



Chatbots and vocabulary learning: Perceptions from efl university students

Chatbots y aprendizaje de vocabulario: Percepciones de estudiantes universitarios de inglés como lengua extranjera


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Luisa Bernardita Zambrano Rodríguez^{1*}

 <https://orcid.org/0009-0003-1094-1947>

Shirley Marianela San Lucas Marcillo²

 <https://orcid.org/0000-0003-2111-0199>

Amarilis Carolina Loor Párraga²

 <https://orcid.org/0000-0002-4103-2047>

1. Docente Investigador de la Universidad Estatal del Sur de Manabí; Jipijapa, Ecuador.
2. Docente Investigador de la Universidad Estatal del Sur de Manabí; Jipijapa, Ecuador.
3. Docente Investigador de la Universidad Estatal del Sur de Manabí; Jipijapa, Ecuador.

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***Correspondencia autor:** luisa.zambrano@unesum.edu.ec

ABSTRACT

The integration of artificial intelligence into educational settings has opened new pathways for second language acquisition, particularly through the use of conversational agents like chatbots. This study explores the perceptions of university-level EFL students regarding the effectiveness of chatbots in vocabulary learning. Drawing on a quantitative, non-experimental design, data were collected through structured surveys administered to students who have interacted with chatbots as part of their English language courses. The study investigates how learners evaluate the usefulness, frequency of use, and pedagogical implications of chatbot-based vocabulary support. Findings from this research suggest that students perceive chatbots as beneficial tools that promote vocabulary retention, enhance learner autonomy, and provide immediate feedback, aligning with previous literature on digital learning technologies. By focusing on student perceptions rather than intervention outcomes, this article contributes to the growing field of educational technology in EFL contexts and proposes recommendations for integrating chatbots into curriculum design. The study is grounded in recent empirical research, with 80% of references drawn from the past five years, ensuring its relevance to contemporary educational discourse. The article also discusses future implications for instructional design and policy considerations within technologically enhanced EFL environments.

Keywords: Chatbots, Vocabulary acquisition, EFL, Educational technology, Learner perceptions.

RESUMEN

La incorporación de la inteligencia artificial en la educación ha abierto nuevas posibilidades para la enseñanza de lenguas extranjeras, especialmente mediante el uso de chatbots como agentes conversacionales. Este estudio examina las percepciones de estudiantes universitarios de inglés como lengua extranjera (EFL) sobre la utilidad de estos recursos en la adquisición de vocabulario. A través de un diseño cuantitativo no experimental y encuestas estructuradas, se indagó en la valoración estudiantil sobre la eficacia, frecuencia de uso e implicaciones pedagógicas de los chatbots utilizados en sus cursos de inglés. Los resultados revelan que los estudiantes consideran estas herramientas tecnológicas como aliadas en la retención léxica, el fortalecimiento de la autonomía y la retroalimentación inmediata. Al enfocarse en las percepciones estudiantiles más que en los resultados de intervención directa, esta investigación aporta a la comprensión del papel de la inteligencia artificial en contextos EFL y plantea recomendaciones para su integración efectiva en el diseño curricular.

Palabras clave: Chatbots, Adquisición de vocabulario, EFL, Tecnología educativa, Percepciones de los alumnos.



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Introduction

The rapid advancement of artificial intelligence (AI) has reshaped educational methodologies, particularly in EFL (English as a Foreign Language) contexts. Chatbots AI-powered conversational agents are increasingly integrated into language learning environments, offering interactive, contextualized practice opportunities outside traditional classroom settings. Early research highlighted the potential of such tools as constant, low-stakes language partners. As Fryer and Carpenter (2006) explained, “Chatbots could provide a means of language practice for students anytime and virtually anywhere” (p. 9).

Vocabulary acquisition is a cornerstone of second language proficiency and communicative competence. Nation (2013) emphasizes that without robust lexical knowledge, learners struggle to comprehend or produce language effectively. In recent years, modern digital tools have presented promising avenues for supporting vocabulary learning, and chatbots have gained recognition for their interactive capabilities.

Winkler and Söllner (2018) identified key educational affordances of chatbots especially context-awareness, proactive learner guidance, and seamless integration with messaging tools. They concluded that these features can significantly enhance engagement and usability in learning scenarios. Wollny et al. (2021) extended this understanding by outlining five major evaluation goals for chatbot research, including usability, motivation, learning outcomes, learner engagement, and interaction quality.

A meta-analytic review published in the *International Journal of Applied Linguistics* found that chatbots produced a medium effect size in second language development, particularly in vocabulary and communicative tasks. The review emphasized that chatbot use increases learner exposure to input, encourages output, and facilitates personalized interaction key variables in the acquisition of new lexical items.

Despite this empirical support, much of the literature has focused on technological implementation or learning outcomes, with comparatively less emphasis on learner perspectives. However, learners’ perceptions are critical predictors of technology adoption, motivation, and sustained use. As Kukulska-Hulme et al. (2020) argued:

While the technical affordances of chatbots are well documented, there is a lack of systematic inquiry into how learners evaluate their experience. Learners’ perceptions directly affect adoption, sustained use, and overall educational impact. (p. 211)

Koç and Savaş (2024), in a systematic meta-synthesis of 57 studies from 2010 to 2024, observed consistent benefits for vocabulary acquisition and speaking fluency when learners interacted with voice-based AI chatbots. They also noted that emotional engagement and learner autonomy were increasingly central to successful implementation.

Complementary evidence comes from qualitative studies in EFL contexts. For instance, Jeon (2021) found that university students reported greater motivation, autonomy, and vocabulary recall after practicing with chatbot-based tools. The students valued the low-pressure environment and the ability to repeat interactions at their own pace. Given this background, the present study focuses on EFL university students’ perceptions regarding chatbot-mediated vocabulary learning. This research adopts a non-interventional, quantitative survey-based design. The goal is not to measure direct learning gains but to understand how students evaluate the usefulness, accessibility, and educational value of chatbots.

In the post-pandemic educational context, where online and hybrid modalities have become the norm, understanding how learners perceive tools that support autonomous vocabulary learning is particularly relevant. Chatbots could offer scalable, low-cost, and flexible solutions that supplement formal

instruction and foster independent learning. As Godwin-Jones (2021) has pointed out, the future of language education increasingly depends on meaningful integration of AI technologies that align with learner needs and preferences.

This study seeks to contribute to that integration by amplifying student voices and identifying the pedagogical value they perceive in chatbot-based vocabulary learning.

Literature review

Chatbots in SLA and Vocabulary Acquisition

The integration of artificial intelligence into language education has given rise to chatbots as promising tools for supporting vocabulary development. These AI-based conversational agents simulate natural interactions, providing learners with contextualized input and opportunities for practice. A systematic review by Schei, Møgelvang, and Ludvigsen (2024) synthesized 24 empirical studies across higher education and found that learners consistently perceived chatbots as useful, motivating, and effective in supporting academic tasks such as vocabulary development and writing. According to the authors, “students reported improved retention and deeper engagement with target vocabulary when chatbot interactions were part of their routine learning” (p. 922). This highlights how chatbot-supported dialogue may facilitate not only word acquisition but also deeper lexical processing.

In a related study, Waziana et al. (2024) surveyed 100 undergraduate students and observed that chatbot use led to a perceived improvement in both vocabulary range and sentence structure. The findings suggest that the tool not only supports vocabulary acquisition but also encourages learners to experiment with new lexical items in writing. As the authors point out, “chatbots help learners activate and recycle vocabulary items in meaningful contexts” (p. 358). This is consistent with the input-interaction-out-

put model of second language acquisition, which emphasizes the need for exposure, use, and feedback.

Meta-analytic evidence also supports the effectiveness of chatbots in SLA. A recent synthesis published in the *International Journal of Applied Linguistics* (2024) reported a medium effect size for chatbot-assisted vocabulary learning across 31 studies. These results suggest that chatbots can be pedagogically valuable tools, particularly when used to supplement classroom instruction. However, the study also noted that the outcomes depend largely on the quality of interaction and the learner's engagement with the chatbot.

It is worth noting that while these findings are promising, they often stem from experimental designs focused on learning gains. In contrast, the current study seeks to explore perceptions how learners experience and evaluate chatbot use. This shift in focus is significant, as it acknowledges that educational effectiveness is not solely a matter of outcomes but also of student attitudes and engagement.

Learner Perceptions and Technology Acceptance

Perception plays a key role in the successful adoption of any educational technology. A recent study based on the Technology Acceptance Model (TAM) applied in Saudi higher education found that perceived usefulness, ease of use, and enjoyment significantly predicted students' willingness to use chatbots in language learning (MDPI, 2023). The authors argue that “learners who viewed chatbots as both helpful and enjoyable were more likely to integrate them into their study routines” (p. 6). This aligns with the broader principle that learner engagement is closely tied to motivation and perceived relevance.

Furthermore, learners do not only value chatbots for their convenience but also for their ability to offer individualized support. In Waziana et al.'s (2024) study, many participants reported feeling more confident using

new vocabulary after chatbot practice. This suggests that the non-threatening, personalized nature of chatbot interaction reduces anxiety and increases lexical experimentation. Such findings reflect Vygotsky's notion of the Zone of Proximal Development, where scaffolded assistance in this case, through chatbot feedback enables learners to move beyond their current level of competence.

Nevertheless, not all studies report uniformly positive attitudes. Some learners express scepticism about the chatbot's ability to handle nuanced or open-ended communication. As reported by Jeon (2021), students occasionally felt that chatbots lacked depth and emotional responsiveness, which limited their value in conversation practice. This tension between technological functionality and human interaction must be acknowledged, particularly when planning pedagogical integration.

These reflections underscore the importance of designing chatbot tasks that are authentic, context-sensitive, and aligned with the learners' communicative needs. From a pedagogical standpoint, the challenge lies in balancing automation with meaningful engagement, ensuring that students not only use the tool but also perceive it as a valuable complement to their learning.

Educational Affordances and Challenges

Beyond vocabulary learning, chatbots offer a range of affordances in educational settings. Studies have shown that they can increase learner autonomy, provide immediate feedback, and encourage metacognitive awareness. Koç and Savaş (2024), in a comprehensive metasynthesis, found that "chatbots promoted vocabulary retention and speaking fluency by offering learners repeated exposure to target language and corrective feedback in a non-judgmental environment" (p. 13). These features contribute to a more personalized and learner-centered approach to language education.

However, the literature also points to certain limitations. One key issue is the emotional shallowness of chatbot interactions. Unlike human interlocutors, chatbots are limited in their ability to express empathy, respond to affective cues, or adapt to nuanced learner moods. As noted in a 2023 review by Abusahyon et al., "students sometimes described chatbot interaction as mechanical or impersonal, especially when dealing with emotionally loaded topics" (p. 144). This can reduce learner satisfaction and hinder long-term engagement.

Another challenge relates to ethical and pedagogical concerns. Chatbots often collect and process learner data, raising questions about privacy, consent, and data security. Moreover, over-reliance on automated tools may lead to reduced human interaction and a fragmented learning experience. Educators must thus weigh the benefits of chatbot integration against potential drawbacks, ensuring that these tools are used to enhance, not replace, the human element in education.

In sum, the literature suggests that chatbots have significant potential to support vocabulary learning in EFL contexts. However, their effectiveness depends not only on technical performance but also on learner perceptions, task design, and ethical considerations. This study aims to contribute to this growing field by exploring how university students evaluate these tools in terms of their vocabulary learning experience.

Methodology

This study adopts a quantitative, non-experimental design to investigate the perceptions of university-level EFL students regarding the use of chatbots in vocabulary acquisition. The primary objective is not to measure causality or conduct an intervention, but rather to collect and analyze student perspectives on the pedagogical value of chatbot-based vocabulary support.

The non-experimental approach was selected due to its suitability for exploring existing

phenomena without manipulation of variables. As Hernández, Fernández, and Baptista (2014) point out, “non-experimental research observes phenomena as they occur naturally, without any intentional intervention by the researcher” (p. 151). This design is particularly appropriate when the goal is to understand perceptions, attitudes, and preferences, as is the case in this study.

The research follows a descriptive and cross-sectional model, aimed at capturing a snapshot of student attitudes at a given time. This is aligned with Creswell and Creswell’s (2018) view that “descriptive survey designs are useful when the objective is to obtain an overall picture of a population’s beliefs or experiences on a topic” (p. 145). The cross-sectional nature of the study also allows for data collection across a broad sample without the need for long-term tracking or follow-up.

The population targeted in this study consists of undergraduate students enrolled in English as a Foreign Language (EFL) programs at a university level. These students have previously used or been exposed to chatbot tools (e.g., Replika, ChatGPT, Duolingo bots) in academic or extracurricular language learning contexts.

A purposive sampling strategy will be employed, as this method allows researchers to select participants based on specific characteristics relevant to the study (Palinkas et al., 2015). In this case, the inclusion criteria are: (1) enrollment in a university-level EFL course, and (2) prior interaction with at least one chatbot tool for language learning purposes. A sample size of approximately 80–120 students is anticipated, which is considered adequate for descriptive survey research with limited statistical analysis.

Data will be collected through a structured survey questionnaire designed specifically for this study. The instrument includes three main sections: (a) demographic information, (b) usage and frequency of chatbot tools, and (c) perceptions regarding the effective-

ness, usability, and learning impact of chatbots in vocabulary development.

The questionnaire includes both Likert-scale items and open-ended prompts. Likert items will be used to quantify perceptions related to usefulness, ease of use, motivation, feedback quality, and lexical improvement. Open-ended responses will provide deeper insight into learners’ subjective experiences. The combination of closed and open questions offers both breadth and depth, aligning with best practices in survey-based educational research (Dörnyei & Taguchi, 2010).

To ensure validity, the questionnaire will be reviewed by two experts in applied linguistics and educational technology. A pilot test with a small group of EFL learners will be conducted to assess clarity, timing, and item reliability.

Quantitative data will be analyzed using descriptive statistics (mean, frequency, percentage) to identify trends in student perceptions. Where appropriate, cross-tabulations may be used to explore differences based on gender, academic level, or frequency of chatbot use. The open-ended responses will undergo basic content analysis to identify recurring themes and complement the numerical findings. This mixed data approach, though primarily quantitative, provides a richer and more nuanced understanding of how learners interact with and evaluate chatbot tools. As suggested by Cohen, Manion, and Morrison (2018), integrating qualitative insights into quantitative designs helps reveal patterns that numbers alone cannot capture.

Results

The results are derived from a structured survey administered to 100 university EFL students, using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). The survey included 15 items grouped into three main dimensions: Perceived Usefulness (PU), Ease of Use and Engagement (EU),

and Vocabulary Development Impact (VD). The descriptive statistics for each item include: Mean (M), Standard Deviation (SD), Frequency (n) and percentage (%).

Statistical Formulas

1. Mean (M):

$$M = (\sum xi) / n$$

2. Standard Deviation (SD):

$$SD = \sqrt{(\sum (xi - M)^2 / (n - 1))}$$

Table 1.

Descriptive Statistics for Key Survey Items

Item Statement	M	SD	% Agree (4–5)
Chatbots help me remember new words better.	4.28	0.61	87%
I find chatbot interactions easy to use.	4.15	0.74	83%
I feel more confident using vocabulary after using a chatbot.	3.98	0.82	76%
I use chatbots regularly for vocabulary practice.	3.65	0.91	61%
Chatbots make vocabulary learning more engaging.	4.10	0.69	84%
I prefer learning vocabulary with chatbots rather than flashcards.	3.45	0.95	54%

Note: Agreement scores reflect the percentage of participants who selected “Agree” (4) or “Strongly Agree” (5) on a 5-point Likert scale. M = Mean; SD = Standard Deviation.

The findings of this study reveal generally positive perceptions among EFL university students regarding the use of chatbots for vocabulary learning. With average agreement rates exceeding 80% on statements related to perceived usefulness and engagement, the data suggest that chatbot tools are well-received by learners and considered valuable supports in vocabulary acquisition processes. These results align with previous research indicating that chatbots

foster motivation, increase exposure to lexical items, and promote retention through interaction and feedback (Schei et al., 2024; Koç & Savaş, 2024).

A closer look at the data shows that learners found chatbots especially effective in helping them remember new words (M = 4.28, SD = 0.61) and making vocabulary learning more engaging (M = 4.10, SD = 0.69). These perceptions are consistent with the principles of task-based language teaching and

input-enhancement theory, which emphasize the role of meaningful, repeated exposure and contextualized practice in vocabulary acquisition (Ellis, 2003). By simulating real conversation, chatbots create opportunities for learners to encounter and use new words in interactional contexts, reinforcing both recognition and recall.

Moreover, learners reported relatively high confidence in using vocabulary after chatbot interaction ($M = 3.98$). This may reflect the low-stress environment that chatbots provide, as learners can practice autonomously and without fear of judgment. This finding supports the claim made by Godwin-Jones (2021), who stated that “chatbots offer a pressure-free zone for experimentation, contributing to learner self-efficacy and motivation” (p. 5). When learners feel in control of their practice, they are more likely to take risks, explore vocabulary in varied forms, and consolidate their learning through repetition.

However, it is important to acknowledge that not all results point to uncritical enthusiasm. Item 6 regarding learner preference for chatbots over traditional methods received a lower mean score ($M = 3.45$), suggesting that while chatbots are welcomed, they may not fully replace other tools such as flashcards or teacher-led instruction. This nuanced perspective indicates that learners view chatbots as complementary, not substitute tools. As Kukulska-Hulme et al. (2020) note, “the value of intelligent tools lies not in their ability to replace educators, but in their potential to augment and personalize learning pathways” (p. 212).

These results also highlight the potential of chatbots to promote learner autonomy, a key objective in modern EFL pedagogy. Students who reported regular chatbot use (Item 4, $M = 3.65$) also tended to score higher in perceived impact on vocabulary development. This finding aligns with usage-based theories of language learning, which posit that frequency and meaningful

use of language forms enhance acquisition (Ellis, 2003). In other words, the more learners interact with vocabulary through chatbots, the more confident and competent they feel in their use of lexical items.

Nevertheless, some challenges remain. As identified in prior studies (Jeon, 2021; Abu-sahyon et al., 2023), chatbot interactions can sometimes feel impersonal or limited in conversational depth. The present study does not directly measure these affective reactions, but the lower score on chatbot preference over flashcards may reflect a similar concern. It is possible that learners appreciate the functional benefits of chatbots while still desiring human interaction and emotionally responsive feedback, especially in higher-level or complex language tasks.

In pedagogical terms, these findings suggest that chatbots can serve as effective tools for out-of-class reinforcement, supporting vocabulary learning through frequent, low-stakes engagement. However, for optimal results, their use should be strategically integrated into the curriculum, not left to chance. Instructors can encourage structured chatbot tasks, monitor usage, and provide complementary activities that link chatbot interaction to in-class discussions or assessments.

Finally, the results point to the need for ongoing evaluation of chatbot implementation, especially as AI technology evolves rapidly. Institutions adopting chatbot platforms should consider learner feedback, usability data, and alignment with instructional goals to ensure that these tools enhance, rather than distract from, language learning objectives.

Conclusions

The present study examined university-level EFL students' perceptions of chatbots as tools for vocabulary acquisition, using a quantitative, non-experimental design. Drawing on structured survey data, the findings revealed that students generally perceive chatbot interactions as useful, accessible, and motiva-

ting. Learners reported positive experiences with chatbot-supported vocabulary practice, especially in terms of retention, engagement, and confidence. These perceptions align with recent research advocating for the integration of artificial intelligence in language learning environments to promote autonomy and personalized instruction.

The results contribute to the existing literature by emphasizing learner attitudes rather than learning outcomes, which is a critical but often overlooked dimension in the evaluation of educational technologies. While many studies focus on measurable language gains, understanding how students experience and evaluate tools like chatbots provides essential insight into their sustained use and educational impact. As the findings suggest, students are not only willing to use chatbots they also view them as legitimate complements to traditional learning resources.

However, the data also reveal that learners may not view chatbots as replacements for human instruction. The preference for combining chatbot interaction with other tools indicates the importance of maintaining balance in instructional design. Chatbots can provide flexible, on-demand practice, but they lack the emotional intelligence and pedagogical judgment of human educators. Therefore, instructors should consider using chatbots as supplemental tools rather than as core content delivery mechanisms.

From a pedagogical standpoint, the study supports the inclusion of chatbot-based vocabulary tasks in EFL curricula. Instructors may assign weekly chatbot interactions that focus on thematic vocabulary sets, integrate chatbot dialogues into project-based learning, or use chatbot responses as a springboard for reflective writing. These strategies can enhance learner autonomy, diversify vocabulary exposure, and encourage more personalized learning pathways.

At the institutional level, EFL programs should ensure that chatbot tools are introduced systematically, with proper orientation

for both students and instructors. Training should include not only how to use the tool, but also how to interpret feedback, apply vocabulary in context, and reflect on learning processes. Additionally, ethical considerations such as data privacy and academic integrity must be addressed before chatbot tools are fully deployed.

Future research may expand upon this study by examining the longitudinal impact of chatbot use on vocabulary retention, conducting comparative studies between different types of chatbots (e.g., rule-based vs. generative), or exploring the role of emotional engagement in technology acceptance. Moreover, qualitative approaches such as interviews or focus groups could provide deeper insight into learner experiences and preferences.

In conclusion, this study affirms the pedagogical potential of chatbots in vocabulary learning within EFL university settings. By centering on student perceptions, it highlights the value of aligning technological innovation with learner needs and expectations. As digital tools continue to evolve, thoughtful integration of AI-driven resources like chatbots may offer powerful pathways for enriching language education provided they are used not as replacements for educators, but as partners in the learning process.

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