The influence of age in the cognitive process of vocabulary for learning English as a foreign language

Influencia de la edad en el proceso cognitivo del vocabulario para el aprendizaje del inglés como lengua extranjera

Karla Alejandra Calero Cisneros
https://orcid.org/0000-0003-1387-9715
kcaleroc2@unemi.edu.ec
Universidad Estatal de Milagro
Guayaquil-Ecuador

Katherine Viviana Ramírez Núñez
https://orcid.org/0009-0007-7939-8697
kramirezn@unemi.edu.ec
Universidad Estatal de Milagro
Guayaquil-Ecuador

Fernando Patricio Riera Hermida
https://orcid.org/0000-0002-1299-1468
frierah@unemi.edu.ec
Universidad Estatal de Milagro
Guayaquil-Ecuador

Paola Alexandra Tipán Vergara
https://orcid.org/0009-0004-2920-3909
ptipanv@unemi.edu.ec
Universidad Estatal de Milagro
Guayaquil-Ecuador

ABSTRACT

This study investigates the effects of interventions on language acquisition among two distinct age groups, eight-year-olds and thirties-year-olds, focusing on improving vocabulary and pronunciation through purposive sampling. The interventions, structured around interactive sessions and phonics training, aimed to improve various language skills, using pre- and post-test designs with specific instruments tailored to each age group. For children, Gardner's Figure-Word Expressive Vocabulary Test was used, while for adults, pronunciation accuracy and vocabulary familiarity were assessed using an instrument developed by Beltrán (2021). The results showed significant improvements in all language criteria for both groups. The children demonstrated remarkable gains in word recognition, sentence construction, and expressive vocabulary, with mean scores increasing from 1.35 to 2.49 in word recognition and from 1.02 to 4.01 in sentence construction. Adults also showed progress, particularly in the use of appropriate vocabulary to express ideas clearly, where mean scores improved from 1.55 to 3.06. Distinguishing between similar-sounding words with different meanings, however, presented the smallest gains for both groups, indicating a challenging aspect of language learning. The study underscores the effectiveness of targeted interventions to improve language acquisition skills in different age groups, highlighting the potential of phonics and interactive training approaches in language education.

Keywords: language acquisition, vocabulary improvement, educational interventions.

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RESUMEN

Este estudio investiga los efectos de las intervenciones en la adquisición del lenguaje entre dos grupos de edad distintos, niños de ocho años y adultos de treinta, centrándose en la mejora del vocabulario y la pronunciación a través de un muestreo intencional. Las intervenciones, estructuradas en torno a sesiones interactivas y entrenamiento fonético, tenían como objetivo mejorar diversas habilidades lingüísticas, utilizando diseños de prueba previa y posterior con instrumentos específicos adaptados a cada grupo de edad. Para los niños se utilizó el Test Figura - Palabra de Vocabulario Expresivo de Gardner, mientras que a los adultos se evaluó la precisión de la pronunciación y la familiaridad del vocabulario mediante un instrumento desarrollado por Beltrán (2021). Los resultados mostraron mejoras significativas en todos los criterios lingüísticos para ambos grupos. Los niños demostraron avances notables en el reconocimiento de palabras, la construcción de oraciones y el vocabulario expresivo, con puntuaciones medias que aumentaron de 1,35 a 2,49 en reconocimiento de palabras y de 1,02 a 4,01 en construcción de oraciones. Los adultos también mostraron avances, particularmente en el empleo de vocabulario apropiado para expresar ideas con claridad, donde las puntuaciones medias mejoraron de 1,55 a 3,06. Sin embargo, distinguir entre palabras que suenan similares con diferentes significados, presentó las ganancias más pequeñas para ambos grupos, lo que indica un aspecto desafiante del aprendizaje de idiomas. El estudio subraya la eficacia de las intervenciones específicas para mejorar las habilidades de adquisición de idiomas en diferentes grupos de edad, destacando el potencial de los enfoques de capacitación fonética e interactiva en la educación de idiomas.

Palabras clave: adquisición del idioma, mejora del vocabulario, intervenciones educativas.

INTRODUCTION

Vocabulary acquisition is deeply intertwined with cognitive development, highlighting the essential role of memory functions, cognitive strategies, and linguistic insights in the journey of learning new words and enhancing lexical knowledge (Sharify, et al., 2022). This intricate relationship underscores the importance for educators and language instructors to tailor language learning experiences to align with the cognitive development stages of learners across various age groups (Blom, 2023).

Memory stands at the forefront of vocabulary acquisition, necessitating learners to adeptly encode, store, and recall new words to effectively broaden their lexical scope. Cognitive strategies, including rehearsal, elaboration, and organizational techniques, play a pivotal role in facilitating the efficient encoding and retention of new vocabulary (Blom, 2023).

In the realm of vocabulary learning, younger learners often employ rote memorization and repetition, capitalizing on their burgeoning working memory to temporarily hold onto new information. However, as individuals progress through childhood and into adolescence, their evolving cognitive capacities unlock the ability to utilize advanced memory techniques. Strategies such as semantic elaboration and the use of imagery become increasingly accessible, significantly enriching the vocabulary acquisition process (Griffiths, et al., 2022).

Metacognitive awareness, or the understanding of one's own learning processes, emerges as a critical factor in vocabulary acquisition (Sharify, et al., 2022). This awareness enables learners to thoughtfully monitor, assess, and adjust their learning strategies. Such reflective practices empower learners to fine-tune their approach to vocabulary learning, paving the way for enhanced language proficiency and more effective language acquisition over time (Blom, 2023).

LITERATURE REVIEW

When learning English as a foreign language through the acquisition of new vocabulary, it is necessary to consider a series of factors. According to Lurie et al. (2021) these factors can be internal, such as the student's learning style and motivation, or external, such as the cultural environment and the availability of educational resources. Internal factors include the student's learning style, which can be visual, auditory, or kinesthetic, among others. It is also

important to consider the student's motivation. (Lurie, et al., 2021). External factors include the student's cultural environment, which can affect their exposure to the language and their access to educational resources.

According to experts, social background encompasses various factors, including socioeconomic status and cultural influences, which significantly impact language learning experiences and outcomes. "Children with low family SES obtain greater benefits from this type of intervention, since these children manage to develop their cognitive functions significantly compared with a population with a high or medium SES" (García, et al., 2022). Positive family dynamics, parental support for education, and home literacy practices can mitigate the effects of socio-economic disadvantages and promote language development and academic success among learners from lower SES backgrounds (García, et al., 2022).

For more than 50 years the term "cognition" referred to all activities and processes related to the acquisition, storage, retrieval and processing of information -regardless of whether these processes are explicit or conscious. (Bayne, et al 2019). It is often said that the cognitive part of the students is one of the most important aspects to consider when learning a new language. Some people believe that the best time to acquire new knowledge is when they are at an early age.

García et al., (2022) conducted a systematic review to explore the impact of cognitive intervention programs on children. The review focused on studies that implemented interventions aimed at improving cognitive functions among this demographic, identifying nine interventions that showed improvements in executive functions, social cognition, and language. Focused attention is crucial for tasks requiring explicit knowledge, such as the learning of vocabulary or grammatical structures, where concentrated effort is paramount.

Many educators claim that youngsters learn a new language faster than older people. Smalle (2023) delved into the question of why children learn languages more effortlessly than adults, drawing from a cognitive perspective and supporting evidence from perceptual and motor learning studies. However, age is a complex factor in learning a foreign language, whose effects can be contemplated in different perspectives.

In this day and age, learners from culturally diverse backgrounds may navigate complex linguistic identities, negotiate language choices, and reconcile linguistic differences within their social and cultural contexts, emphasizing the dynamic interplay between language, identity, and cultural heritage in shaping individuals' language acquisition journeys. According to Blom (2023) who investigated the lexical and cognitive development of children learning regional languages, challenging the negative social judgments often associated with regional language speakers.

Working memory, a component for language processing, allows for the temporary storage and manipulation of information, playing a vital role in the acquisition of vocabulary and understanding of complex grammatical constructions (Hou, 2022). In early childhood, the capacity of working memory is somewhat limited, posing challenges in grasping and retaining new linguistic elements. However, this capacity generally expands with age, enhancing the efficacy of language learning by enabling more robust information processing and retention (Blom, 2023). This research contributes to understanding the environmental mechanisms underlying SES-related disparities in academic achievement by emphasizing the critical role of cognitive stimulation in supporting children's language development.

METHODOLOGY

Participants

This study focused on a quantitative research approach to understand the experiences and perceptions of two distinct age groups: eight-year-old children, representing the younger learners enrolled in the fourth grade at a public school in Pichincha Province, and thirty-year-old adults, providing a comparative perspective on the vocabulary acquisition process at a significantly different cognitive developmental stage.

The participants for this study were selected using purposive sampling, aiming for a diverse representation within the two age groups to capture a broad spectrum of experiences and insights related to foreign language vocabulary acquisition. The 28 younger participants were recruited from a single fourth-grade class in the public school system, ensuring that they are at the standardized curriculum level for English language learning. The 25 adult participants

were recruited from the local community, with a preference for those who have recently started to learn English or have experience in educational settings by teaching other subjects in their mother's tongue language.

Instruments

This study applied a pre-test and post-test design utilizing two distinct instruments tailored to the respective age cohorts. For the children's group, the Test Figura - Palabra de Vocabulario Expresivo of Gardner, as adapted by Mariana Castro et al., (2012). For the adult participants, it was implemented as an instrument developed by Beltrán (2021) to gauge the participants' familiarity and pronunciation accuracy of English phonemes that were presumed to be less known to them.

Eight-year-old kids

The Test Figura - Palabra de Vocabulario Expresivo of Gardner, adapted by Mariana Castro, et al., (2012, cited by Villacorta, 2017), is a Peruvian adaptation of the original test created by Morrison Gardner. This individual assessment tool was designed to evaluate expressive vocabulary in children aged 2 to 11 years, lasting approximately 10 to 15 minutes. The test aims to provide norms related to mental age, intelligence quotient, percentile, and belonging group concerning the individual's expressive vocabulary. It consists of 110 pictures and a record sheet, offering a structured method to assess and understand children's expressive language capabilities systematically.

In this test, individuals are asked to verbally identify figures presented on cards, allowing for the recording of correct and incorrect responses. Its reliability was established using the internal consistency method, achieving a Cronbach's Alpha coefficient ranging from 0.73 to 0.83, with a median of 0.80, indicating statistical significance ($p<0.01$). Validity was confirmed through expert judge criteria, with a consensus degree verified by Aiken's V coefficient, resulting in coefficients between 0.80 and 1, showcasing the test's methodological foundation in evaluating expressive vocabulary (Villacorta, 2017).

30th-year-old adults

With these participants an instrument designed by Beltrán (2021) to gauge how familiar participants were with the pronunciation of certain English words, specifically targeting those that were relatively unknown to them for use in experimental sessions. It featured a list of words containing specific phonemes (/ɪ/, /ə/, /ʃ/, /ʒ/, /θ/, /ɜ:/, /æ/), where participants indicated how often they had encountered these words with options ranging from never, sometimes, to frequently. The questionnaire included 48 words divided among the phonemes and included six words to assess the participants' attentiveness to the task. This instrument was administered via Google Forms during a virtual meeting on Google Meet, where participants had around 30 minutes to complete it. Based on their responses, 14 words frequently heard by over 50% of the participants were replaced to ensure the novelty of the vocabulary for the experimental phase.

Following the initial assessment, the selected words for each phoneme were reordered in four different sequences to prevent any performance bias linked to word position in the list. This reordering was part of the experimental design to ensure varied exposure and eliminate repetitive pattern recognition. The words were pronounced three times by the researcher and an avatar in each sequence, with the final order being used for audio and video recordings sent by participants for evaluation. This organization aimed to measure the familiarity and pronunciation skills of the participants with the newly introduced words.

Design, procedure, and data analysis.

In this quasi-experimental study, it was designed and adapted interventions to enhance English language acquisition across different age groups, specifically targeting eight-year-old children and thirty-year-old adults, without the inclusion of control groups. For the younger participants, the intervention, developed by Soto (2021), focuses on cultivating auditory discrimination, memory, perception, executive functions, and articulatory precision through a series of dynamic and engaging group activities. These sessions are rich with diverse instructional materials and

techniques tailored to foster an interactive learning environment. Meanwhile, for the adult cohort, the adapted intervention designed by Beltrán (2021) aims to address phonetic training through virtual sessions, prioritizing the improvement of pronunciation and articulatory precision of challenging English phonemes. Both interventions were developed in a two-month period.

Eight-year-old kids

The intervention designed by Soto (2021) for enhancing language acquisition was adapted to be applied among eight-year-old participants focused on developing auditory discrimination, memory, perception, executive function, and articulatory precision through a series of interactive and engaging group sessions. Each session targeted specific areas and employed a variety of resources including balloons, markers, foam flooring, applicative cards, letter cards, a box, straws, vocabulary cards, sound equipment, glasses, and bowling games to facilitate learning.

In the first session, the emphasis was on auditory discrimination, memory, and perception through activities like emotional balloon presentation, memory applicative cards, and group tasks involving identification and differentiation of vowels, consonants, syllables, and words. The second session continued to focus on auditory discrimination, alongside attention and praxis, with activities including a musical game, attention applicative cards, and group missions that involved reproducing sounds with straws and sequencing images. The third session aimed at achieving correct articulatory points and modes at the level of words and sentences, involving emotional status, executive function tasks, and group missions for repeating letters, words, sentences, and spelling. The fourth session also focused on articulatory accuracy, temporal-spatial orientation, and memory, including a motivational glasses game, temporal-spatial orientation tasks, and group activities involving word identification and cumulative word recall.

Thirty-year-old adults

To adapt the language acquisition enhancement intervention for thirty-year-old participants without a control group focusing on phonetic training through virtual sessions. The adapted intervention from the Beltran (2021) design, will specifically cater to adult learners, emphasizing flexibility and accessibility to accommodate varying schedules and mitigate dropout rates. The intervention will be delivered in four sessions, each dedicated to improving pronunciation and articulatory precision of English phonemes that are often challenging for adult learners. These sessions will employ a mix of visual aids, such as images depicting the point of articulation, and auditory stimuli, including pronunciations by an avatar or a human trainer, to cater to diverse learning preferences.

The sessions will be structured to ensure consistency in the learning process, starting with greetings and attendance, followed by the introduction of phonemes with visual and auditory guidance, participant practice with recording submissions, and varied phoneme and word repetitions for reinforcement. To enhance engagement and provide a personalized learning experience, the intervention will leverage technology, using applications for avatar creation and communication platforms for submission of practice recordings. This approach aims to create a supportive and interactive learning environment that encourages adult participants to improve their phonetic skills systematically, thereby facilitating better language acquisition outcomes. The success of this intervention will be measured by evaluating the participants' phonetic reproduction quality in both isolated phonemes and in-context word pronunciations, using a standardized evaluation scale to track progress throughout the sessions.

RESULTS

Data Analysis

The data analysis for this quasi-experimental study will entail a comprehensive examination of the impact of the designed interventions on language acquisition among the two distinct age groups: eight-year-old children and thirty-year-old adults. Given the pre-test and post-test design, the initial step will involve verifying the normality of the distribution of scores for both groups to determine the appropriate statistical tests.

For the comparison of pre-test and post-test results within each age group, paired sample t-tests will be used to identify statistically significant changes in language acquisition as measured by the specific instruments utilized. This analysis will help in understanding the effectiveness of the interventions within each group.

Table 1
Pre- test and Post-test (28 children)

Criteria	**Pre-test mean**	**Post-test mean**
Accurately recognize the words presented in the test	1.35	2.49
Correctly identify the meanings of words within the context of simple sentences	1.00	2.00
Match images with their corresponding definitions accurately	2.10	3.90
Comprehend words sufficiently to construct coherent sentences	1.02	4.01
Spell words correctly	1.95	2.97
Articulate words with precise pronunciation	0.85	2.10
Employ appropriate vocabulary to express ideas clearly	1.15	3.80

Distinguish between words that sound similar but have different meanings	0.70	2.09

Table 1 presents the mean scores for 28 children on various linguistic criteria, comparing their performance before and after the intervention aimed to enhance language skills. Across all criteria, there is a noticeable improvement from the pre-test to the post-test scores, indicating a positive impact of the intervention on the children's language abilities.

Initially, the children showed a modest ability to recognize words presented in the test, with a pre-test mean score of 1.35, which increased to 2.49 in the post-test. This improvement suggests that the intervention was effective in enhancing the children's word recognition skills. Similarly, their ability to identify the meanings of words within simple sentences improved from a mean score of 1.00 to 2.00, doubling the initial score and indicating a significant enhancement in understanding word meanings in context.

A remarkable improvement is observed in the children's ability to match images with their corresponding definitions, where the mean score rose from 2.10 to 3.90. This leap suggests a substantial enhancement in visual and linguistic association skills. The comprehension of words to construct coherent sentences also saw a dramatic increase from 1.02 to 4.01, the highest jump among all criteria, highlighting the intervention's effectiveness in improving sentence construction capabilities.

The children's spelling abilities and their precision in articulating words also improved, with mean scores increasing from 1.95 to 2.97 and 0.85 to 2.10, respectively. These improvements indicate progress in orthographic knowledge and pronunciation skills. The use of appropriate vocabulary to express ideas clearly showed a significant enhancement, with the mean score soaring from 1.15 to 3.80, suggesting that the intervention markedly improved the children's expressive vocabulary.

Lastly, the ability to distinguish between words that sound similar but have different meanings showed growth from a low base of 0.70 to 2.09. Although starting from the lowest pre-test mean, this criterion still demonstrates a noteworthy improvement, indicating better phonological awareness and understanding of homophones.

Table 2

Pre- test and Post-test (25 adults)

Criteria	**Pre-test mean**	**Post-test mean**
Accurately recognize the words presented in the test	1.40	2.00
Correctly identify the meanings of words within the context of simple sentences	2.30	3.10
Match images with their corresponding definitions accurately	2.10	2.90
Comprehend words sufficiently to construct coherent sentences	1.30	2.60
Spell words correctly	2.13	2.52

Articulate words with precise pronunciation	1.02	1.33
Employ appropriate vocabulary to express ideas clearly	1.55	3.06
Distinguish between words that sound similar but have different meanings	0.95	1.86

Table 2 shows the linguistic progress of 25 adults through pre-test and post-test mean scores across various language skills criteria. The data reflects overall improvements in their abilities following the intervention aimed to enhance language proficiency.

Beginning with the ability to accurately recognize words presented in the test, there's an increase from a pre-test mean of 1.40 to a post-test mean of 2.00. This indicates a moderate improvement in word recognition skills among the adult participants. In understanding the meanings of words within simple sentences, the increase from 2.30 to 3.10 suggests a notable enhancement in comprehending vocabulary in context, a crucial skill for effective language use.

The participants' capability to match images with their correct definitions saw a rise from 2.10 to 2.90. This improvement reflects a better visual-vocabulary association, important for language learning and comprehension. There's a significant leap in the ability to comprehend words to construct coherent sentences, with mean scores improving from 1.30 to 2.60. This jump highlights the intervention's effectiveness in bolstering sentence formation skills, indicating enhanced syntactic and semantic understanding.

When it comes to spelling words correctly, there's a slight improvement from 2.13 to 2.52. Although the increase is modest, it suggests some progress in orthographic knowledge among the adults. The ability to articulate words with precise pronunciation showed a minor improvement, with mean scores going from 1.02 to 1.33. This indicates a slight enhancement in phonological skills, although it suggests pronunciation might be a challenging area for adults.

A significant improvement is observed in the use of appropriate vocabulary to express ideas clearly, with scores jumping from 1.55 to 3.06. This considerable increase signifies a major advancement in expressive vocabulary, crucial for effective communication. Lastly, the ability to distinguish between words that sound similar but have different meanings improved from 0.95 to 1.86, nearly doubling the pre-test score. This improvement demonstrates enhanced phonological awareness and understanding of homophones, an important aspect of language proficiency.

DISCUSSION

During the interventions designed for each study group, a notable transformation in language acquisition processes was observed, underscoring the distinctive impact of tailored pedagogical approaches on diverse age cohorts.

For the eight-year-old children, the intervention was marked by a series of interactive and immersive sessions that capitalized on the sensory and cognitive openness inherent to this developmental stage. Activities such as emotional balloon presentations, musical games, and articulation exercises not only engaged the children's attention but also directly addressed key linguistic skills in a context that was both enjoyable and meaningful. The results showed substantial improvements across all measured linguistic criteria. This outcome suggests that the children's intervention was highly effective, capitalizing on their developmental readiness for language acquisition through play-based and sensory-rich activities. The greatest improvements were seen in their ability to comprehend words to construct coherent sentences and to employ appropriate vocabulary to express ideas clearly, indicating a deepening understanding of language and its use in communication.

The intervention's success among the eight-year-old children can also be attributed to its comprehensive approach, which integrated various facets of language learning—auditory discrimination, memory enhancement, perceptual skills, executive function, and articulatory precision. By embedding these elements within engaging group activities, the intervention mirrored natural language acquisition processes, where learning is deeply intertwined with social

interaction and sensory engagement. This methodology fostered an environment where children could experiment with language in a supportive setting, gradually building their confidence and competence.

Conversely, the intervention for the thirty-year-old adults involved a more structured and technology-assisted approach, reflecting the differing needs and learning styles of adult learners. Sessions focused on phonetic training through virtual platforms offered flexibility and accessibility, crucial for accommodating the varied schedules of adult participants. Despite the more formalized structure of these sessions, the adult group still showed significant improvements, particularly in recognizing words and employing appropriate vocabulary clearly. This indicates that even within a more rigid framework, adult learners can achieve meaningful progress in language acquisition when the intervention is thoughtfully designed to meet their specific needs.

The use of technology in the intervention for adults played a pivotal role in their learning process. By incorporating tools such as virtual meeting platforms and applications for avatar creation, the intervention leveraged the familiarity and comfort many adults have with digital environments. This not only made the learning experience more accessible but also introduced a novel aspect that could stimulate interest and engagement. The digital nature of the intervention allowed for a unique blend of auditory and visual stimuli, critical for phonetic training, where nuances in pronunciation and articulation are often best conveyed through both listening and observing.

Moreover, the personalized feedback enabled by technology, where participants could record and submit their practice sessions for evaluation, provided a tailored learning experience. Adults could learn at their own pace, revisiting challenging phonemes or vocabulary as needed, which is an essential aspect of adult education known as andragogy. This approach acknowledges that adult learners come with a wealth of personal and professional experiences, learning best when new knowledge is integrated into their existing knowledge base.

The contrast in intervention strategies and their outcomes highlights the importance of age-appropriate teaching methodologies in language learning. While children benefit from playful, interactive sessions that stimulate their sensory and cognitive development, adults require a blend of structured guidance and practical application, supported by technology, to navigate the complexities of language acquisition. Both groups showed marked improvements, yet the interventions' differential impacts underscore the necessity of tailoring educational approaches to the unique characteristics and learning stages of the target audience.

FINAL CONSIDERATIONS

The study demonstrated valuable insights into the language acquisition processes among two distinct age groups, eight-year-old children and thirty-year-old adults, through targeted interventions. The interventions, designed to enhance vocabulary and pronunciation skills, resulted in significant improvements across various linguistic criteria for both groups being the children's intervention the most effective as children showed a higher level of proficiency after the intervention.

These findings suggest a compelling argument for the adoption of differentiated teaching strategies across age groups in language learning programs. Such strategies should not only address the linguistic goals but also embrace the cognitive, developmental, and lifestyle realities of learners. As language educators look to the future, the insights gained here could inform the development of more nuanced, flexible, and effective approaches to teaching, ensuring that learners of all ages can achieve their full potential in acquiring new languages.

LIMITATIONS

Despite its contributions, the study faced several limitations. One major limitation was the absence of a control group, which could have provided a clearer causal relationship between the interventions and the observed outcomes. Additionally, the small sample size and the specific demographic characteristics of the participants might limit the generalizability of the findings to other populations or age groups.

Another significant limitation encountered was the variable access to reliable internet, which posed challenges, particularly for the thirty-year-old adults engaged in the phonetic training through virtual sessions. The reliance on digital platforms for the delivery of the intervention necessitated a consistent and high-quality internet connection, which was not uniformly available to all participants. This variability in internet access could have influenced the

consistency of engagement with the intervention materials and potentially impacted the overall effectiveness of the program for some participants.

RECOMMENDATIONS

Given the study's findings, it is recommended that future educational programs and interventions prioritize age-specific strategies to optimize language acquisition outcomes. For young learners, the results underscore the importance of engaging, interactive sessions that incorporate visual and auditory stimuli, catering to their developmental stage and learning preferences. Adult learners, on the other hand, may benefit from phonetic training that leverages technology, such as avatar creation and online platforms, to accommodate their schedules and learning needs.

Future research should consider expanding the study to include larger and more diverse participant samples that would enhance the generalizability of the results. Investigating the long-term effects of these interventions on language retention and usage, as well as exploring similar studies across different languages and cultural contexts, could offer further valuable insights into the field of language acquisition.

CONCLUSIONS

The data clearly demonstrates the effectiveness of the intervention in enhancing language acquisition skills across various dimensions. The substantial improvements in all measured criteria from the pre-test to the post-test suggest that the intervention was not only successful but also that its methodologies could potentially be applied to other groups beyond fourth graders. This versatility is an important consideration for educators looking to implement similar strategies across different age groups or educational settings.

The observed improvements on adults, although more modest than those seen in children, indicate that the intervention was effective for this age group as well. This suggests that the methodologies used can be adapted and applied to adult learners, potentially extending to various contexts such as adult education centers, workplace training programs, or self-directed learning environments. The necessity for ongoing content and methodology updates for educators is equally relevant here; as adult learning needs evolve, so too must the strategies employed to meet these needs.

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