

MULTISENSORY IN ENGLISH LEARNING

Multisensorial en el aprendizaje del inglés

Multissensorial no aprendizado de inglês

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RESUMEN

Introducción: El aprendizaje multisensorial se ha convertido en un enfoque pedagógico eficaz en la enseñanza de idiomas gracias a su capacidad para involucrar múltiples canales sensoriales y fortalecer los procesos cognitivos involucrados en la adquisición de lenguas extranjeras. El objetivo de este estudio es analizar cómo el aprendizaje multisensorial mejora los procesos cognitivos en la adquisición del inglés en estudiantes universitarios. Se empleó un diseño de investigación de métodos mixtos. Los datos cuantitativos se recopilaron mediante una encuesta a 23 estudiantes de cuarto semestre del programa de Pedagogía de Lenguas Nacionales y Extranjeras (PINE) de la Universidad Laica Eloy Alfaro de Manabí (ULEAM), Extensión Chone. La recopilación de datos cualitativos se realizó mediante una combinación de observación de aula y entrevistas abiertas con todos los docentes de la carrera. Los hallazgos sugieren que las estrategias de enseñanza multisensorial tienen un impacto positivo en procesos cognitivos clave, como la atención, la memoria, la percepción y la comprensión. Estas estrategias contribuyen a una mayor participación estudiantil y a un aprendizaje más efectivo del inglés. El estudio concluye que la integración de enfoques multisensoriales en la enseñanza del inglés promueve un procesamiento cognitivo más profundo y representa una valiosa estrategia pedagógica en el contexto de la educación superior.

Palabras clave: Aprendizaje multisensorial; procesos cognitivos; aprendizaje del idioma inglés; educación superior; estrategias de enseñanza de idiomas.

ABSTRACT

Introduction: Multisensory learning has become an effective pedagogical approach in language teaching due to its capacity to engage multiple sensory channels and strengthen the cognitive processes involved in foreign language acquisition. The objective of this study is to analyze how multisensory learning improves cognitive processes in English language acquisition among university students. A mixed-methods research design was employed. Quantitative data were collected through a survey of 23 fourth-semester students enrolled in the National and Foreign Language Pedagogy programme (PINE) at the Universidad Laica Eloy Alfaro de Manabí (ULEAM), Extension Chone. The collection of qualitative data was achieved through a combination of classroom observation and open-ended interviews with all teachers of the major. The findings suggest that multisensory teaching strategies have a positive impact on key cognitive processes, including attention, memory, perception, and comprehension. These strategies contribute to enhanced student participation and more effective English language learning. The study concludes that the integration of multisensory approaches in English language teaching promotes deeper cognitive processing and represents a valuable pedagogical strategy in the context of higher education.

Keywords: Multisensory learning; cognitive processes; English language learning; higher education; language teaching strategies.

RESUMO

Introdução: A aprendizagem multissensorial tornou-se uma abordagem pedagógica eficaz no ensino de línguas devido à sua capacidade de envolver múltiplos canais sensoriais e fortalecer os processos cognitivos envolvidos na aquisição de línguas estrangeiras. O objetivo deste estudo é analisar como a aprendizagem multissensorial melhora os processos cognitivos na aquisição da língua inglesa entre estudantes universitários. Foi empregado um método de pesquisa misto. Os dados quantitativos foram coletados por meio de um questionário aplicado a 23 alunos do quarto semestre do programa de Pedagogia de Línguas Nacionais e Estrangeiras (PINE) da Universidade Laica Eloy Alfaro de Manabí (ULEAM), Extensão Chone. A coleta de dados qualitativos foi realizada por meio de uma combinação de observação em sala de aula e entrevistas abertas com todos os professores da disciplina. Os resultados sugerem que as estratégias de ensino multissensorial têm um impacto positivo em processos cognitivos-chave, incluindo atenção, memória, percepção e compreensão. Essas estratégias contribuem para uma maior participação dos alunos e uma aprendizagem mais eficaz da língua inglesa. O estudo conclui que a integração de abordagens multissensoriais no ensino da língua inglesa promove um processamento cognitivo mais profundo e representa uma estratégia pedagógica valiosa no contexto do ensino superior.

Palavras-chave: Aprendizagem multissensorial; processos cognitivos; aprendizagem da língua inglesa; ensino superior; estratégias de ensino de línguas.

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INTRODUCCIÓN

Currently, English is considered a global language of communication due to its predominance in fields such as education, science, technology, and intercultural interaction. Its expansion has created a need to strengthen its teaching as a foreign language in various educational contexts, especially in higher education, where proficiency in English has become a key skill for accessing specialized information, facilitating academic mobility, and fostering professional and sociocultural development for students (Chavéz, Saltos, & Saltos, 2017).

Given its significant impact in the educational context, learning English continues present various challenges, particularly when teaching and learning processes are based on traditional methodologies focused on verbal transmission and memorization of content. These practices have been demonstrated to be inadequate in meeting the current demands of foreign language learning, as they have been observed to limit student participation, which has a detrimental effect on their understanding and functional use of the language (Yassin, Nambi, Sebbowa, & Najjembba, 2024).

Conversely, it is acknowledged that traditional English language teaching methodologies do not take into account the manner in which the human brain processes and organizes information. Understanding how students perceive, encode, and retain linguistic information is essential for facilitating more effective learning, as neglecting the cognitive processes involved can hinder the development of functional language comprehension in foreign language acquisition settings (Prystauka, DeLuca, Luque, Voits, & Rothman, 2023).

In light of these limitations, educational research has begun to concentrate on alternative pedagogical approaches that allow for a much more effective response to the challenges of learning English. In this sense, the multisensory approach has emerged as a pedagogical proposal that acknowledges the necessity to actively engage students by stimulating various sensory channels during the learning process, thus allowing learners to associate the second language with the perceptions and sensations they are experiencing (Seidl, Indarjit, & Borovsky, 2022).

These approaches have led to the development of multisensory teaching practices, which promote the intentional and combined use of different sensory channels with the aim of optimizing second language learning processes. Empirical evidence indicates that integrating visual, auditory, and tactile stimuli into foreign language teaching enhances student motivation and leads to substantial improvements in skills such as listening, speaking, reading, and writing when compared to traditional single-sensory methods (Catur, Sutapa, & Regina, 2023).

In the context of Ecuadorian higher education, evidence suggests the presence of a diversity of learning styles and levels of English language proficiency among students. This diversity poses a challenge for teachers and highlights the need to implement pedagogical approaches that respond to these characteristics. Despite the growing interest in multisensory learning, there is a paucity of empirical studies that specifically analyze its relationship with cognitive processes in university contexts (Orosz, Monzón, & Velasco, 2021).

Within this framework, the purpose of this research is to analyze how multisensory learning contributes to strengthening cognitive processes in university students enrolled in the National and Foreign Languages (PINE) program at the Universidad Laica Eloy Alfaro de Manabí (ULEAM), Extension Chone. Specifically, it seeks to identify the main cognitive processes involved in learning a foreign language, to examine the relationship between multisensory stimulation and the strengthening of these processes, and to explore how the use of various sensory channels influences the improvement of English language skills in order to provide relevant empirical evidence for the context of higher education.

MATERIALES Y MÉTODOS

This research was developed using a mixed approach, combining quantitative and qualitative methods, with the aim of gaining a more comprehensive understanding of the relationship between multisensory learning in English language acquisition and the cognitive processes involved in learning a foreign language among university students. The present study was conducted at the Universidad Laica Eloy Alfaro de Manabí (ULEAM), Extension Chone, with the participation of 23 fourth-semester students enrolled in the Pedagogy of National and Foreign Language (PINE), as well as English teachers from the same programme. Participants were selected using convenience sampling, considering their availability and direct link to the academic context under investigation.

Three instruments were utilized to collect data: firstly, a survey administered to students, secondly interviews with open-ended questions for teachers, and thirdly, observation sheets used during English classes. The survey provided insights into students' perceptions of the use of multisensory strategies in the classroom, as well as their reflections on how these strategies influenced their engagement, understanding, and learning experience. Meanwhile, the interviews provided an understanding of teachers' experiences and perspectives on multisensory learning and language teaching. Finally, the observation sheets offered the direct recording of teaching practices during English classes, which allowed the information provided by students to be compared with that expressed by teachers.

RESULTADOS Y DISCUSIÓN

Cognitive Processes Activated			
Survey Results	Interview Results	Observation Results	Triangulated Analysis
Multisensory activities mainly activate attention (37%), memory (33%), and perception (26%)	Attention, memory, and perception are activated through multisensory activities.	Constant activation of attention and memory across observed classes.	The multisensory learning strongly activates essential cognitive processes.
Senses that help the most in learning			
Survey Results	Interview Results	Observation Results	Triangulated Analysis
Students reported that hearing (43%) and sight (35%) are the most helpful senses for learning.	Vision and hearing are the most helpful, while movement supports learning.	Frequent use of images, audio, gestures, and visual-auditory input.	English learning is predominantly supported by visual and auditory input.
Most effective sensory combinations			
Survey Results	Interview Results	Observation Results	Triangulated Analysis
The most effective combinations were Visual + Auditory (43%) and Visual + Auditory + Kinesthetic (43%)	Visual + Auditory, enhanced by movement, is the most effective.	Activities combine video images, sound, and gestures.	The visual-auditory combination forms the core of learning and kinesthetic input increases effectiveness.
Information students remember most easily			
Survey Results	Interview Results	Observation Results	Triangulated Analysis
Students remember best by doing (30.4%) and seeing + hearing (30.4%)	Students remember best what they do and what they see and hear	Hands-on and visually supported tasks show higher retention.	Retention increases with dual-sensory input and experiential learning
Changes observed when multisensory stimuli are used			
Survey Results	Interview Results	Observation Results	Triangulated Analysis

Students reported better comprehension (29%), more focus (27%), and better recall (24%).	Motivation, interaction, attention, and comprehension increases.	Lessons become more dynamic and engaging.	Multisensory instruction significantly improves comprehension, concentration, and motivation.
When students learn more easily			
Survey Results	Interview Results	Observation Results	Triangulated Analysis
The Visual + Auditory + Kinesthetic combination (48%) is the easiest way for students to learn.	Students learn more naturally in meaningful, real, and interactive contexts.	Contextualized activities support participation and understanding.	Authentic, fully multi-sensory activities promote natural and effective learning.
Language skill most benefited			
Survey Results	Interview Results	Observation Results	Triangulated Analysis
The skills that benefit the most are listening (38%) and reading (34%).	Listening and reading receive the strongest support.	Visual and auditory aids support structure recall.	Multisensory learning primarily strengthens oral – comprehension skills.
Most effective multisensory resources for listening			
Survey Results	Interview Results	Observation Results	Triangulated Analysis
Activities with audio and images are 52% more effective.	Videos, songs, and audios with images are the most effective.	Frequent use of audio- visual materials.	Audio + Visual input is the most powerful resource for listening comprehension.
Influence on oral expression			
Survey Results	Interview Results	Observation Results	Triangulated Analysis
Students reported 48% significant improvement and 35% moderate improvement	Role- plays and dramatizations improve fluency and confidence.	Students participate more in dynamic oral activities.	Multisensory tasks greatly enhance fluency, confidence, and spontaneous speaking.
Multisensory support that improves writing			
Survey Results	Interview Results	Observation Results	Triangulated Analysis
The most helpful supports were visual mapping (38%) and auditory support (35%)	Images, videos, and graphic organizers help organize ideas.	Visual scaffolding observed during writing activities.	Writing benefits most from visual and auditory scaffolding that aids idea generation.
Visual resources that help reading comprehension			
Survey Results	Interview Results	Observation Results	Triangulated Analysis
The most helpful visual resources were illustrations (54%) and infographics (19%).	Images, illustrations, diagrams, and info-graphic improve understanding.	Use of images and visual cues observed.	Images inside the text are the most effective tools for reading comprehension.

With regard to the cognitive processes that are activated during English language learning, the results demonstrate that attention, memory, and perception are the most recurrent when multisensory strategies are employed. Teachers noted that these activities promote greater concentration and information retention, a finding that was confirmed by classroom observations, where constant activation of attention and memory was recorded. In addition, students reported that when participating in activities involving various sensory stimuli, they experience higher levels of concentration, remember the content easily, and perceive the information presented more clearly, as reflected in the percentages associated with attention (37%), memory (33%), and perception (26%).

The results of the study indicate a predominance of sight and hearing in terms of the senses that contribute most to learning English. It was asserted by the teaching faculty that these senses facilitate understanding of content, while movement acts as a supporting element. During the observations, it was evident that images, audio, and gestures were frequently employed, a finding that corresponded with the responses of the students, who indicated that hearing (43%) were the senses that most facilitated their learning of English.

Regarding the most effective sensory combinations, the results indicate that the integration of visual and auditory stimuli is the most widely used and valued in the learning process. It was emphasized by the teaching staff that this combination is rendered even more effective when movement is incorporated, and aspect that

was observed during the development of activities that integrated videos, images, sounds, and gestures. The survey results indicated that 45% of students regarding that visual-auditory combination as the most effective, followed by the visual-auditory-kinesthetic combination with 33%.

In relation to the type of information that students remember most easily, the results show that content associated with action and visual and auditory stimuli is retained more effectively. Teachers noted that students remember better what they do in a practical way and what they see and hear simultaneously. This perception was corroborated in classroom observations, as well as in the survey, where students indicated that they remember information obtained through doing (34.4%) and a combination of seeing and hearing (30.4%) more easily.

Regarding the changes observed when using multisensory stimuli, the findings indicate an enhancement in student motivation, interaction, attention, and comprehension. Teachers indicated that classes were more dynamic and participatory, a finding that was confirmed through direct observation of the sessions. In a similar vein, students have reported that multisensory learning enables them to enhance their comprehension of the subject matter (29%), sustain elevated levels of concentration (27%), and facilitate the retention of linguistic information (24%).

The results obtained of the study indicate that students demonstrate optimal learning outcomes when activities are conducted in meaningful, real-life, and interactive contexts. It was noted by teaching staff that this type of activity permits more natural student participation, an aspect that was also observed during lessons. The survey data indicates that 48% of students reported an enhanced learning experience when a combination of visual, auditory, and kinesthetic approaches is employed.

With regard to the linguistic skills most enhanced by multisensory strategies, the findings indicate that listening and reading are the most strongly supported. Teachers explained that these skills are particularly enhanced by multisensory instruction, insofar as they are reinforced through oral interaction, auditory input, and active participation. This pattern was also observed during classroom sessions. The survey results indicate that students perceive listening (38%) and reading (34%) as the skills that benefit the most from multisensory-based learning.

With respect to the impact of multisensory learning on vocabulary and grammar retention, the results show a more significant effect on vocabulary learning. Teachers reported that students demonstrated a marked improvement in their acquisition of new vocabulary, meanwhile progress in grammar was more moderate. This perception was consistent with the responses of the students, who indicated a significant improvement in vocabulary (52%) and a moderate improvement in grammar (35%).

From the perspective from the most effective multisensory resources for developing listening comprehension, the results indicate that videos, songs, and audio recordings accompanied by images are the most widely used and valued. It was emphasized by the teaching faculty that these resources are instrumental in facilitating comprehension of the oral information. This assertion was corroborated during classroom observations. The survey results indicated that audio- visual activities were considered the most effective strategy for enhancing listening skills by 52% of the student respondents.

Concerning the impact of multisensory learning on oral expression, the findings point out that activities such as dramatizations, role-playing, and participatory dynamics facilitate the development of fluency and confidence in speech. It was observed by teaching staff that students participating in these types of activities did so with increased confidence, as evidenced during classroom sessions. Conversely, students reported a marked enhancement in their oral expression, with 48% of respondents noting a significant improvement and 35% attributing a moderate improvement.

In terms of multisensory support that contributes to improving writing, the results show that visual and audiovisual resources facilitate the organization of ideas. Teacher highlighted the use of images, videos, and graphic organizers as support tools during writing activities, an aspect that was also observed in the classroom. The survey results indicated that visual maps and auditory support were the resources that helped students most when writing.

Finally, in relation to visual resources that promote reading comprehension, the results demonstrate that images, illustrations, diagrams and infographics play an important role in understanding texts. Teachers highlighted that these resources facilitate content interpretation, a finding that was corroborated during

observations. According to the findings of the study, illustrations (54%) and infographics (19%) were identified as the visual resources that contributed most to reading comprehension.

DISCUSSION:

The finding of this study demonstrate that attention, memory, and perception are the cognitive processes most frequently engaged when multisensory strategies are employed in the context of English language learning. This finding aligns with prior research suggesting that simultaneous stimulation of multiple sensory channels enhances attentional focus and strengthens information encoding (Salomatxon, 2024). In this sense, the recurrence of these cognitive processes, observed in both teachers and students, suggests that multisensory learning transcends its motivational function and acts as a direct facilitator of cognitive processing in foreign language learning.

With regard to the senses that are of primary importance in English language acquisition, the results show a clear predominance of sight and hearing. This phenomenon has been documented in similar studies, which highlight that visual and auditory stimulus facilitate the comprehension of linguistic input and contribute to reducing the cognitive load on the learner (Kanellopoulou, Kermanidis, & Giannakoulopoulos, 2019). The frequency with which the use of images, audio, and gestures was observed in the classroom confirms that these resources are perceived by teachers as effective tools to support teaching, which is reflected in the positive assessment of students regarding their usefulness.

In accordance with the aforementioned points, the affirmative evaluation of the visual-auditory combination, in conjunction with its integration with movement, is corroborated by the methodologies employed by Mayer (2009). The author's argument is rooted in multimedia learning theory, which posits that the integration of words, images, and actions within a unified experience enhances the efficacy of learning. This integration has been demonstrated better organization of information and more efficient processing, which helps explain the effectiveness of the dynamic and interactive activities observed in this study.

In terms of information retention, the results indicate that students remember content associated with action visual and auditory stimuli more easily. This finding reinforces the idea that active and experiential learning generates more lasting memories compared to passive reception of information. Previous research has shown that direct student participation in practical tasks promotes learning consolidation, especially in foreign language acquisition contexts (Jubran, 2012). In this study, the agreement between teachers, students, and classroom observations lends greater strength to this interpretation.

Conversely, the observed changes in motivation, interaction, and attention when using multisensory stimuli suggest that this approach contributes to the creation of more dynamic and participatory learning environments. These results are consistent with studies that highlight the relationship between stimulus variety, motivation, and student engagement in language learning (Zamora, 2025). The finding of this study suggest that students who engage with learning materials that incorporate multiple sensory stimuli may experience enhanced cognitive and emotional engagement, thereby reinforcing the notion that multisensory learning methodologies can positively impact learning outcomes.

With regard to the conditions in which students learn most easily, the results show a preference for meaningful, real life, and interactive contexts, especially when a combination of visual, auditory, and kinesthetic stimuli is used. This evidence coincides with that language learning is enhanced when the language is used in authentic and contextualized communicative situations (Carrillo & Armando, 2013). In this way, multisensory approaches seem to facilitate the creation of such contexts by promoting a more natural and active participation of the students.

In relation to language skills, the results indicate that listening comprehension and oral expression benefit most from the use of multisensory strategies. This finding has been reported in studies that indicate that visual and contextual support improves comprehension of oral messages and facilitates language production (Gómez, Díaz, & Gómez, 2021).

Finally, the results indicate that multisensory strategies should be specifically designed to enhance each of the language skills. This approach coincides with Rogowsky, Calhoun, & Tallal (2020), who argue that English language learning is strengthened when activities are tailored to the characteristics of each skill. According to the authors, visual, auditory stimuli strengthen listening, kinesthetic experiences support the development of

speaking, and visual and organizational supports contribute to the development of writing, which explains the results obtained in the present study.

CONCLUSIONES

The study demonstrates that the multisensory approach has the capacity to transform English learning experience by enhancing cognitive processes, language skills and pedagogical dynamics in the university classroom. The constant activation of attention, memory, and perception through activities integration visual, auditory, and kinesthetic stimuli allow students to maintain a higher level of concentration, develop richer mental representations, and consolidate linguistic information more stably in long-term memory.

In this sense, the use of a variety of multimedia, including images, audio, videos, gestures, dramatizations, role-playing, and practical tasks, contributes to the transformation of input in English from abstract content to a lived, contextualized, and meaningful experience. This shift enables students to participate actively in the learning process rather than merely receiving information passively. This configuration of the classroom as an interactive space is reflected increased motivation, participation, and interaction, which favour both the cognitive and effective dimensions of learning.

From the perspective of skill development, the results demonstrate a particularly notable impact on listening comprehension and oral expression. Multisensory activities provide visual and contextual supports that facilitate the decoding of oral messages and create authentic opportunities to produce languages with greater fluency and confidence. Concurrently, the integration of visual aids, such as maps, graphic organisers, illustrations, infographics, and other visual and audiovisual resources, has been demonstrated to facilitate the organization of ideas and the planning of writing discourse.

Furthermore, these visual aids have been shown to support the construction of inferences and the overall interpretation of texts, thereby enhancing writing and reading comprehension. The utilization of vocabulary in multisensory contexts, encompassing the association of words with images, sounds, actions, and particular circumstances, has been demonstrated to facilitate the retention and functional application of vocabulary in diverse communicative endeavors.

Taken together, these findings support, from an academic perspective, the need to systematically integrate multisensory strategies into higher education as a means of addressing the diversity of learning styles, the current demands of language training, and the search for more in-depth, participatory, and meaningful English teaching and learning processes.

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Declaración de responsabilidad de autoría

Yimi Elian Loor Barre, Karol Cristina Figueroa Solórzano y Henry Xavier Mendoza Ponce: revisión bibliográfica, metodología, redacción e investigación.