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AI as a language immersion environment for learning English as a second language

La IA como entorno de inmersión lingüística para el aprendizaje del inglés como segunda lengua

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ABSTRACT

Learning English as a second language presents difficulties in educational contexts with limited exposure to the language, which mainly affects the development of oral skills. In this context, the present research aimed to analyze the role of artificial intelligence as a language immersion environment for learning English in A2+ level students. The study was developed using a mixed methodological approach and a quasi-experimental design with a pretest-posttest scheme applied to a single group, formed through intentional non-probabilistic sampling. With the aim of strengthening listening comprehension and oral expression, the pedagogical proposal consisted of implementing AI-based tools such as chatbots, voice recognition systems, and adaptive learning platforms in a planned manner. The results showed significant progress in the students'


language proficiency, as post-test scores demonstrated higher performance levels. Likewise, through the analysis of qualitative and perceptual data, a high degree of motivation, more active participation, greater autonomy in learning, and decreased anxiety when speaking English were observed. The effectiveness of artificial intelligence as an environment that promotes language immersion was corroborated by triangulating quantitative and qualitative data. In conclusion, artificial intelligence acts as an innovative, relevant, and feasible pedagogical alternative that strengthens the teaching and learning of English as a second language, especially in environments where opportunities for real immersion are limited.

Keywords: artificial intelligence, language immersion, english language learning, communicative competence, technology-mediated education

RESUMEN

El aprendizaje del idioma inglés como segunda lengua presenta dificultades en contextos educativos con limitada exposición al idioma, lo que afecta principalmente el desarrollo de las habilidades orales. En este contexto, la presente investigación tuvo como objetivo analizar el papel de la inteligencia artificial como entorno de inmersión lingüística para el aprendizaje del inglés en estudiantes de nivel A2+. El estudio se desarrolló bajo un enfoque metodológico mixto y un diseño cuasi-experimental con esquema pretest-postest aplicado a un solo grupo, conformado mediante muestreo no probabilístico intencional. Con el objetivo de fortalecer la comprensión auditiva y la expresión oral, la propuesta pedagógica consistió en implementar de manera planificada herramientas basadas en inteligencia artificial como chatbots, sistemas de reconocimiento de voz y plataformas de aprendizaje adaptativo. Los resultados obtenidos demostraron avances significativos en el dominio del idioma por parte de los alumnos, pues los puntajes del postest demostraron que los niveles de desempeño fueron más altos. Asimismo, mediante el análisis de los datos cualitativos y perceptivos, se pudo observar un alto grado de motivación, participación más activa, mayor autonomía en el aprendizaje y disminución de la ansiedad al hablar inglés. La efectividad de la inteligencia artificial como un entorno que favorece la inmersión lingüística, fue corroborada mediante la triangulación de los datos cuantitativos y cualitativos. En conclusión, la inteligencia artificial actúa como una alternativa pedagógica innovadora, pertinente y factible que permite fortalecer la enseñanza y el aprendizaje del inglés como segunda lengua, especialmente en entornos donde las oportunidades de inmersión real son limitadas.

Palabras claves: Inteligencia artificial, inmersión lingüística, aprendizaje del inglés, competencia comunicativa, educación mediada por tecnología

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INTRODUCTION

In such a globalized world, learning English as a second language (ESL) has become a fundamental necessity, as intercultural communication, access to scientific information, and academic and professional competitiveness depend on proficiency in this language (Guarín, 2022; Shchur et al., 2022). One of the strategies considered effective for developing communication skills is language immersion, as it promotes the constant and natural use of the language in real-life situations (Andrade, 2024; Al et al., 2025). However, many people do not have access to real immersion experiences, mainly due to economic, geographical, and social issues (Andrade, 2024).

According to Del Real and Núñez (2022), in several educational institutions where English is taught as a foreign language, its use outside the classroom is still limited. This constant limitation has a direct impact on the development of communication skills, especially listening comprehension and speaking, creating a gap between what is expected to be achieved (at the curricular level) and the actual learning outcomes (Palacio, 2024; Bustos, 2025). Furthermore, because many educational institutions do not have the appropriate technological resources and methodological strategies, intensive, contextualized, and meaningful language practice is not possible (Sangmin, 2022).

Faced with this reality, artificial intelligence (AI) is presented as an innovative option for reducing the limitations of traditional immersion in language learning (Lázaro et al., 2024). The development of adaptive systems, conversational tutors, voice recognition, and interactive virtual environments has made it possible to offer new learning possibilities that are more personalized, dynamic, and accessible (Ortiz, 2025). Sánchez (2024) and Álvarez (2025) mention that the incorporation of AI in English language teaching is justified by its ability to provide immediate feedback, adjust to the student's level and pace, and simulate authentic communicative situations that promote functional and meaningful use of the language.

Previous research has analyzed the use of digital technologies in language teaching, highlighting the benefits offered by computer-assisted learning, mobile learning, and the use of AI-based tools to support the language learning process (Macías et al., 2025).

Recent research indicates that chatbots and intelligent systems can increase motivation, reduce communication anxiety, and improve language practice (Sanz, 2025). However, most of these studies focus on linguistic performance or student perception, without delving sufficiently into the analysis of AI as a comprehensive language immersion environment (Rebolledo & Gisbert, 2025).

There is, therefore, a gap in the literature on the concept and pedagogical analysis of artificial intelligence when used as a language immersion environment for learning English as a second language. It is therefore necessary to systematically explore how the characteristics of AI itself reinforce the fundamental principles of traditional language immersion.

The purpose of this article is to analyze the role of AI as a language immersion environment in learning English as a second language, from a theoretical-analytical approach that combines theories on how second languages are learned with the use of technology. To this end, it draws on the comprehensible input hypothesis, interaction theory, and communicative approaches, as well as the principles of personalized and adaptive learning characteristic of AI. The aim is to contribute to academic reflection on the pedagogical use of AI and its capacity to transform the processes of teaching and learning English.

MATERIALS AND METHODS

The research was conducted using a mixed approach, combining quantitative and qualitative strategies, with the aim of achieving a comprehensive and detailed overview of the use of artificial intelligence when employed as a language immersion environment in the learning of English as a second language. The quantitative approach allowed for the measurement of changes in participants' linguistic performance before and after the pedagogical intervention, while the qualitative approach facilitated the analysis of perceptions, experiences, and interaction dynamics generated during the AI-mediated learning process.

The research design was quasi-experimental, with a descriptive and explanatory scope, and was structured under a pretest-posttest scheme with a single group. This design allowed for a comparison of the participants' level of linguistic competence prior to the intervention and after its implementation, without random manipulation of the subjects, considering the conditions of the educational context.

The study was conducted at a higher education institution located in Ecuador, in a formal educational context where English is taught as a second language and basic technological resources are available to support the teaching-learning process. For reasons of institutional confidentiality and ethical considerations, the name of the institution where the research was conducted is not disclosed in this study. The sample consisted of 40 students, aged between 18 and 22, who had an A2+ level of English and were enrolled in training programs where English is part of the curriculum. The sample was selected using intentional non-probabilistic sampling, considering criteria aligned with the research objectives.

The inclusion criteria stipulated that students must have an A2+ level of English, be within the established age range, have the necessary time to participate throughout the research process, have access to technological devices and good internet connectivity, and voluntarily agree to participate by signing the informed consent form. Students with English levels below or above A2+ and those with previous experience in language immersion settings were excluded.

Data collection was carried out using various tools: diagnostic tests, final language performance tests, structured surveys, and pedagogical observation. These tools provided quantitative information on the progress of English communication skills and qualitative

information on interaction, motivation, and students' perceptions of the use of AI in language learning.

Similarly, the instruments used were a standardized test of oral comprehension and production in English, a Likert-type questionnaire to assess students' attitudes and perceptions about the use of AI, and an observation guide to record participation, level of interaction, and functional use of language during the intervention activities.

The research was conducted in three phases. The first phase consisted of administering a diagnostic assessment to determine the initial level of linguistic competence of the participating students. In the second phase, the AI-supported pedagogical intervention was carried out over a specific period, including communicative practice activities, guided interaction, and immediate feedback. In the third phase, a final assessment was administered, and qualitative data were collected and subsequently analyzed.

During the pedagogical intervention, AI-based tools such as conversational chatbots, voice recognition systems, and adaptive platforms were used, designed to promote continuous exposure to the English language and simulate authentic communicative situations. The activities were designed to strengthen oral comprehension and production, thereby promoting autonomous learning and active student participation.

Statistical data were analyzed using descriptive and inferential statistics, comparing pretest and posttest results to identify possible improvements in linguistic performance. In the case of qualitative data, a thematic categorization process was used, which made it possible to identify recurring patterns and relevant meanings related to the learning experience measured by AI.

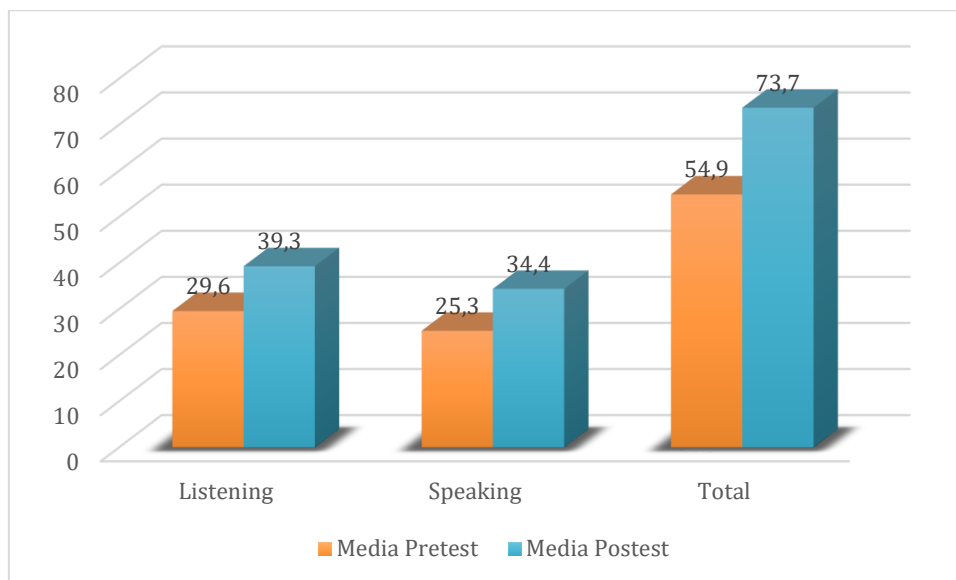
Finally, methodological triangulation was applied as a strategy to strengthen the validity and reliability of the results. This triangulation was carried out by integrating and contrasting the data obtained from different techniques and instruments, as well as from quantitative and qualitative approaches, ensuring a more complete and rigorous interpretation of the phenomenon studied.

RESULTS

The results show a positive impact of the AI-mediated pedagogical intervention on the development of linguistic competence in English as a second language. The comparison between the pretest and posttest results showed a significant improvement in student performance in terms of linguistic performance. As shown in Figure 1, the overall average score increased from 54.9 to 73.7 points, which is equivalent to an improvement of 18.8 points. More specifically, listening comprehension showed an improvement from an average of 29.6 to 39.3, while oral production increased from 25.3 to 34.4 points. These results demonstrated a consistent improvement in both skills, especially in oral expression.

Figure 1

Comparison of average pretest and posttest scores for English language proficiency



The evolution of performance is also reflected in the distribution of the levels achieved by students. Before the intervention, six participants were at the insufficient level and 24 at the initial basic level; however, after the implementation of the pedagogical proposal, no students remained at the insufficient level and 22 reached the satisfactory basic level, while only eight remained at the initial basic level, as shown in Table 1. This shift confirms a general improvement in the study group.

Table 1

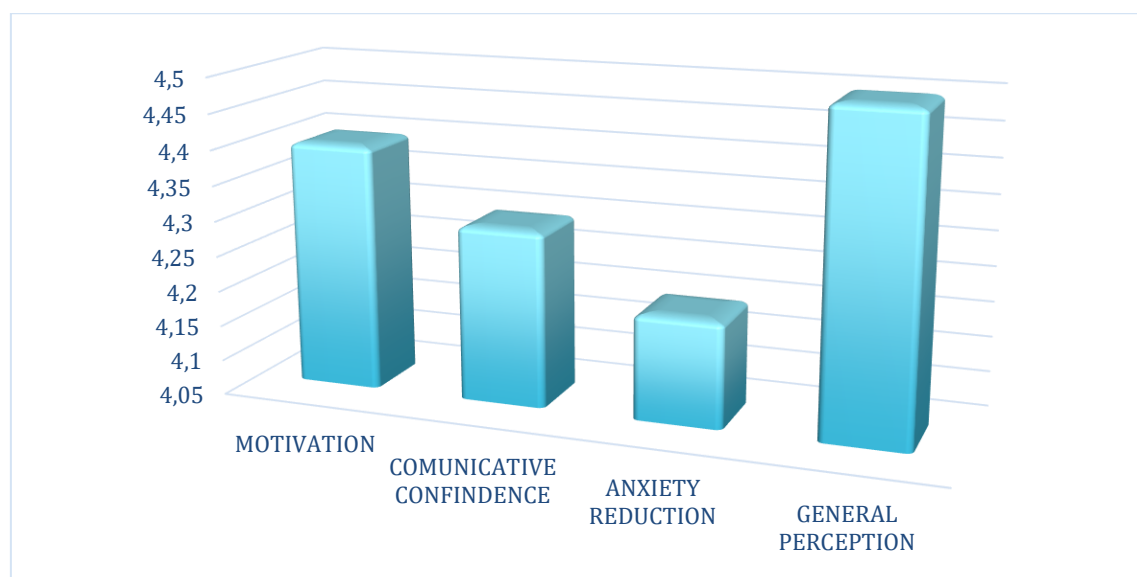
Distribution of pretest and posttest performance levels

Level	Pre-test	Post-test
Insufficient	6	0
Basic initial	24	8
Basic satisfactory	0	22
Basic high	0	0

Regarding students' perceptions of the use of artificial intelligence, the results of the Likert-type questionnaire show a highly positive assessment. Figure 2 shows that all dimensions evaluated obtained averages above 4.0 on a five-point scale, with the general perception of AI use and motivation to learn English standing out. Likewise, high levels of communicative confidence and a significant anxiety reduction when using the language were recorded, suggesting that AI fostered a more secure and motivating learning environment.

Figure 2

Averages by dimension of the student perception questionnaire



The data obtained through the pedagogical observation guide reinforce these findings. As shown in Table 2, the averages per dimension were high, with positive behavior and active participation by students during AI-mediated activities standing out. Oral interaction and autonomy also achieved high scores, while functional language use, although slightly lower, remained within an adequate range for level A2+, demonstrating basic communicative use of English.

Table 2

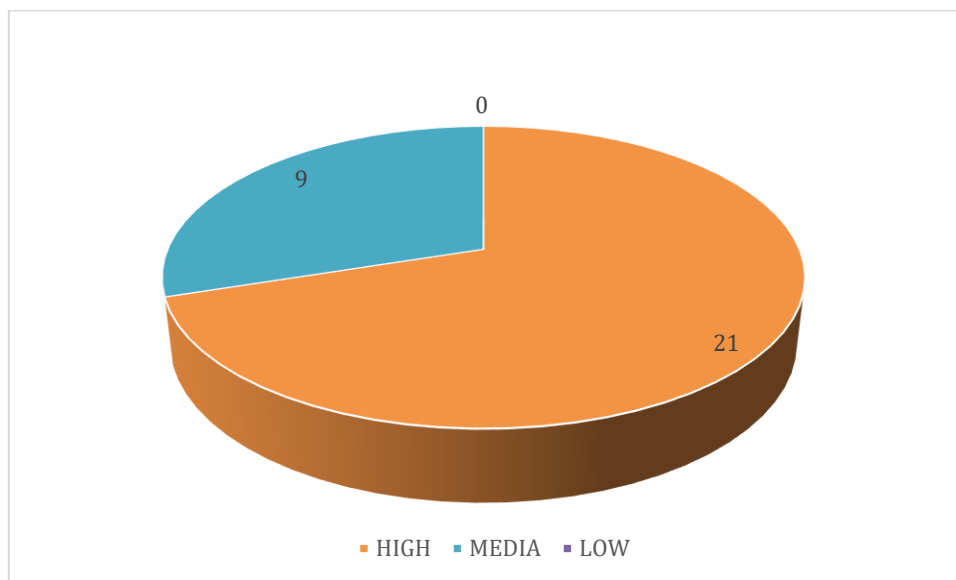
Distribution of pretest and posttest performance levels

Dimension	Average
Active participation	4,4
Oral interaction	4,3
Functional use of language	3,9
Student autonomy	4,3
Behavior	4,6

The records of AI tool usage were analyzed, demonstrating that during the intervention, students actively and consistently used the digital platforms. Figure 3 shows that most students had a high level of interaction, while the remaining group had a medium level, with no evidence of low participation. These results demonstrated that constant interaction with AI favored the development of linguistic competence, which was positively reflected in academic performance.

Figure 3

Level of student interaction with AI



The convergence of quantitative and qualitative results confirms the effectiveness of artificial intelligence as a language immersion environment for learning English, demonstrating improvements in linguistic performance, a positive perception of the learning process, and high levels of student participation and autonomy.

DISCUSSION

The results obtained in this study show that artificial intelligence can function effectively as a language immersion environment for learning English as a second language, especially in educational contexts where exposure to the language is limited. The clear difference in the pretest and posttest results demonstrates that the pedagogical intervention using AI had a positive impact on the listening comprehension and oral expression of students with an A2+ level. This supports the theoretical foundations that describe the importance of constant contact with the language, practice in meaningful contexts, and immediate feedback for learning foreign languages as a second language (Guarín, 2022; Shchur et al., 2022).

The improvement observed in listening and speaking skills can be explained by communicative and language acquisition approaches, which suggest that learning is enhanced when students frequently interact with linguistic resources appropriate to their level (Andrade, 2024; Palacio, 2024). This demonstrates that the artificial intelligence tools used in the pedagogical intervention provided opportunities for constant practice, simulations of real communicative situations, and immediate feedback, enabling students to strengthen their oral skills in a less intimidating environment than the traditional classroom. These results coincide with Sanz (2025) and Sánchez (2024), who point out that interactive digital environments have the ability to improve oral performance by reducing anxiety and increasing the frequency of language use.

Similarly, the results obtained from the student perception questionnaire confirm the effectiveness of the intervention, as students reported high levels of motivation, greater confidence in communicating, and a positive assessment of the use of AI in English language learning. Considering that one of the main barriers to oral participation during language learning is communicative anxiety, the result showing its reduction is particularly significant. According to Rebolledo and Gisbert (2025) and Ortiz (2025), AI seems to have the ability to provide a safe environment that encourages experimentation with language and autonomous learning.

The quantitative results of the pedagogical observation guide show that levels of active participation, oral interaction, and autonomy in activities supported by AI increased, also supporting the results of the quantitative data. This shows that AI not only contributes to the linguistic process but also promotes positive attitudes toward learning, increasing student engagement in their educational process. Although functional language use showed a slightly lower average compared to the other variables, it is consistent with the A2+ level of the students who participated in the research and shows a progressive acquisition process, without detracting from the effectiveness of the intervention (Sangmin, 2022; Macías et al., 2025).

As for the results of the AI tool usage logs, they show frequent and sustained interaction with the platforms during the intervention period, reinforcing the relationship between intensity of use and progress in linguistic performance. This finding coincides with studies that indicate that regularity and time spent in digital learning environments have a positive influence on academic results. In this sense, AI is establishing itself as a pedagogical resource that complements traditional teaching and expands opportunities for language immersion outside the classroom (Lázaro et al., 2024).

Finally, triangulation of the data obtained from the different instruments strengthens the validity of the results and allows us to affirm that artificial intelligence is an effective pedagogical alternative for learning English as a second language. However, this research has some limitations related mainly to the sample size and the intervention period, so future research could consider a larger number of participants, including students of different levels of linguistic competence, examining the effects of AI use over longer periods of time. Despite these limitations, the results of this research offer significant empirical evidence about the capacity of AI as a language immersion environment, thereby contributing to the academic debate and the development of innovative proposals for foreign language teaching.

CONCLUSIONS

The results of the study confirm that AI can be used as an innovative and effective teaching resource, especially in contexts where exposure to English is limited. By triangulating quantitative and qualitative information, it was demonstrated that its implementation in the classroom strengthens the process of learning English as a second language.

In particular, the AI-supported educational intervention significantly favored the development of listening comprehension and oral production in university students at the A2+ level, aged 18 to 22, reflecting an improvement in their communicative competence. Observation records and digital records revealed high levels of participation, autonomy, and consistent use of technological platforms.

However, these results do not indicate that AI will replace the role of teachers, but rather that it acts as a complement that enhances their pedagogical work. Teacher mediation continues to be a key complement to guiding learning, contextualizing content, accompanying students, and promoting the comprehensive development of communication skills. Consequently, artificial intelligence is presented as a viable alternative to strengthen the teaching of English as a second language and expand opportunities for language immersion.

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