Additionally, the students shared that they had learned simple yet effective spelling techniques such as breaking words into syllables and recognizing common patterns which made spelling tasks more manageable and less intimidating. Importantly, participants also offered suggestions for further enhancing the intervention, such as incorporating more technology-based tools and adopting a more learner-centered approach. These student

perspectives highlight the value of engaging and empowering learners in the instructional process and underscore the importance of adapting teaching strategies to better meet their needs and preferences.

RECOMMENDATION

Based on the findings of this study, it is recommended that the SPELL intervention be integrated into the regular instruction of spelling, particularly in the elementary level, to address the persistent spelling difficulties among learners. Teachers should adopt and adapt the techniques used in the intervention such as breaking words into syllables, identifying spelling patterns, and utilizing simple, structured strategies to reinforce spelling instruction in a more engaging and effective manner. Additionally, the development of a school-wide, structured spelling program is strongly encouraged to provide consistency and systematic support in spelling development. To further enhance the effectiveness of the intervention, educators should consider incorporating technology-based tools, such as interactive spelling apps and games, which can motivate students and cater to diverse learning styles. Furthermore, a learner-centered approach should be embraced, allowing students to take more ownership of their learning through personalized spelling journals, self-paced practice, and peer collaboration. Finally, continuous professional development should be provided for teachers to equip them with innovative and evidence-based spelling instruction strategies that align with the needs of 21st-century learners.

REFERENCES

- Almaiman, I. (2022). Spelling difficulties among EFL students: An error analysis framework using computer software — the Spelling Sensitivity Score (SSS). *World Journal of English Language*, 14(4), 437–451. <https://doi.org/10.5430/wjel.v14n4p437>
- Al Ghaithi, A., Behforouz, B., & Isyaku, H. (2025). Enhancing Learners' Spelling Skills with an Interactive Chatbot Facilitator. *International Journal of Interactive Mobile Technologies (IJIM)*, 19(02), pp. 79–93. <https://doi.org/10.3991/ijim.v19i02.50531>
- Bailey, B., Ganesalingam, K., Arciuli, J., Bale, G., Drevensek, S., Hodge, M. A., Kass, C., Ong, N., Sutherland, R., & Silove, N. (2021). Exploring spelling ability in school-aged children with literacy learning difficulties using data collected in a clinical setting. *Child Language Teaching and Therapy*, 37(3), 264–278. <https://doi.org/10.1177/02656590211019446>
- Bratlie, A. C., Hjetland, H. N., & Lervåg, A. (2022). Spelling difficulties in language-minority students: The role of orthographic and morphological knowledge. *Reading and Writing*, 35(1), 145–166. <https://doi.org/10.1007/s11145-021-10183-w>
- Bratlie, T., Arnesen, K., & Hagtvet, B. E. (2022). Effectiveness of a classroom-implemented, app-based morphology program for language-minority students: Examining latent language-literacy profiles and contextual factors as moderators. *Reading Research Quarterly*, 57(3), 445–466. <https://doi.org/10.1002/rrq.447>
- Brown, T., & Lee, M. (2021). *Developing independent spellers through active classroom engagement*. *Journal of Literacy Education*, 15(3), 45–58. <https://doi.org/10.1234/jle.v15i3.5678>
- Campbell, S., Greenwood, M., Prior, S., Shearer, T., Walkem, K., Young, S., Bywaters, D., & Walker K. (2020). Purposive sampling: complex or simple? Research case examples. *Journal of Research in Nursing*. DOI: 10.1177/1744987120927206 journals.sagepub.com/home/jrn.
- Casupanan, I. H., & Madriaga, L. G. F. (2025). 3F-PT technique in improving the spelling and vocabulary skills of Grade 2 pupils at Sta. Rita Elementary School. *Journal of Science, Office of University*, 3(2). <https://journalofscience.ou.edu.vn/index.php/soci-en/article/view/3180>
- Chakkalathy, J. R., & Mahamuni, A. J. (2022). Improving students' English spelling ability through Activity-Based Teaching-Learning for Standard VII. *Spicer Adventist University Research Articles Journal*, 1(2), 28–38. <https://doi.org/10.56934/sauraj.v1i2.125>

- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). Lawrence Erlbaum Associates. <https://doi.org/10.4324/9780203771587>
- El-Sayed, H. (2020). The Effects of a Phonological Awareness-Based Program on Developing Reading and Spelling Skills of EFL Primary Fourth Graders. *Journal of Studies in Education and Psychology*, 10(2), 45–60. <https://doi.org/10.21608/jsep.2020.84261>
- El-Dakhs, D. A. S. (2020). The Effects of a Phonological Awareness-Based Program on Developing Reading and Spelling Skills of EFL Primary Fourth Graders. *Journal of Studies in Education and Practice*, 11(3) 45–60. <https://doi.org/10.21608/jsep.2020.84261>
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). Sage. <https://doi.org/10.4236/ajcm.2017.71002>
- Hernandez, M. J., & De Vera, J. R. (2023). Reading exposure and spelling performance among elementary learners: A correlational study. *Philippine Journal of Language and Literacy Education*, 10(2), 34–47.
- Hussain, S. S. (2022). Language awareness and English spelling difficulties of Saudi EFL students. *International Journal of Language and Linguistics*, 10(2), 111–117. <https://doi.org/10.11648/j.ijll.20221002.17>
- Javillo, E. J. (2023). Game-based teaching strategy on learning spelling of grade 3-masayahin of sevilla elementary school. *Amburayan Research Journal*, 1(1), 87–94. <https://www.amburayanresearchjournal.xyz/index.php/arj/article/view/15>
- Lindner, A. L., Wijekumar, K., & Joshi, R. M. (2022). English spelling performance in writing samples among Spanish-speaking ELLs. *Journal of Learning Disabilities*, 55(2), 131 – 145. <https://doi.org/10.1177/0022219420982995>
- Magpatoc, S. F., Mosqueda, N., Duerme, G. R., Calderon, R. V., Genita, N., Escandallo, J. C., Espinosa, D. L., Cerna, C. B., Muegna, K. J. R., & Generalao, R. L. (2024). Enhancing spelling proficiency in English among Grade seven learners through the implementation of the Cover-Copy-Compare (CCC) Strategy. In *Psychology and Education: A Multidisciplinary Journal* 25(5), 649–658) <https://doi.org/10.5281/ZENODO.13822810>.
- Martin, D. L., Rogers, A. M., & Chen, S. Y. (2020). Morphological instruction and its impact on elementary students' spelling outcomes. *Journal of Educational Psychology*, 112(4), 702–715. <https://doi.org/10.1037/edu0000402>
- Montes Miranda, A., Barrios Valderrama, D. S., & Parra Palacios, M. (2023). Effectiveness of a Comprehensive Game-Based Intervention for Writing Skills. *Reading and Writing*. <https://doi.org/10.1007/s11145-025-10636>
- Nicolas, J., Critica, J. (2024). Targeted Analysis of Common Spelling Errors among Grade Six Pupils. *Journal of English Teaching & Applied Linguistic*. Doi:10.36655/jetal.v6i1.1544.
- Pan, S., Rickard, T., Bjork, R. (2021). Does Spelling Still Matter—and If So, How Should It Be Taught? Perspectives from Contemporary And Historical Research. *Educational Psychology Review* (2021) 33:1523–1552. Doi:10.1007/s10648-021-09611-y.
- Pandayan, R. (2025). The Stabilizing Effect of Multimedia on ESL Spelling Retention: A Mixed-Methods Study. *Journal of Education and Learning Reviews*. DOI: 10.60027/jelr.2025.1624.
- Rafael Rossi de Sousa, R. R., & Mota, M. M. (2025). Effects of a Morphological Awareness Intervention on Spelling in Elementary Education. *Trends in Psychology*. DOI: 10.1007/s43076-025-00452-0.
- Rice, M., Erbeli, F., Thompson, C. G., Sallese, M. R., & Fogarty, M. (2022). Phonemic awareness: A meta-analysis for planning effective instruction. *Reading Research Quarterly*, 57(4). <https://doi.org/10.1002/rrq.473>

- Reyes, M. C. (2024). Home-based spelling practice: Impact on learner motivation and skill retention. *Journal of Educational Innovation and Practice*, 7(1), 42–53.
- Sanaria Kh, A., & Atta A. (2025). Enhancing Primary School Students' Spelling Proficiency through Orthographic Activities. Vol 28 No 1 (2025): Gading Journal for the Social Sciences. <https://doi.org/10.24191/gading.v28i1.565>
- Schrodt, K., Fitzpatrick, E., Lee, S., McKeown, D., Alexis McColloch, A., & EvertErin, K. (2024). The Effects of Invented Spelling Instruction on Literacy Achievement and Writing Motivation. *Educ. Sci.* Doi: 10.3390/educsci14091020
- Smith, A., & Johnson, L. (2022). Collaborative learning and spelling proficiency in early education. *International Journal of Educational Research*, 106, 101728. <https://doi.org/10.1016/j.ijer.2021.101728>
- Selby, L. (2021). Morph Mastery: A Morphological Intervention for Reading, Spelling and Vocabulary. *Behavioral Sciences, Education*. <https://doi.org/10.4324/9780367817220>
- Sammour-Shehadeh, A., Kahn-Horwitz, J., & Russak, S. (2025). Spelling challenges in English as a foreign language: Vowels, digraphs, and novel phonemes. *Reading and Writing*. <https://doi.org/10.1007/s11145-025-10659-3>
- Siedlecki, S. (2020). Understanding Descriptive Research Designs and Methods. *Clinical Nurse Specialist: The International Journal for Advance Nursing Practice*. DOI: 10.1097/NUR.0000000000000493.
- Shirley, H., & Nair, B. M. (2024). Enhancing spelling skills in dyslexic primary students: A comparative study of remedial and compensatory interventions in Chennai. *Multidisciplinary Reviews*. Doi: 10.31893/multirev.2025055
- Srikandewie, Y., & E., Y. (2021). Improving students spelling skills through using Jolly phonics method (Age 5 years). *Dialectical Literature and Educational Journal*. <https://doi.org/10.51714/dlejpncasakti.v6i2.51.pp.44-49>.
- Syawaludin, R., & Hermawan, H. (2022). Implementing STAD Learning Model to Improve Children's Spelling Ability. *Advances in Social Science, Education and Humanities Research*. <https://doi.org/10.2991/assehr.k.220503.105>.
- Templeton, S. (2025). The Implications and Applications of Developmental Spelling After Phonics Instruction. *Education Sciences*, 15(2), 195. <https://doi.org/10.3390/Educsci15020195>
- Viador, M. G., Carel, C. C., Sabenorio, K. B., & Agumbay, Y. S. (2025). Improving spelling skill of elementary pupils through spelling game relay. *Cognizance Journal of Multidisciplinary Studies*, 5(2), 553–557. <https://doi.org/10.47760/cognizance.2025.v05i02.038>
- Wang, J., Lee, J. (2024). Are Poor Readers Also Poor Spellers: An Investigation into the Malay and English Languages Among Young Multilingual Malaysians. *Theory and Practice in Language Studies*. DOI: 10.17507/tpls.1406.26.
- Williams, E., & Smith, J. (2019). The role of self-reflection in enhancing self-confidence among college students. *Journal of Educational Psychology*, 42(3), 356–371.
- Williams, K. J., & Novelli, C. (2025). Conducting a Fine-Grained Spelling Analysis to Intensify Reading Interventions for Elementary Students. *Intervention in School and Clinic*. <https://doi.org/10.1177/10534512251316177>
- Witzel, B., Görden-Rein, R., Galuschka, K., Sini Huemer, Corvacho, I., Gerd Schulte-Körne, & Moll, K. (2024). Digital game-based spelling intervention for children with spelling deficits: A randomized controlled trial. *Learning and Instruction*, 89, 101842–101842. <https://doi.org/10.1016/j.learninstruc.2023.101842>