

## Spelling activities to reinforce vocabulary learning

### Actividades de deletreo para reforzar el aprendizaje de vocabulario

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#### Abstract

This research examined the effectiveness of spelling activities in reinforcing vocabulary learning among fifth-grade students. The study employed a quasi-experimental design with 68 participants divided into control and experimental groups at Unidad Educativa Fiscomisional Tirso de Molina in Ecuador. A seven-week intervention was implemented, incorporating various spelling activities including word searches, crosswords, and interactive games. Data was collected through pre-test and post-test assessments based on the Key English Test (KET) A2 level format. Results showed significant improvement in the experimental group's vocabulary knowledge, with mean scores increasing from 2.24 to 5.06, while the control group showed modest improvement from 2.59 to 3.62. Statistical analysis confirmed the effectiveness of spelling activities, with post-test results showing a significant difference between groups ( $p < 0.001$ ). The findings demonstrate that systematic implementation of spelling activities enhances vocabulary acquisition in elementary school students learning English as a foreign language.

**Keywords:** *spelling activities, vocabulary knowledge, interactive games, English learning, vocabulary acquisition.*

#### Resumen

Esta investigación examinó la efectividad de las actividades de deletreo en el refuerzo del aprendizaje de vocabulario en estudiantes de quinto grado. El estudio empleó un diseño cuasi-experimental con 68 participantes divididos en grupos control y experimental en la Unidad Educativa Fiscomisional Tirso de Molina en Ecuador. Se implementó una intervención de siete semanas, incorporando diversas actividades de deletreo incluyendo sopas de letras, crucigramas y juegos interactivos. Los datos se recolectaron mediante evaluaciones pre-test y post-test basadas en el formato Key English Test (KET) nivel A2. Los resultados mostraron una mejora significativa en el conocimiento de vocabulario del grupo experimental, con puntuaciones medias aumentando de 2.24 a 5.06, mientras que el grupo control mostró una mejora modesta de 2.59 a 3.62. El análisis estadístico confirmó la efectividad de las actividades de deletreo, con resultados post-test mostrando una diferencia significativa entre grupos ( $p < 0.001$ ). Los hallazgos demuestran que la implementación sistemática de actividades de deletreo mejora la adquisición de vocabulario en estudiantes de primaria que aprenden inglés como lengua extranjera.

**Palabras clave:** *actividades de deletreo, conocimiento de vocabulario, juegos interactivos, aprendizaje del inglés, adquisición de vocabulario.*

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#### INTRODUCTION

Pedagogical theories strongly support the role of spelling activities in cognitive development and language acquisition. According to Treiman and Bourassa (2020), children engaged in spelling activities develop crucial cognitive abilities that enhance phonological awareness and communication effectiveness. This cognitive

foundation is particularly vital in early education, where spelling activities motivate children to begin writing and expressing phrases through correct word usage (Bowers, 2018).

The current landscape of vocabulary teaching presents several challenges. Rijthoven et al. (2020) identified four

essential spelling strategies for effective vocabulary instruction: phonetic, rule-based, visual, and morphemic. These strategies, when systematically implemented, contribute to improved language proficiency and vocabulary retention.

Previous research demonstrates the effectiveness of spelling interventions in language learning. Rahmawati and Harahap (2023) reported a 23.97% increase in favorable responses when implementing spelling bee games with seventh-grade students. Similarly, Pratiwi et al. (2021) found that students taught vocabulary through spelling activities achieved mean scores of 76.00 compared to 69.83 in control groups using conventional methods.

Vocabulary development is essential for effective interaction between individuals. Everything language users want to express requires extensive lexical knowledge. As Khafidhoh (2019) points out, vocabulary enables individuals to express meanings, viewpoints, and objectives effectively in communication.

Vocabulary constitutes a fundamental subskill for language learning, forming the foundation for all other linguistic skills (Islamovna, 2023). It helps students develop fluency and accuracy, being key to understanding written or oral texts where children learn and memorize word meanings to increase their knowledge (Schmitt, 2000).

The relationship between spelling and cognitive development extends to multiple language skills. According to Kilic (2019), vocabulary knowledge significantly impacts writing and speaking abilities, showing a 17% difference in both speaking and writing performance. This connection emphasizes the importance of effective vocabulary instruction methods.

Vocabulary is categorized into passive and active forms. Passive (receptive) vocabulary relates to reading and listening comprehension, while active (productive) vocabulary involves writing and speaking skills (Laufer & Goldstein, 2004). The key distinction lies in control: receptive vocabulary involves word recognition, while productive vocabulary requires active word usage (Alqahtani, 2015).

Classroom observations reveal persistent challenges in vocabulary learning. Students often rely on traditional learning methods - writing lists of unknown words, repetition, dictionary lookups, and rote memorization - without achieving desired outcomes (Afzal, 2019). According to Alizadeh (2016), while students prefer

memorization for its speed, Weaver (2022) notes this approach's limitations in language learning.

Modern approaches to spelling instruction incorporate digital technology. Boggio et al. (2022) developed applications for spelling training, reflecting education's evolving landscape while maintaining emphasis on spelling accuracy. Research by Sprunhan et al. (2022) indicates that spelling provides insight into students' sound system knowledge and writing abilities.

Regarding spelling activities specifically, Albuquerque and Martins (2020) demonstrated their effectiveness in enhancing children's literacy skills. Teachers must recognize that teaching children differs fundamentally from teaching young adults (Alqahtani, 2015). Nation and Macalister (2020) identify spelling as crucial for connecting listening, speaking, writing, and reading skills, all requiring proper orthographic usage.

The fundamental role of spelling in educational success (Boggio et al., 2022) necessitates its proper development for effective communication. Educational researchers should focus on optimizing support for school-age children's spelling skill development (Alshahrani, 2019; Daffern & Fleet, 2021), making this study's investigation of spelling activities' impact on vocabulary learning particularly relevant.

## MATERIALS AND METHODS

This research was carried out using a quantitative approach with a quasi-experimental design at Unidad Educativa Fiscomisional Tirso de Molina, located in Izamba, Ambato, Ecuador. The study population comprised 68 fifth-grade students aged 9-10 years, with a balanced distribution of 33 girls and 35 boys. The participants were divided into two groups: parallel A serving as the control group and parallel C as the experimental group, each containing 34 students (Table 1).

Group	Male	Female	Total	Percentage
Control	19	15	34	50%
Experimental	16	18	34	50%
Total	35	33	68	100%

**Table 1.** Population distribution by gender and group

The experimental group participated in a seven-week instructional intervention, whereas the control group continued with traditional English classes.

The research instruments were designed based on the Key English Test (KET) A2 level format. Both the pre-test and post-test consisted of ten multiple-choice questions focusing on vocabulary spelling and meaning. These instruments underwent validation by three experts in

Teaching English as a foreign language to ensure their reliability and appropriateness for the target population.

The intervention phase extended over seven weeks, with weekly 20-minute sessions implementing various spelling activities. During the first week, students engaged in pair work focusing on noun spelling activities. The second week involved group work using a spelling snake activity centered on food vocabulary. Week three introduced spelling bingo for practicing gerund verbs through individual work. The fourth week concentrated on school subjects through pair work activities. The fifth week incorporated days of the week spelling activities in group settings. Week six focused on common collocations through pair exercises, and the final week addressed adjectives through paired spelling activities.

The first week focused on noun spelling activities through pair work exercises. During the second week, students engaged in group work using a spelling snake activity centered on food vocabulary. The third week introduced spelling bingo for practicing gerund verbs through individual work. The fourth week concentrated on school subjects through pair work activities. The fifth week incorporated days of the week spelling activities in group settings. Week six emphasized common collocations through pair exercises, and the final week addressed adjectives through paired spelling activities.

Throughout the intervention, the control group continued with their regular English classes following the traditional methodology. Both groups were assessed at the beginning and end of the study period using identical testing instruments to measure vocabulary knowledge and spelling accuracy.

Figure 1 presents the progression of student participation throughout the intervention period, demonstrating the engagement levels across different activity types.

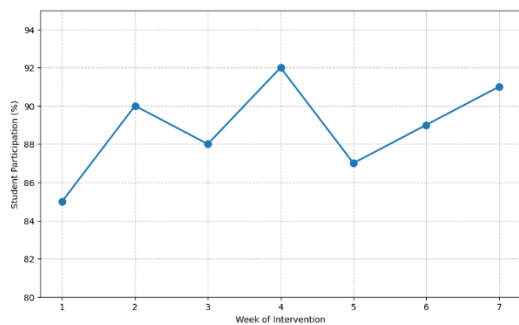


Figure 1. Student engagement during spelling activities

The data analysis involved descriptive statistical methods to compare pre-test and post-test results, with particular attention to measuring the effectiveness of the spelling

activities in vocabulary learning. A t-test was employed to determine the statistical significance of differences between the control and experimental groups.

## RESULTS AND DISCUSSION

To ensure the reliability of the research instruments, Cronbach's alpha coefficient was calculated, yielding values of 0.89 and 0.91 for the pre-test and post-test respectively, indicating high internal consistency. The data analysis process encompassed three main statistical procedures. First, descriptive statistics were employed to analyze the central tendency and dispersion measures of both groups' performance. Second, the t-student test was utilized to evaluate the statistical significance of differences between the experimental and control groups' means, with a significance level of 0.05. A comparative analysis of pre-test and post-test results was conducted to measure the effectiveness of the spelling activities intervention on vocabulary learning (Table 2).

Instrument	Cronbach's Alpha	N of Items
Pre-test	0.89	10
Post-test	0.91	10

Table 2. Reliability analysis results

The analysis of pre-test data revealed low initial vocabulary knowledge levels in both groups. The control group obtained an average score of 2.59 (26% of the expected average), while the experimental group scored 2.24 (22%). The t-test analysis of pre-test scores showed a two-tailed significance of 0.435 (>0.05), indicating no significant initial difference between groups (Table 3).

Group	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Control	2.59	1.12	0.786	66	0.435
Experimental	2.24	0.98			

Table 3. T-test results for pre-test scores

Figure 2 illustrates the progression of both groups' performance throughout the intervention period. The graph demonstrates a steady improvement in both groups, with the experimental group showing a more pronounced upward trend. While the control group's progress remained moderate, increasing from 2.59 to 3.62, the experimental group exhibited a steeper improvement curve, advancing from 2.24 to 5.06.

During the seven-week intervention phase, the experimental group participated in various spelling activities designed to enhance vocabulary learning (Table 4).

Week	Activity Type	Learning Format
1	Spelling Flashcards	Pair work
2	Spelling Snake	Group work
3	Spelling Bingo	Individual
4	School Subjects	Pair work
5	Days of the Week	Group work
6	Collocations	Pair work
7	Crossword	Pair work

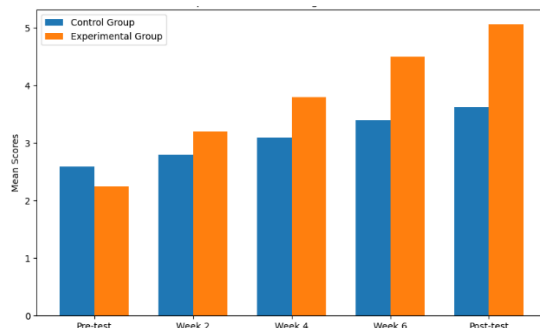
**Table 4.** Implementation of spelling activities

Post-test results demonstrated significant improvement in the experimental group. The control group achieved a mean score of 3.62 (36% of expected average), while the experimental group reached 5.06 (51%). Statistical analysis of post-test data revealed a two-tailed significance of 0.001 (<0.05), confirming a significant difference between groups after the intervention (Table 5).

Group	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Control	3.62	1.45	-3.54	66	0.001
Experimental	5.06	1.38			

**Table 5.** T-test results for post-test scores

The reliability analysis of the instruments yielded Cronbach's alpha values of 0.89 for the pre-test and 0.91 for the post-test, indicating high internal consistency.



**Figure 2.** Group performance throughout intervention

These results demonstrate that students who participated in the spelling activities intervention showed significantly greater improvement in vocabulary knowledge compared to those who followed traditional teaching methods.

## DISCUSSION

This research aimed to determine if vocabulary learning through spelling activities improved fifth-grade students' learning process. The study findings revealed significant

insights about the effectiveness of spelling activities in vocabulary acquisition.

The pre-test results showed a low level of English vocabulary proficiency in both groups, with averages of 2.59 and 2.24 out of 10 for control and experimental groups respectively. This aligned with Ningrum and Pusparini's (2020) findings, which identified similar deficiencies in students' vocabulary mastery at the beginning of their research.

The implementation of spelling activities through a game-based learning approach proved effective during the intervention phase. Students showed increased engagement and motivation when learning through activities rather than memorization, supporting findings by Saleh and Althaqafi (2022). The activities included crossword puzzles, spelling meaning exercises, syllable spelling, word searches, and flashcards, which created an interactive learning environment.

Post-test results demonstrated significant improvement in the experimental group (5.06) compared to the control group (3.62). This improvement aligns with studies by Lundberg et al. (2022) and Saleh and Althaqafi (2022), who found that spelling activities enhanced vocabulary retention and overall language proficiency.

Several limitations were encountered during the research process. The seven-week intervention period was relatively short, potentially limiting the full development of planned spelling activities. Additionally, the need for vocabulary application in real contexts was identified as crucial for ensuring both short and long-term retention. The study also highlighted the potential for expanding spelling activities to include online games and digital resources.

These findings contribute to the growing body of research supporting the effectiveness of interactive spelling activities in vocabulary acquisition for young learners. Future research could explore the integration of digital tools and extended intervention periods to further enhance vocabulary learning outcomes.

## Future Research Directions

The findings of this study provide compelling evidence supporting the effectiveness of spelling activities in vocabulary acquisition; however, several aspects warrant further exploration to optimize instructional methodologies and expand their applicability across different learning contexts.

Future research should investigate the long-term effects of spelling-based interventions on vocabulary retention and

overall language proficiency. While this study assessed immediate post-test improvements, examining vocabulary recall over extended periods (e.g., six months to one-year post-intervention) would offer valuable insights into the sustainability of learning gains.

The integration of digital learning tools, gamification, and artificial intelligence (AI)-driven applications presents a promising avenue for modernizing spelling instruction. Further studies should explore the effectiveness of interactive platforms, adaptive learning algorithms, and virtual reality environments in enhancing spelling proficiency and promoting self-directed vocabulary learning among students.

Given that vocabulary acquisition is highly influenced by linguistic background and cognitive processes, future studies should examine the effectiveness of spelling activities across diverse language learning environments. Research comparing monolingual and bilingual learners, as well as students from different linguistic backgrounds, could elucidate the cognitive mechanisms underlying spelling-based vocabulary retention.

Individual learning preferences and cognitive styles vary among students; thus, future research should explore how customized spelling interventions, tailored to students' proficiency levels and learning modalities, affect vocabulary acquisition. Investigating adaptive teaching methodologies and differentiated instruction strategies could optimize learning outcomes for both high-performing students and those with learning difficulties (e.g., dyslexia or language processing disorders).

While this study primarily relied on pre-test and post-test scores, future research should incorporate multi-dimensional assessment approaches, including eye-tracking studies, neurocognitive analyses, and qualitative feedback from students and teachers. A more holistic evaluation of spelling interventions would provide deeper insights into their pedagogical value and cognitive impact on vocabulary acquisition.

## CONCLUSIONS

Spelling activities effectively enhance vocabulary learning in fifth-grade students, as evidenced by the significant improvement in the experimental group's performance. The post-test results demonstrated that students exposed to spelling activities achieved higher scores (51% of expected average) compared to those following traditional methods (36%).

The implementation of diverse spelling activities, including games and interactive exercises, creates an engaging learning environment that motivates students to

participate actively in vocabulary acquisition. This approach proves more effective than traditional memorization techniques.

Students' initial low vocabulary proficiency levels can be significantly improved through systematic application of spelling activities. The structured seven-week intervention demonstrates that consistent practice with varied spelling exercises leads to measurable improvements in vocabulary knowledge.

Interactive approaches to spelling instruction facilitate better retention and understanding of vocabulary. The combination of individual, pair, and group activities provides multiple opportunities for students to engage with new vocabulary in meaningful ways.

Teachers should incorporate spelling activities as a regular component of English language instruction, moving beyond traditional vocabulary teaching methods to embrace more interactive and engaging approaches that support comprehensive language development.

## AUTHOR CONTRIBUTIONS

Andrea Alexandra Lascano Ortiz (AL): Conceptualization, methodology design, intervention implementation, data collection, statistical analysis, and original draft writing. She played a key role in structuring the study and ensuring the methodological rigor of the research. Enith Jessenia Mejía Sánchez (EM): Supervision, validation, and review of the research design. She contributed to refining the methodology, verifying statistical accuracy, and reviewing the manuscript for coherence and academic rigor. Guillermo Luis Proaño López (GP): Data analysis and interpretation, literature review, and graphical representation of results. He was responsible for ensuring the accuracy of statistical findings and their contextualization within existing research. Judith Alexandra Silva Chávez (JS): Editorial support, language refinement, and formatting. She provided substantial contributions in structuring the manuscript according to high-impact journal standards, ensuring clarity, academic precision, and adherence to publication guidelines.

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