UNEMI
UNIVERSIDAD ESTATAL DE MILAGRO

REPÚBLICA DEL ECUADOR

UNIVERSIDAD ESTATAL DE MILAGRO

FACULTAD DE POSGRADO

VICERRECTORADO DE INVESTIGACIÓN Y POSGRADO

ARTÍCULOS PROFESIONALES DE ALTO NIVEL

PREVIO A LA OBTENCIÓN DEL TÍTULO DE

MAGÍSTER EN ENSEÑANZA DE INGLÉS

TEMA:

Impact of the Use of Pictograms on Vocabulary Acquisition and Reading Motivation in Spanish-Speaking Children Aged 6 to 8 Years

Autor: AJILA MOROCHO KAROL VANESSA

PICO LOZANO MARIA ISABEL

PARRAGA LOOR JULEXI NIKOLE

Director: OROZCO JURADO VANESSA VIVIANA

Milagro, año

Impact of the Use of Pictograms on Vocabulary Acquisition and Reading Motivation in Spanish-Speaking Children Aged 6 to 8 Years

María Isabel Pico Lozano; Julexi Nikole Párraga Loor;
Karol Vanessa Ajila Morocho; Vanessa Viviana Orozco Jurado
Correspondence: mpicol2@unemi.edu.ec

Author identifiers (emails and ORCID):
• María Isabel Pico Lozano — mpicol2@unemi.edu.ec — ORCID: 0009-0004-6701-3671
• Julexi Nikole Párraga Loor — julexiparraga@gmail.com — ORCID: 0009-0009-3549-1237
• Karol Vanessa Ajila Morocho — karolajila@gmail.com — ORCID: 0009-0002-0946-9430
• Vanessa Viviana Orozco Jurado- vorozcoj@unemi.edu.ec- ORCID: 0009-0003-6680-4239

Affiliations
I. Master's Program in Teaching English as a Foreign Language, Universidad Estatal de Milagro (UNEMI), Ecuador.
II. Master's Program in Teaching English as a Foreign Language, Universidad Estatal de Milagro (UNEMI), Ecuador.
III. Master's Program in Teaching English as a Foreign Language, Universidad Estatal de Milagro (UNEMI), Ecuador.
IV. Director of the TEFL online Degree Program in UNEMI,

Abstract

This article examines the impact of using pictograms as a teaching resource in teaching English as a foreign language to Spanish-speaking children aged 6 to 8. Based on evidence showing that traditional teaching methods are insufficient to sustain reading motivation and vocabulary retention at early ages, a quasi-experimental study was designed with 60 participants divided into an experimental group that used materials with pictograms and a control group that worked only with written texts. Pre- and post-tests of vocabulary and a reading motivation questionnaire adapted from the Motivation for Reading Questionnaire (MRQ) (Wigfield & Guthrie, 1997) were administered to measure change in both dimensions. The results showed that the experimental group obtained significant improvements in both vocabulary retention and reading motivation, with large effect sizes ($d \approx 1.3$) compared to the control group. Furthermore, a positive correlation was observed between improvements in vocabulary and increases in reading motivation. The discussion analyzes these findings from the perspective of Paivio's dual-code theory and multimedia learning, reviewing previous research on pictograms and visual aids in language teaching. The study concludes that the systematic incorporation of pictograms not only facilitates

the comprehension and recall of new words, but also enhances motivation and enjoyment of reading in English. Implications for teaching practice and the development of educational policies that promote multimodal learning from the earliest stages are highlighted.

Keywords: Pictograms; English as a Foreign Language (EFL); Vocabulary retention; Reading motivation; Multimodal learning; Dual-code theory; Quasi-experimental study; Primary education.

Resumen

El presente artículo examina el impacto del uso de pictogramas como recurso didáctico en la enseñanza del inglés como lengua extranjera en niños hispanohablantes de 6 a 8 años. A partir de la evidencia que demuestra que los métodos tradicionales de enseñanza resultan insuficientes para sostener la motivación lectora y la retención de vocabulario en edades tempranas, se diseñó un estudio cuasi-experimental con 60 participantes divididos en un grupo experimental que utilizó materiales con pictogramas y un grupo control que trabajó únicamente con textos escritos. Se aplicaron pre y pos pruebas de vocabulario y un cuestionario de motivación lectora adaptado del MRQ (Wigfield & Guthrie, 1997) para medir el cambio en ambas dimensiones. Los resultados mostraron que el grupo experimental obtuvo mejoras significativas tanto en retención de vocabulario como en motivación lectora, con efectos de magnitud grande ($d \approx 1.3$) en comparación con el grupo control. Asimismo, se observó una correlación positiva entre las mejoras en vocabulario y el incremento en la motivación lectora. La discusión analiza estos hallazgos desde la perspectiva de la teoría del doble código de Paivio y del aprendizaje multimedia, revisando investigaciones previas sobre pictogramas y recursos visuales en la enseñanza de lenguas. El estudio concluye que la incorporación sistemática de pictogramas no solo facilita la comprensión y el recuerdo de nuevas palabras, sino que también potencia la motivación y el placer por la lectura en inglés. Se destacan implicaciones para la práctica docente y la formulación de políticas educativas que promuevan un aprendizaje multimodal desde etapas iniciales.

Palabras Clave: Pictogramas; Inglés como lengua extranjera (EFL); Retención de vocabulario; Motivación lectora; Aprendizaje multimodal; Teoría del doble código; Estudio cuasi-experimental; Educación primaria.

Resumo

Este artigo examina o impacto do uso de pictogramas como recurso didático no ensino de inglês como língua estrangeira a crianças dos 6 aos 8 anos, falantes de espanhol. Com base em evidências

que mostram que os métodos de ensino tradicionais são insuficientes para sustentar a motivação para a leitura e a retenção de vocabulário em idades precoces, foi delineado um estudo quase experimental com 60 participantes divididos num grupo experimental que utilizou materiais com pictogramas e um grupo de controlo que trabalhou apenas com textos escritos. Foram administrados pré e pós-testes de vocabulário e um questionário de motivação para a leitura adaptado do MRQ (Wigfield & Guthrie, 1997) para medir a mudança em ambas as dimensões. Os resultados mostraram que o grupo experimental obteve melhorias significativas tanto na retenção de vocabulário como na motivação para a leitura, com grandes tamanhos de efeito ($d \approx 1,3$) em comparação com o grupo de controlo. Além disso, foi observada uma correlação positiva entre as melhorias no vocabulário e os aumentos na motivação para a leitura. A discussão analisa estas descobertas na perspetiva da teoria do código duplo de Paivio e da aprendizagem multimédia, revendo a investigação anterior sobre pictogramas e recursos visuais no ensino de línguas. O estudo conclui que a incorporação sistemática de pictogramas não só facilita a compreensão e a memorização de novas palavras, como também aumenta a motivação e o prazer pela leitura em inglês. São destacadas implicações para a prática docente e o desenvolvimento de políticas educativas que promovam a aprendizagem multimodal desde os primeiros anos.

Palavras-chave: Pictogramas; Inglês Língua Estrangeira (EFL); Retenção de vocabulário; Motivação para a leitura; Aprendizagem multimodal; Teoria da dupla codificação; Estudo quase experimental; Educação primária.

Introduction

Learning a foreign language in early childhood entails particular challenges, especially when the taught language is not present in the learner's immediate environment. In the case of English as a foreign language in Spanish-speaking countries, the difficulties are related both to the nature of linguistic learning and to motivation and the strategies employed by teachers. Various studies have shown that repetitive memorization methods and predominant exposure to written texts are not adequate for children between 6 and 8 years of age, who require varied, meaningful stimuli aligned with their cognitive abilities (Cameron, 2001; Slavin, 2007). These traditional methods tend to focus on the verbal code and overlook complementary sensory channels, which limits the development of rich representations and the consolidation of vocabulary. In addition, limited use of visual tools negatively affects reading motivation and willingness to interact with texts in a foreign language.

The disconnect between research and pedagogical practice is reflected in the fact that, despite abundant studies recommending the inclusion of images and other visual supports to improve language learning, many basic education curricula continue to privilege textbooks and repetition-based exercises. This tendency is explained in part by academic tradition, since literacy and reading research has historically focused on the verbal aspect of texts. Guo and colleagues (2020) point

out that, although contemporary texts are multimodal, research on reading comprehension often has a verbal bias that sidelines the processing of visual information. This bias generates a gap between the demands of today's readers - who must integrate text, images, and even interactive elements - and the dominant teaching strategies used in classrooms.

Specialized literature highlights that the use of visual resources improves comprehension and retention of information by activating dual processing channels. According to Paivio's dual-code theory (1986), learning is optimized when information is presented simultaneously in verbal and non-verbal form, enabling independent but complementary codings. Images, symbols, and other visual resources are associated with the non-verbal channel and facilitate the elaboration of mental representations that, in turn, strengthen recall and access to meaning (Clark & Paivio, 1991).

Empirical research supports this theoretical approach. Guo et al. (2020) observed that images produce a moderate positive effect on reading comprehension ($g \approx 0.39$), emphasizing that including graphics in texts increases the likelihood of remembering and understanding information. Likewise, Bisson et al. (2015), using an eye-tracking study, found that participants remembered significantly more foreign language words when they were accompanied by images, and that time spent looking at illustrations predicted performance on the memory test. This evidence shows that images do not merely embellish teaching materials; they play a functional role in knowledge construction.

Among visual resources, pictograms stand out as a set of simple, standardized, and easily recognizable graphic symbols. They can represent objects, actions, or ideas and, due to their simplicity, are especially useful for learners at early ages. Pictograms have been used for decades to support communication among people with special educational needs; however, their use in foreign language teaching has gained relevance in recent years. Recent studies in different cultural contexts have shown that pictograms can enhance comprehension, improve reading fluency, and increase learners' motivation (Mendoza, 2014; Lascano, 2019).

For example, Adeniyi et al. (2022) applied pictograms in early childhood classrooms in Nigeria and found significant differences in the performance of children exposed to pictograms compared with a control group, recommending their systematic incorporation into lessons. Similarly, Pauzhi Coellar and Argudo-Serrano (2024) reported that using pictograms in primary English teaching improved vocabulary acquisition, motivation, reading comprehension, and language production. In the Andean region, Bravo and Prado (2025) analyzed the influence of pictograms on the communicative skills of children aged 4 to 5 and concluded that they are an adaptable visual resource with substantial educational value.

Despite favorable evidence, pictogram use in basic education classrooms in Latin America remains limited. The lack of adapted materials, scarce teacher training, and curriculum prescriptions grounded in traditional methods act as barriers to implementation (Oviedo, 2023). AlAli and Al-Barakat (2023), in a study on early childhood teachers' understanding of the potential of visual resources, found that many teachers interpret visual aids only as "transmitters of information," overlooking their capacity to develop skills, attitudes, and positive dispositions in students. In

addition, the results showed that those who had not received specific training on visual aids had a more nuanced understanding of their value, highlighting the need for professional development programs that promote a multimodal approach in the classroom. These limitations justify the present study, which seeks to provide empirical evidence in Spanish-speaking contexts and to propose concrete recommendations for incorporating pictograms in language teaching.

The central objective of this research is to evaluate the impact of pictogram use on vocabulary retention and reading motivation among Spanish-speaking children aged 6 to 8 learning English as a foreign language. The hypothesis is that incorporating pictograms into teaching activities will foster both the acquisition of new vocabulary and motivation to read texts in English to a greater extent than instruction based exclusively on written text.

Methodology

This study was conducted under a quantitative approach with an explanatory scope, as it aims to establish a cause-effect relationship between pictogram use and the dependent variables (vocabulary retention and reading motivation). A quasi-experimental pretest-posttest design with a control group and an experimental group was adopted, a common method in educational research when random assignment is not feasible (Creswell, 2009). The groups were formed from already existing classrooms in the educational institution, and efforts were made to ensure similar characteristics in terms of age and initial level of English. Variables such as instructional load, teacher experience, and curricular content were controlled so that the only substantial difference between groups was pictogram incorporation.

The sample consisted of 60 students (31 girls and 29 boys) aged 6 to 8, enrolled in third grade of basic education at UE Stella Maris. Participants were selected through intentional non-probabilistic sampling, working with available groups that met the inclusion criteria: (1) age within the established range, (2) homogeneous initial English level according to a diagnostic test, and (3) informed consent from parents or legal guardians. Students were distributed into two groups (sections A and B) of 30 students each:

- Experimental group: received English classes using materials with pictograms, such as illustrated stories, visual cards, songs with graphic support, and interactive activities.
- Control group: received English classes using the institution's traditional methods, based on textbooks and written exercises without additional visual support.

Both groups were taught by teachers with equivalent training and a minimum of five years of experience in teaching English. Each group had an instructional load of 4 hours per week for four weeks. To minimize the influence of teacher differences, sessions were planned jointly and the same thematic contents were used.

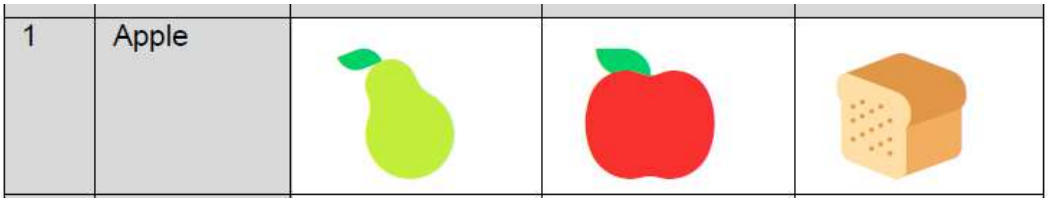
The independent variable was pictogram use, operationalized through the inclusion of standardized images to represent words and phrases in teaching activities. Two levels were considered: (1) pictogram use (experimental group) and (2) absence of pictograms (control group).

The dependent variables were:

1. Vocabulary retention: measured through an English vocabulary test designed for this study. The test consisted of 20 multiple-choice items in which children heard an English word pronounced by the teacher and had to select the correct image among four options. The maximum score was 20 points. The test was administered before and after the intervention to measure changes in retention (Figure 1).

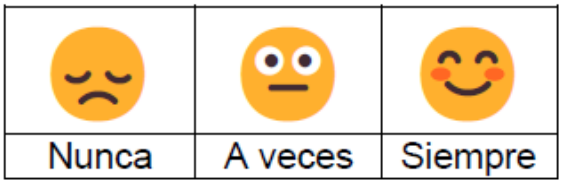
2. Reading motivation: assessed using an adapted version of the Motivation for Reading Questionnaire (MRQ) by Wigfield and Guthrie (1997). The questionnaire included 10 items on a Likert-type scale represented by emoticons (0 = never, 1 = sometimes, 2 = always) and measured three dimensions: enjoyment, curiosity, and avoidance. The maximum score was 20 points. Before administration, the questionnaire was reviewed by two experts in psychometrics and adapted to the Ecuadorian cultural context to ensure children's comprehension.

Figure 1. Portion of the vocabulary retention instrument.



Source: Authors' own elaboration.

Figure 2. Likert scale with emoticons (excerpt from Instrument 2).



Source: Authors' own elaboration.

The study was carried out during the second trimester of the 2025 school year. Prior to implementation, approval was requested from the educational institution's ethics committee, and a meeting was held with parents to explain the objectives and obtain their consent. The procedure was developed in the following phases:

1. Diagnostic phase: the vocabulary test and the motivation questionnaire were administered to both groups as a pretest. During this phase, a general English diagnostic test was also conducted to ensure that groups had similar initial levels. The results confirmed that initial differences were not significant.

2. Intervention phase: for four weeks, the experimental group received classes with materials that included pictograms. In the first week, illustrated stories and vocabulary cards were introduced; in

the second week, interactive games in which children had to associate words with images; in the third week, English songs with lyrics represented by pictograms; and in the fourth week, creative projects in which students produced their own stories with pictograms. In parallel, the control group followed the curricular schedule with textbook readings and copy-and-repeat exercises.

3. Evaluation phase: at the end of the intervention, the vocabulary test and the motivation questionnaire were administered again as a posttest. The teachers responsible conducted systematic observations during sessions, recording students' attitudes, behaviors, and comments regarding the use of pictograms.

Data were analyzed using Minitab 22 and JASP 0.95. Descriptive statistics (means, standard deviations) were used to characterize group scores before and after the intervention. Distribution normality was checked using the Shapiro-Wilk test; although not all variables showed a normal distribution, parametric tests were applied due to sample size and by analogy with previous studies.

To analyze differences and improvement within each group, paired-samples t-tests (pretest vs. posttest) were conducted. Effect sizes were calculated using Cohen's d; effect sizes are considered small when $d \approx 0.2$, moderate when $d \geq 0.5$, and large when $d \geq 0.8$ (Cohen, 1988). Finally, the correlation between vocabulary improvement and motivation increase was examined using Pearson's coefficient (r), with a significance level of $p < 0.05$. Graphs were created to visually represent pre-post differences in each group and variable.

Results

Tables 1 and 2 present the means and standard deviations of scores on the vocabulary test and the motivation questionnaire before and after the intervention, by group. The data show that both groups started from similar levels in the pretest, but that the experimental group experienced a greater improvement in the posttest.

Table 1. Descriptive statistics for Vocabulary Retention (VR).

Source: JASP 0.95

	Pretest (Control)	Pretest (Experimental)	Posttest (Control)	Posttest (Experimental)
Valid	30	30	30	30
Mean	9.467	8.867	13.07	16.20
Std. deviation	1.697	1.655	2.363	2.483
Shapiro-Wilk	0.935	0.945	0.952	0.963
Shapiro-Wilk p-value	0.068	0.122	0.191	0.376
Minimum	7.000	5.000	8.000	10.00

Maximum	13.00	12.00	17.00	20.00

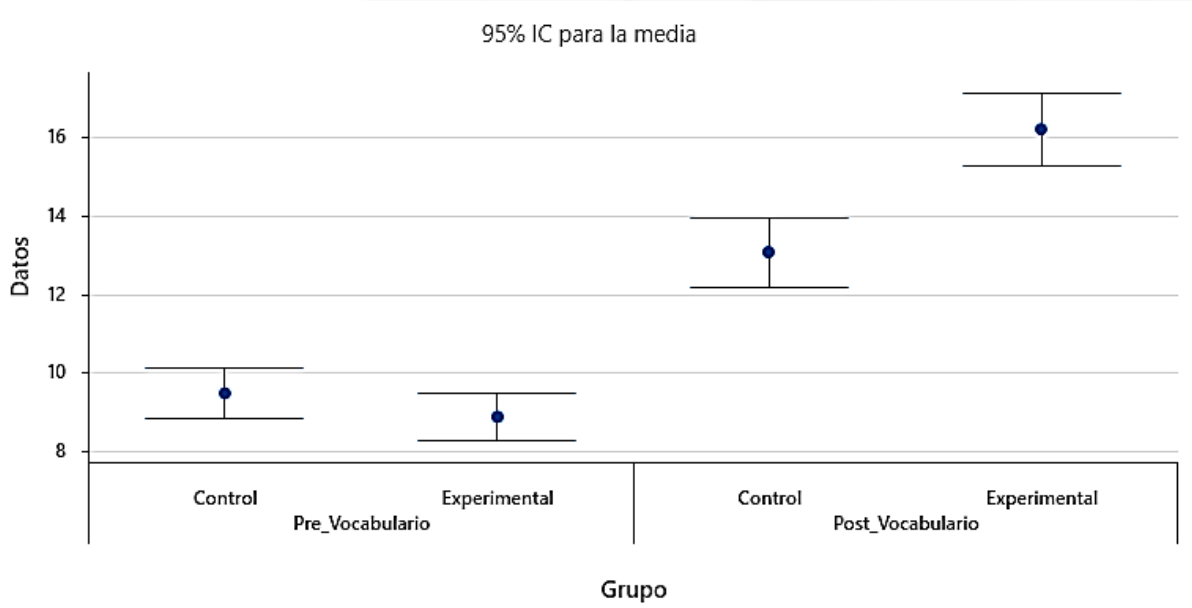
Table 2. Descriptive statistics for Reading Motivation (RM) according to the adapted MRQ.
Source: JASP 0.95

	Pretest (Control)	Pretest (Experimental)	Posttest (Control)	Posttest (Experimental)
Valid	30	30	30	30
Mean	12.73	12.67	14.90	17.63
Std. deviation	1.964	1.749	2.123	2.059
Shapiro-Wilk	0.867	0.937	0.948	0.887
Shapiro-Wilk p-value	0.001	0.077	0.150	0.004
Minimum	7.000	10.00	11.00	14.00
Maximum	17.00	16.00	19.00	20.00

As shown, on the vocabulary test the control group mean increased by 3.60 points, whereas the experimental group mean increased by 7.33 points. In reading motivation, the control group increased its mean by 2.17 points and the experimental group by 4.96 points. These differences suggest a positive effect of pictograms on both variables.

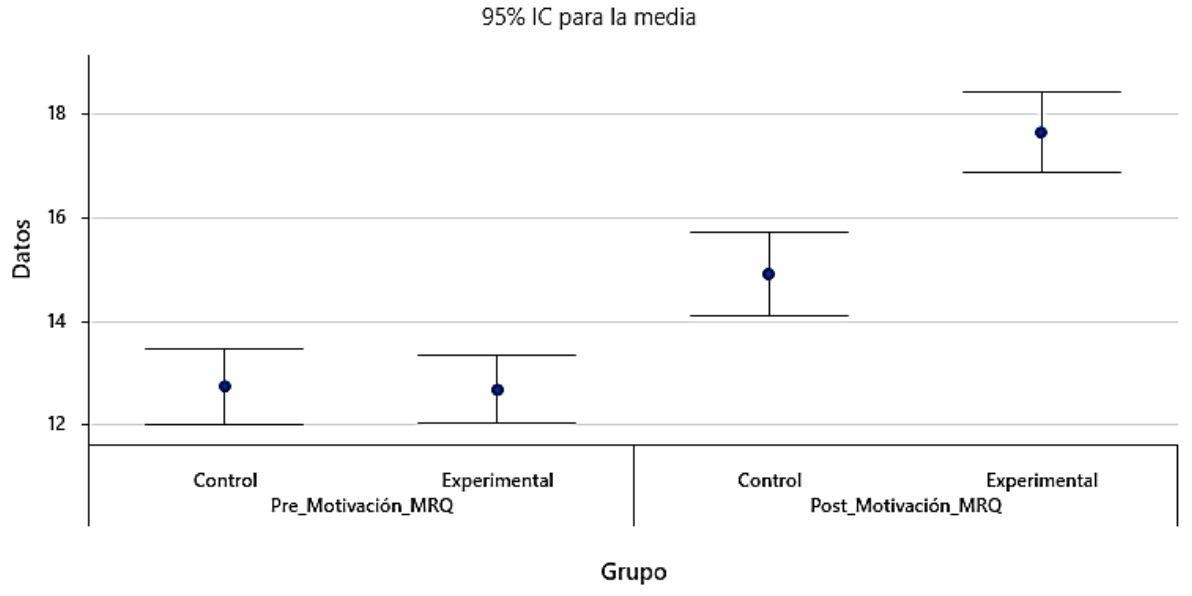
Interval plots were generated to illustrate pre-post differences in vocabulary and motivation. Figure 3 presents vocabulary test performance: the experimental group shows a notable increase that nearly doubles the improvement of the control group. Figure 4 shows the evolution of reading motivation, where the experimental group also exhibits a considerable increase.

Figure 3. Changes in vocabulary scores pre- and post-intervention in the control and experimental groups.



Source: Minitab 22

Figure 4. Changes in reading motivation scores (adapted MRQ) pre- and post-intervention in the control and experimental groups.



Source: Minitab 22

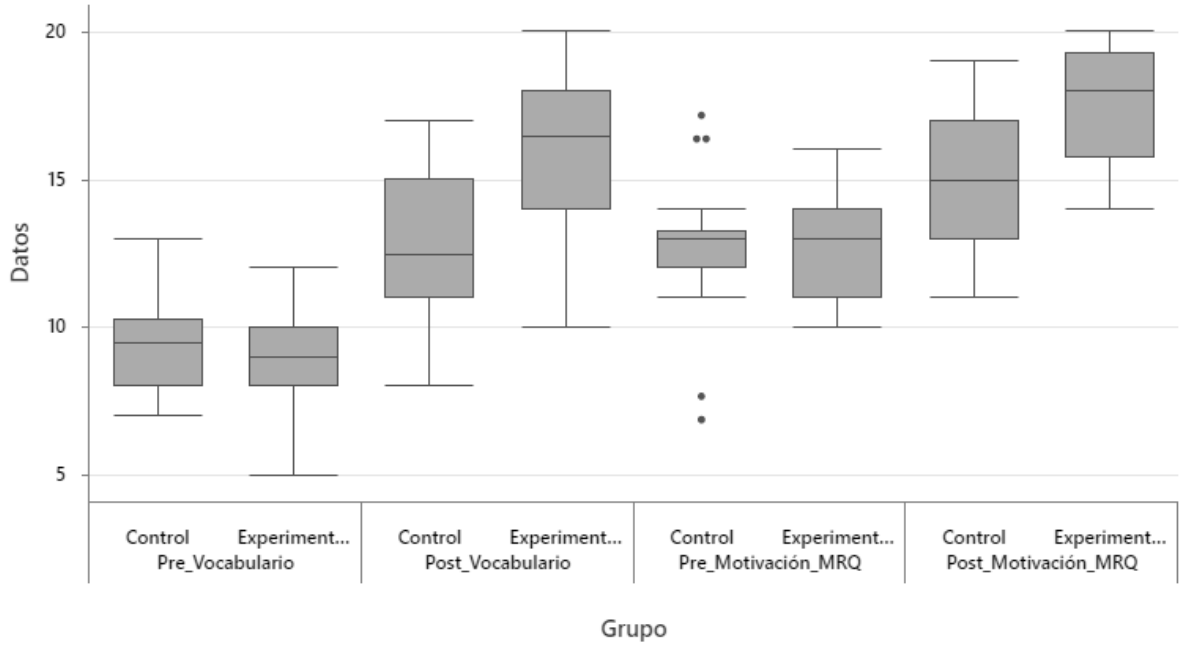
Student's t-tests were conducted to compare posttest scores for vocabulary and motivation between groups. Results indicate that the experimental group obtained significantly higher scores in vocabulary ($p < 0.001$) and motivation ($p < 0.001$). The magnitude of these differences was evaluated with Cohen's d, yielding $d = 1.29$ for vocabulary and $d = 1.31$ for motivation, which are considered large effects. These data confirm that pictogram use produced substantial improvements in learning and in students' disposition toward reading.

Within each group, paired-samples t-tests were conducted. In the control group, vocabulary scores increased significantly ($p < 0.001$) and reading motivation also improved ($p = 0.00015$). In the experimental group, both vocabulary ($p < 0.001$) and motivation ($p < 0.001$) showed significant increases. These results indicate that, although both groups improved, the magnitude of change was considerably greater in the group that used pictograms (Figure 5).

Pearson's correlation between vocabulary improvement (post-pre difference) and motivation increase yielded $r = 0.28$ ($p = 0.03$), suggesting a moderate positive relationship between both variables: children who gained more vocabulary tended to increase their reading motivation.

The Shapiro-Wilk test showed that some pretest variables did not follow a normal distribution. Therefore, non-parametric tests (Mann-Whitney U) were also used to corroborate the findings. These tests confirmed significant between-group differences in posttest vocabulary and motivation, reinforcing the robustness of the results. Combining parametric and non-parametric analyses provides greater confidence in interpreting the data, especially in moderate samples such as that of this study.

Figure 5. Combined plot.



Source: Minitab 22

Discussion

The findings of this research demonstrate that pictogram use has a significant and positive effect on vocabulary retention and reading motivation among Spanish-speaking children aged 6 to 8 learning English as a foreign language. The difference observed between groups indicates that pictograms nearly double the vocabulary gains achieved with traditional methods and increase motivation to a considerable extent. These results confirm the stated hypothesis and support the literature that posits the effectiveness of dual processing and multimodal learning (Paivio, 1986; Mayer, 2009).

In terms of vocabulary retention, the greater improvement in the experimental group can be attributed to pictograms providing a visual context that facilitates semantic encoding. By associating each word with a clear image, students generate richer mental representations and establish connections that enable easier retrieval of information. This is consistent with Bisson et al. (2015), where time spent viewing images correlated with memory for words, as well as with the meta-analysis by Guo et al. (2020), which revealed that graphics improve reading comprehension to a moderate degree. The effect size ($d \approx 1.29$) can be considered large according to Cohen's criteria, indicating that pictogram use has a strong impact and that classroom incorporation could produce significant advances with a relatively short intervention.

Regarding reading motivation, the increase observed in the experimental group suggests that pictograms not only support cognitive learning but also influence the affective dimension. Images arouse curiosity, make readings more attractive, and reduce anxiety associated with unknown vocabulary. This perception is consistent with prior studies in which students reported enjoyment and engagement when working with visual material (Yunus et al., 2013; Pauzhi Coellar & Argudo-Serrano, 2024). Moreover, the fact that vocabulary improvement is correlated with motivation increase ($r = 0.28$) suggests a positive feedback loop: understanding and remembering more words strengthens the sense of competence, which in turn stimulates motivation to continue reading and learning.

The results align with growing international evidence on the value of pictograms and other visual resources in language teaching. Adeniyi et al. (2022), in a study with 25 preschool teachers in Nigeria, found that children exposed to pictograms achieved higher scores on vocabulary tests and showed greater curiosity during activities. In the present work, the positive effect is replicated with a larger sample and with additional motivational variables. Likewise, the research by Pauzhi Coellar and Argudo-Serrano (2024) documented positive perceptions and improvements in reading comprehension, oral production, and motivation when pictograms were used. Our results corroborate those findings in an Ecuadorian context and with a more rigorous quasi-experimental design.

In studies with younger ages, such as Bravo and Prado (2025), pictograms were found to be a functional and easily adaptable visual resource that contributes to the development of communicative skills in children aged 4 to 5. This complements our conclusions by showing that their effectiveness also extends to reading motivation at slightly higher levels. Furthermore, the

review by Guo et al. (2020) indicated that the effectiveness of graphics depends on design quality and content relevance, a criterion addressed in this study through careful selection of simple pictograms aligned with the vocabulary taught.

This study also echoes the warnings of AlAli and Al-Barakat (2023) about the need to improve teacher training in the use of visual aids. The intervention was designed with teacher involvement from the planning stage, enabling coherent implementation and avoiding superficial image use. Classroom observations recorded that teachers initially felt uncertain about incorporating pictograms, but later recognized that students showed greater enthusiasm and better understood explanations. Collaboration between researchers and teachers is essential to overcome the barriers highlighted in the literature.

The findings have important implications for educational practice in teaching English and other foreign languages in primary education. First, pictograms should be integrated into curricular planning in a systematic and coherent manner, avoiding their use as purely ornamental elements. Pictograms should be selected according to students' linguistic level and relevance to the learning unit; ideally, images should be culturally neutral or accompanied by explanations that contextualize their meaning.

Second, teachers need training in strategies for creating and using pictograms. Professional development should address dual-code theory and cognitive load management so that teachers understand why and how images benefit learning. AlAli and Al-Barakat (2023) showed that many teachers lack this understanding; therefore, professional development policies geared toward multimodal learning may have a significant impact.

Third, student participation in creating their own visual materials should be encouraged. During the intervention, the experimental group produced pictogram-based stories in the final week, and this activity appeared to increase a sense of belonging and motivation. Creating pictograms allows children to personalize learning, foster creativity, and reinforce the connection between image and word. This practice aligns with constructivist approaches and with the idea that meaningful learning arises when students actively produce knowledge.

Finally, results suggest that including pictograms can be especially beneficial for students with special educational needs or reading difficulties, since images provide additional support for understanding text meaning. Research on inclusive education indicates that pictograms facilitate communication in children with autism spectrum disorder or language problems (Chiliquinga & Guachamín, 2017). Although these cases were not explicitly studied here, teachers observed that students with lower reading levels participated more when words were accompanied by images.

In addition to practical implications, the results open new lines of research that can enrich the field of foreign language didactics. First, it would be relevant to explore the impact of pictograms at other educational levels, such as lower and upper secondary education. Although adolescents presumably have greater linguistic skills and may benefit from more abstract learning, images can facilitate comprehension of complex structures and technical terms. It is also recommended to

investigate the interaction between pictograms and other motivational variables, such as reading self-efficacy, goal orientation (mastery vs. performance), and beliefs about the language's utility. These dimensions are framed within academic motivation theories such as self-determination theory and the expectancy-value model, which emphasize the importance of satisfying needs for competence, autonomy, and relatedness to generate intrinsic motivation.

Another interesting direction is to examine the effect of pictograms on oral and written production. In this study we focused on receptive vocabulary retention and reading motivation; however, images could support sentence construction and planning of written texts. Pictogram sequences, used as visual scripts, can help students structure narratives and stories. Research such as Aliyar and Peters (2022) indicates that reading comics and then carrying out creative activities supports incidental vocabulary acquisition and written production. Assessing transfer from visual information to oral expression could broaden the scope of findings and demonstrate pictograms' versatility.

The growth of educational technology also offers possibilities to experiment with digital and interactive pictograms. Platforms such as mobile applications or virtual learning environments allow animated, sound-supported, and customizable pictograms. These tools could enhance attention, provide immediate feedback, and adapt to individual learning pace. However, it is necessary to investigate whether interactive multimedia modifies cognitive load and whether pictogram benefits are maintained in digital environments. Balancing motivation and overstimulation is key to designing effective experiences.

Study Limitations

Although the study presents solid results, it is important to recognize limitations that may affect the generalizability of the findings. First, it is a quasi-experimental design without random assignment, implying that uncontrolled variables could have influenced results (for example, pre-existing motivational differences or family support). To mitigate this risk, groups with similar characteristics were selected and pretests were applied, but future studies could use experimental designs with tighter control.

Second, the duration of the intervention was relatively brief (four weeks). Although significant effects were observed, longer-term studies could examine whether pictogram benefits persist over time or whether complementary strategies are required. It would also be useful to explore the interaction between pictograms and other methodologies, such as cooperative learning or digital technology use.

Third, measurement instruments were adapted to the Ecuadorian context, but they may not capture all dimensions of reading motivation in this population. For example, the original MRQ includes subscales such as self-efficacy and social recognition that could be explored in future research. In addition, although the reliability of the vocabulary test was acceptable, it would be advisable to

expand the number of items and the diversity of lexical categories to obtain a more complete measure of progress.

Finally, results were obtained in a specific institution on Ecuador's coast, limiting generalization to other cultural or socioeconomic contexts. Comparative studies in different regions of Ecuador and other Spanish-speaking countries would help validate the robustness of the findings and explore possible cultural differences in the perception and use of pictograms.

Conclusions

This research confirms that pictograms constitute an effective pedagogical resource for improving vocabulary retention and reading motivation among Spanish-speaking children learning English as a foreign language. The use of simple, representative images allows students to build dual representations that strengthen memory and facilitate access to meaning. In addition, images increase interest and satisfaction in reading, generating a virtuous cycle in which comprehension fuels motivation and vice versa. The effects observed in this study are large in magnitude and support the adoption of pictograms as an integral part of the English curriculum in basic education.

The findings also highlight the importance of teacher training in the use of visual aids and the need to support educators so they can integrate these tools appropriately. The evidence suggests that educational policies should invest in multimodal learning that combines text, images, and hands-on experiences, especially at early ages. In conclusion, incorporating pictograms is not only an inclusive and motivating strategy, but also responds to psychological principles of learning and to the demands of an increasingly visual society.

References

- Adeniyi, K., Mafikuyomi, J. A., Mafikuyomi, O. D., & Chukwudiegwu, C. E. (2022). Effective Use of Pictograms in Early Childhood Care and Education: A Study of Selected Nursery Schools in Ojo Local Government Area of Lagos State, Nigeria. British Journal of Teacher Education and Pedagogy, 1(2), 52-57. https://doi.org/10.32996/bjtep.2022.1.2.6
- AlAli, R. M., & Al-Barakat, A. A. (2023). Role of Teacher Understanding about Instructional Visual Aids in Developing National and International Student Learning Experiences. Journal of International Students, 13(4), 331-354. https://doi.org/10.32674/jis.v13i4.5121
- Aliyar, M., & Peters, E. (2022). Incidental Acquisition of Italian Words from Comic Books. Reading in a Foreign Language, 34(2), 349-377. https://doi.org/10.26686/rfl.v34i2.1369541
- Bisson, M.-J., van Heuven, W. J. B., Conklin, K., & Tunney, R. J. (2015). The Role of Verbal and Pictorial Information in Learning New Words: An Eye-Movement Study.

Journal of Experimental Psychology: Learning, Memory, and Cognition, 41(3), 646-659. https://doi.org/10.1037/xlm0000068

- Bravo, N., & Prado Soledispa, N. (2025). Los pictogramas en las habilidades comunicativas en los niños de 4-5 años. LATAM Revista Latinoamericana de Ciencias Sociales y Humanidades, 6(2). https://doi.org/10.56712/latam.v6i2.3672
- Cameron, L. (2001). Teaching Languages to Young Learners. Cambridge University Press.
- Clark, J. M., & Paivio, A. (1991). Dual coding theory and education. Educational Psychology Review, 3(3), 149-210. https://doi.org/10.1007/BF01320076
- Cohen, J. (1988). Statistical Power Analysis for the Behavioral Sciences (2nd ed.). Lawrence Erlbaum Associates.
- Creswell, J. W. (2009). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (3rd ed.). Sage Publications.
- Guo, D., Zhang, S., Wright, K. L., & McTigue, E. M. (2020). Do You Get the Picture? A Meta-Analysis of the Effect of Graphics on Reading Comprehension. AERA Open, 6(1), 1-20. https://doi.org/10.1177/2332858420901696
- Lascano, D. (2019). Pictograms in the development of English reading skills [Undergraduate thesis]. Universidad Central del Ecuador. https://dspace.uce.edu.ec/handle/25000/18559
- Mayer, R. E. (2009). Multimedia Learning (2nd ed.). Cambridge University Press.
- Mendoza, A. (2014). Pictograms and their Influence on the English Learning of First Grade Students [Undergraduate thesis]. Universidad Laica Eloy Alfaro de Manabí. https://repositorio.uleam.edu.ec/handle/123456789/3820
- Nation, I. S. P. (2001). Learning Vocabulary in Another Language. Cambridge University Press.
- Oviedo, J. C. (2023). Desafíos y oportunidades en la enseñanza del inglés en Ecuador: Un enfoque multimodal. Ediciones de la Universidad de Guayaquil.
- Pauzhi Coellar, C. P., & Argudo-Serrano, J. (2024). Los efectos del uso de pictogramas durante el proceso de enseñanza-aprendizaje del inglés en la escuela primaria. Revista Religación, 9(39), 1-16. https://doi.org/10.46652/rgn.v9i39.1141
- Slavin, R. E. (2007). Educational Psychology: Theory and Practice (8th ed.). Pearson Education.
- Wigfield, A., & Guthrie, J. T. (1997). Relations of Children's Motivation for Reading to the Amount and Breadth of Their Reading. Journal of Educational Psychology, 89(3), 420-432.
- Yunus, M. M., Salehi, H., & John, D. S. (2013). Using Visual Aids as a Motivational Tool in Enhancing Students' Interest in Reading. Theory and Practice in Language Studies, 3(1), 91-98.

Polo del Conocimiento
ISSN: 2550-682X
Revista multidisciplinar de innovación y estudios aplica
Artículos científicos, de revisión, cortos, casos clínicos
CASEDELPO

Casa Editora del Polo (CASEDELPO), hace constar que:

El artículo científico:

"Impact of the Use of Pictograms on Vocabulary Acquisition and Reading Motivation in Spanish-Speaking Children Aged 6 to 8 Years"

De autoría:

María Isabel Pico Lozano, Julexi Nikole Párraga Loor, Karol Vanessa Ajila Morocho, Vanessa Viviana Orozco Jurado

Ha sido publicado en el ***Vol. 11, No 2, Febrero 2026***, de la revista Polo del Conocimiento con ISSN 2550-682X, indexada y registrada en las siguientes bases de datos y repositorios: **Latindex Catálogo v2.0, MIAR, Google Académico, ROAD, Dialnet,ERIHPLUS.**

Disponible en:

URL: https://polodelconocimiento.com/ojs/index.php/es/article/view/11198

Y para que así conste, firmo la presente en la ciudad de Manta, a los 25 días del mes de febrero del año 2026.

Dr. Victor R. Jama Zambrano
DIRECTOR

Dirección: Ciudadela. El Palmar II Etapa Mz. E. No 6
Teléfono: 0991871420
Email: polodelconocimientorevista@gmail.com
www.polodelconocimiento.com
Manta – Manabí- Ecuador