

**The Influence of an AI Conversational Agent on Students' Online
Engagement in an EFL Virtual Course**

María Paula Cárdenas Acosta

Thesis Director:

Ferney Cruz Arcila, Ph.D.

UNIVERSIDAD PEDAGÓGICA NACIONAL

FACULTAD DE HUMANIDADES

MAESTRÍA EN ENSEÑANZA DE LENGUAS EXTRANJERAS

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Abstract

This study explores the influence of an AI conversational agent on students' online engagement in an EFL virtual course at Tec Alianza, a Colombian higher education institution. The research emerged from the need to better understand the impact of AI-driven tools on engagement dimensions, particularly in contexts where low participation and discontinuity represent persistent challenges. The study was conducted with 29 adult participants enrolled in a foundational English course. The intervention involved the design and implementation of an AI agent to provide academic support, guidance, practice, and feedback throughout a one-month course.

Qualitative data analysis collected by means of semi-structured interviews, field notes, an engagement scale, interaction logs, and a final LMS report, revealed that the AI agent positively contributed to behavioral, emotional, and cognitive engagement by promoting accessibility, continuity, and pedagogical accompaniment. However, the study also identified limitations regarding the depth of interaction, a lack of social engagement and less efficiency at promoting deep cognitive engagement processes. Overall, this thesis contributes to discussions about the pedagogical integration of AI in language learning contexts.

Keywords: Artificial Intelligence (AI), AI agents, online engagement, EFL learning.

Resumen

Este estudio explora la influencia de un agente conversacional de inteligencia artificial (IA) en el engagement en línea de los estudiantes dentro de un curso virtual de inglés como lengua extranjera (EFL) en TEC Alianza, una institución colombiana de educación superior. La investigación surgió de la necesidad de comprender mejor el impacto de las herramientas impulsadas por IA sobre las dimensiones del engagement, particularmente en contextos donde la baja participación y la discontinuidad representan desafíos persistentes. El estudio fue desarrollado con 29 participantes adultos matriculados en un curso básico de fundamentación en inglés. La intervención consistió en el diseño e implementación de un agente de IA con el propósito de proporcionar apoyo académico, orientación, práctica y retroalimentación a lo largo de un curso de un mes.

El análisis cualitativo de los datos, recolectados mediante entrevistas semiestructuradas, notas de campo, una escala de engagement, registros de interacción y un reporte final del LMS, reveló que el agente de IA contribuyó positivamente al engagement conductual, emocional y cognitivo al promover accesibilidad, continuidad y acompañamiento pedagógico. Sin embargo, el estudio también identificó limitaciones relacionadas con la profundidad de la interacción, la ausencia de engagement social y una menor efectividad para promover procesos de engagement cognitivo profundo. En términos generales, esta tesis contribuye a las discusiones sobre la integración pedagógica de la inteligencia artificial en contextos de aprendizaje de lenguas.

Palabras clave: Inteligencia Artificial (IA), agentes de IA, engagement en línea, aprendizaje de inglés como lengua extranjera (EFL).

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CHAPTER I: INTRODUCTION

This chapter presents the general overview of the research study, and contextualizes the educational environment where the study emerged, particularly the challenges associated with student engagement, participation and continuity in English courses at Tec Alianza. Additionally, it addresses the relevance and need for exploring AI-driven tools in virtual language learning settings. Finally, the research questions and objectives that guided this implementation are presented.

1.1 Introduction

The rapid development of artificial intelligence has generated growing interest and concern about its potential role within educational contexts, particularly in virtual education, where communication, interaction and student accompaniment are frequently described as pedagogical challenges. As Holmes et al. (2022) claim, AI integration is a transformative element in learning environments as it enhances personalization, interaction and support, while simultaneously raising concerns about human presence and the role of teachers in digital learning.

In EFL contexts, virtual learning environments demand students to autonomously engage with the course content while managing limited interaction opportunities, delayed feedback, and reduced participation. In this regard, the appearance of AI systems has introduced new possibilities for supporting guidance, feedback, and learning engagement beyond classroom boundaries. Recent studies have emphasized not only AI integration technological capabilities, but also its impact on motivation, participation, and learning experiences (Fang, 2025; Xue & Wang, 2024; Zhou & Hou, 2024).

Nonetheless, despite the growing implementation of AI tools in learning environments, there is still a need for more qualitative research exploring how students experience these technologies within real educational contexts. Particularly, little attention has been given to understanding how AI personalized conversational agents influence the multidimensional nature of engagement in virtual learning environments, where emotional, cognitive, social, and behavioral participation represent a crucial aspect in the learning process.

This study emerges from this previous need as well as contextual demands of an educational institution where limited interaction, lower participation, and high dropout rates have been recurrent concerns in EFL learning courses. The intervention was designed to allow students to have access to continuous guidance, academic support, conversational practice and clarification, reminders, and feedback delivered through a familiar digital environment. Additionally, this study approached AI as a complementary pedagogical support mechanism able of extending accompaniment beyond synchronous classes and institutional learning management systems.

This research takes a qualitative perspective to examine students' perceptions, experiences, and interactions with the AI agent to analyze its impact on online engagement and explore other pedagogical implications. This study delved into the AI agent's influence on engagement dimensions throughout an online EFL course, while examining the possibilities, tensions, limitations and challenges associated with the integration of AI driven tools in language learning environments.

Taken together, this study contributes to current discussions regarding the integration of AI in language education through a descriptive and reflective exploration of students' experiences and processes with an AI agent that was specifically designed for the purposes of this study. By exploring the potential possibilities and tensions of a

conversational AI agent in an online EFL course, this research seeks to provide pedagogical and research-centered insights into the role of emerging technologies in shaping engagement within modern language environments and the challenges that these environments entail.

1.2 Statement of the problem

In response to the arrival of the COVID-19 pandemic, educational institutions have opted to integrate virtual learning as part of their academic programs. Although the transition to online education was challenging at the beginning, throughout the years of adaptation, it has been established as an essential component of any course, especially in terms of foreign language learning, making a shift back to traditional methods unlikely. An increasing number of academies are offering online courses through LMS (Learning Management Systems) like Brightspace, allowing students to autonomously learn, manage their progress, and, in certain scenarios, have virtual classes to complement these courses. Nonetheless, this rapid change has brought evident inconvenience for EFL learning, especially for short-term courses, in which high dropout rates and low engagement are noticeable. Alamri et al. (2020) note that even though millions of learners enroll in MOOCs (Massive Open Online Courses), fewer than 10% complete the course despite multiple research efforts to identify and understand the causes and effectively respond to the problem.

This phenomenon is observable in online English language courses at Tec Alianza, an education initiative in Colombia that started operating in January 2026. It seeks to combine the academic excellence of Universidad de los Andes with the productivity ecosystem of Colsubsidio (a Colombian family compensation fund) to offer educational opportunities that foster employability and continuous learning while promoting productive and professional competencies among students (Colsubsidio n.d).

In alignment with the company's mission, English courses are offered, aiming to enhance academic and professional opportunities to adult learners seeking a job¹ and employees who get the courses as a corporate benefit from different partner companies. The courses range from beginner to pre-intermediate and are aligned to the Common European Framework of Reference for Languages (CEFR).

Tec Alianza offers 7 English courses (48 hours each) from pre-A1 to A2 levels, the courses emphasize a structured progression that is coherent and clear for the students and educators. The students attend three synchronous classes a week (3 hours each) and one independent session to promote autonomous learning. The courses rely on the Connect platform and the Ellevate instructional resources developed by McGraw-Hill. In class, students work on skill-integrated activities, while independent work consists of completing Online activities on the platform, preparing for assessments, and working on final projects. All these components are part of the assessment model in which at least 60% average in students' grades is necessary to obtain the certificate and continue with the training process.

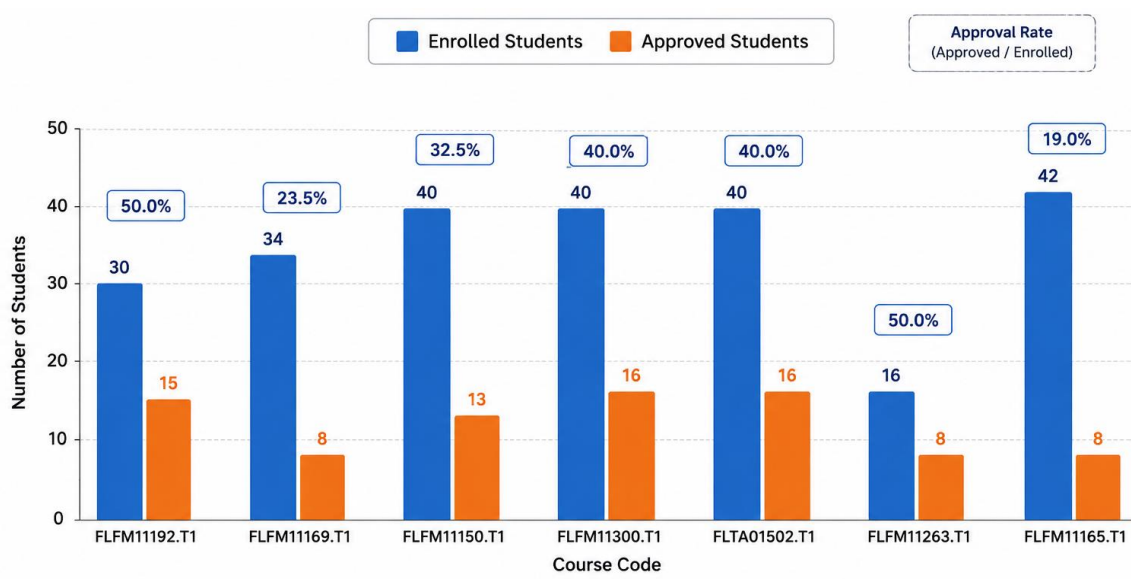
However, despite this structure and the integration of different resources and synchronous classes, maintaining students' participation and continuity has become a significant challenge at Tec Alianza. In particular, students struggle to complete assignments on the LMS and attend synchronous classes. Given that these live sessions are not mandatory, students tend to be absent, contributing to low engagement, reduced course completion rates, and ineffective learning processes. Additionally, practitioners within the organization have identified that English courses are the most affected by low completion rates and, nonetheless, the most in-demand modules. The next figure shows

¹ Not all students are unemployed, as some are in the process of joining a company or have already started a job by the time the course begins.

data collected from 7 random English courses at Tec Alianza, from February to April, evidencing that most courses did not achieve approval rates above 50%. On the contrary, several courses presented low rates ranging between 19% and 40% of approvals, which reflects the significant challenge regarding course completion.

Figure 1.

Students enrolled vs students approved



Colsubsidio has tried to deal with the worrying dropout rate in the English courses by designing and implementing different strategies that facilitate students' participation on the platform and completion of the courses, namely: group synchronous classes from Monday to Friday, class recordings available on the LMS, and call center intervention periodically, at least once throughout the course. However, despite the existing efforts, the lack of involvement in the courses is still alarming.

The new methodological framework presents higher demands in terms of direct instruction and autonomous work; it highlights the importance of autonomy without contemplating the underlying issue of lack of engagement. Holec (1981) states that autonomy is an ability that requires preparation, awareness, and reflection. Hence,

learners' autonomy requires training and time, it is not an inherent trait and increasing workload might cause students to feel overwhelmed and drop out.

Objectively, the new design presents a more organized, clear, and gradual structure, but students have previously mentioned having issues when balancing their academic, employment, and personal responsibilities. For instance, when asked about their lack of engagement in platform activities or online classes, students commonly highlight reasons such as having issues navigating the platform, not having enough time, scheduling conflicts, etc. As it may be observed in the next table taken from the call center reports sent to the teachers.

Table 1.

Students' response after the Call Center's contact

Gestión de contacto telefónico	Número de estudiantes
Atraso en actividades	26
Cuelga llamada	19
Desiste de continuar con la formación	11
Estudiante al día	20
Estudiante refiere falta de tiempo(*Estudio)	9
Estudiante refiere falta de tiempo(*Trabajo)	15
Fallas en la comunicación	3
Manejo de plataforma	23
Mensaje con tercero	3
Modalidad de estudio	1
No Contesta	39
No cuenta con disponibilidad	10
No desea ser contactado	1
Volver a Llamar	20
Total general	200

Note: Data retrieved from the Call Center area's *Reporte de Gestión de Seguimiento* (September, 2025). Internal documents shared with teachers.

In this report, it is noteworthy how a significant number of students simply did not answer, rejected the call, or disconnected when contacted by the Corporation.

Bauman (2000) explains this behavior as a characteristic of liquid modern life, in which there are no permanent bonds, and any type of commitment is intentionally kept loose so it can be easily abandoned when the circumstances change, demonstrating that students' struggles with engagement are not only pedagogical, but also sociological.

One of the limitations found is related to the inconsistent and impersonal contact, as the call center area must work not only with the English Courses, but also with the entire company's portfolio, delaying and interfering with the EFL courses contact process. Additionally, a significant language barrier arises as call centers themselves have reported limited proficiency in English. This constraint impedes agents from providing accurate and detailed information about the course content, topics, activities and requirements. For instant, one of the call center's tasks is to guide the student through the registration on digital platforms; however, McGraw-Hill's platform is entirely in English, which makes it challenging for agents to provide effective guidance. Consequently, there is a need to personalize EFL students' interactions and automate manual tasks that commonly demand a high amount of time and work.

Equally important, the role of teachers in students' retention is most often limited to synchronous classes. Teachers only get a report providing information about a few students who have not participated in the course; even so, most students do not answer the call or simply reject it. Phone calls are sometimes considered intrusive, and in certain scenarios, students are unable to respond due to different duties or professional obligations, finishing the contact process without further assisting the student or acknowledging absenteeism reasons. In prior studies in online education,

phone calls proved to be inefficient as students were frequently reluctant to take the calls, reducing the practicality of the method (Muñoz, et al., 2017).

Teachers play a crucial role in encouraging engagement, promoting meaningful learning experiences and acting as socio-emotional support for students. Nonetheless, in the new model, the teacher's presence seems to diminish gradually while autonomous work increases. Although the main goal is to increase the students' independence, the lack of teachers' guidance might be detrimental to students' progress and weaken engagement and persistence. Deci and Ryan (2017) claim that motivation and engagement are fostered when the teacher supports learners' autonomy and competence.

The engagement challenge intensifies when teachers' re-hiring processes highly depend on quantitative metrics and approval rates. Every quarter, teachers are evaluated not only on the quality of their synchronous classes but also on the results of students' surveys, and institutional indicators such as absenteeism, dropout, and approval rates. In addition to the common pedagogical assignments teachers have, they are expected to undertake tasks such as attempting to reintegrate students who never show up and consequently do not complete the module. This leads to teachers investing considerable time and effort trying to contact learners who, in most cases, may be unwilling or unable to re-enroll. Such responsibilities take attention away from teaching, as time is redirected toward administrative tasks rather than pedagogical practices that enhance learning, such as lesson planning or providing meaningful feedback (Kim, 2019).

Building upon this limitation, and considering recurrent challenges and drawbacks that high dropout rates represent for the company and the students, it is essential to explore alternative solutions that take advantage of the rapid technological growth, promoting students' engagement on LMS platforms and allowing higher completion rates. Accordingly, this study proposes the integration of AI-driven

solutions to decrease the above-mentioned problems and keep students engaged while providing the teacher with a closer approach to their students' progress and status in the courses.

According to Hew and Cheung (2014), although multiple strategies have been implemented to decrease dropout rates in video-based instruction courses or MOOCs, it is challenging to keep students' attention and engagement, as online learning doesn't offer the same interactions as those in face-to-face classrooms. Therefore, creating more interactive and participatory strategies to improve retention and increase engagement is essential, especially when in-person instruction is not comparable to online learning.

These challenges become even more significant in EFL online learning contexts, where engagement is a key factor for students' successful learning and course completion. Alshammari and Alrashidi (2024) claim that, in LMS English courses, students who have a higher level of engagement in online tasks tend to have better academic achievement. This clearly shows that, even though new technologies allow the students to be autonomous in their processes, the lack of constant guidance and close follow-up has hindered students' participation and completion rates. Consequently, EFL learners require ongoing interaction, motivation, and exposure to the language, especially adult learners who juggle with multiple responsibilities and whose engagement in EFL courses is highly affected by external and social factors.

According to Hachey, Wladis, and Conway (2023), work, family, and other academic responsibilities significantly impact students' motivation and increase dropout rates. Therefore, there is an increasing need for designing strategies that support learners' autonomy and engage them in online virtual courses, not only because completion rates represent the financial sustainability of the company, but also because it is essential to guarantee high-quality education and effective EFL learning in virtual

environments. From a sociological perspective, Bauman (2000) states that in liquid modernity, institutions and communities that used to give people stability are weaker, making it difficult to maintain long-term bonds or keep commitments when completing online EFL courses. As bonds become weaker, responsibilities increase and individuals are required to handle education, careers, and relationships all together, preventing them from achieving personal goals they are pursuing.

The fragility of online environments creates a weak sense of community, one of the main characteristics of the liquid society, reinforced by the absence of the teacher's presence and a proper follow-up. As a result, even if online learning provides a flexible schedule, self-paced learning, and students' autonomy, learners struggle to keep engaged and reach their goals. According to Bauman (2000), as social structures are becoming unstable, more responsibility is placed on individuals, leading to less regular guidance and support from a community. In Tec Alianza, students are expected to manage their own learning, work on plenty of assignments autonomously, explore the platform individually, and manage their study schedule. Although this flexibility might appear beneficial at first, many students are used to having continuous guidance, monitoring and presence of a teacher to lead the learning process. The lack of clear structure and teachers' guidance, as suggested by Moore (1993), results in reduced engagement, disorientation and poor performance.

In response to these challenges, recent studies have highlighted the potential benefits of AI-driven tools to enhance engagement in different learning environments. Studies on AI chatbots and conversational systems have demonstrated positive effects on different dimensions of online engagement due to personalized interaction, immediate feedback and continuous support (Xue & Wang, 2024; Ma & Chen, 2024; Fang, 2025). These findings suggest that AI initiatives might support EFL contexts

where low participation, reduced completion rates, and limited interaction are persistent challenges.

Despite these advancements, the effects of implementing AI-driven tools in short-term online courses for adult learners, remain largely unexplored. Most studies focus on blended or face-to-face contexts; fewer studies analyze how AI tools may influence engagement in fully online courses with flexible attendance and autonomous learning. Consequently, to address the aforementioned issues, it is necessary to reconsider the current approach of engaging students at Tec Alianza and explore new technologies as the integration of AI-powered tools to enhance learning, promote engagement, and improve completion rates. In this sense, adopting AI tools may contribute to creating more dynamic, effective, and engaging learning processes that evolve according to teachers' and students' needs.

1.3 Research question

How does the design and implementation of an AI conversational agent impact online engagement in LMS-based EFL online courses, offered to adult students by Tec Alianza?

1.4 General objective:

To analyze the potential impact of the design and implementation of an AI conversational agent on online engagement of adult students in LMS-based EFL online courses at Tec Alianza.

1.5 Specific objectives:

1. To examine the pedagogical potential of adopting an AI conversational agent in an LMS-based EFL online course.

2. To identify the limitations associated with the implementation of an AI conversational agent to support an LMS-based EFL online course.
3. To explore the possible relationship between the use of AI agents and students' continuity in an LMS-based EFL online course.

1.6 Rationale

Proposing an AI-powered agent to address students' disengagement responds to administrative and pedagogical needs, and teachers' administrative demands and challenges. It is thought of as a resource to act within the liquid modernity; it is a support mechanism that aims to make students successfully complete their courses and be as flexible and adaptable as modern times demand. Additionally, it seeks to enhance students' learning processes and optimize teachers' time and efforts. By no means, the present study attempts to solve the instability and fluidity of modern society, but it is framed by liquid modernity, and the stated problem of students' disengagement and high dropout rates is a symptom of it. Implementing the AI tool seeks to be a stabilizing mechanism in a system that lacks structure.

Additionally, dropout in online courses represents significant challenges in academic and institutional terms. Students who do not certify their EFL learning processes are given fewer opportunities in the work market as English is an essential requirement in society. Moreover, when academic institutions present high dropout rates in their programs, they diminish funding, credibility, and sustainability. As stated by Shaikh and Asif (2022), dropout creates frustration and loss of confidence in students, representing potential issues with quality, inadequacy, financial implausibility, and harm in the institution's reputation.

In Colombia, the Ministry of Education (2014) underlines the importance of having platforms and content that facilitate students' interaction with peers and teachers in synchronous and asynchronous contexts. Nevertheless, in practice, students are supposed to explore the contents of the courses independently, causing discouragement when trying to understand activities or not knowing how to manage the platform, consequently leading to disengagement and non-completion of the courses Grace et al (2025) emphasize that the main benefit of using an AI chatbot is the increased engagement and motivation of students, demonstrating that the use of AI messaging systems could tackle this sense of abandonment and disconnection in online learning environments.

From a research perspective, this study might contribute to the current discussions on the integration of artificial intelligence in online EFL learning contexts. Particularly, in Latin American and adult learning environments, that remain underrepresented in existing studies. Additionally, this initiative attempts to provide a qualitative understanding of how students perceive AI-driven interaction and how this might influence engagement and persistence in short-term online courses. This is particularly relevant as most existing research on AI and engagement is predominantly quantitative and focuses on measuring outcomes rather than describing and understanding students' perceptions and experiences.

Beyond its potential academic contribution, developing this project as a teacher-researcher will help me grow professionally and pedagogically. By examining the role of AI and emerging technologies on language learning in online environments, I will have the opportunity to critically evaluate digital tools from pedagogical and ethical perspectives, understanding their benefits, limitations, and impact on students' engagement and learning processes. Moreover, through this process, I will have a better

understanding of students' motivations, behaviors and learning patterns, allowing me to create more personalized interventions. Besides, the results of this study might contribute to institutional innovation since it offers a model of how AI-mediated communication could improve dropout rates and overall quality of learning experiences at Tec Alianza.

CHAPTER II

Theoretical Foundations

This section presents the theoretical constructs that support the development of this project. It opens with an overview of studies that have been done around the topic of AI implementation in EFL courses and its impact on engagement, dropout, and learning. Then, key concepts are described and defined to examine the impact of adopting an AI messaging system on dropout rates and the enhancement of behavioral and emotional engagement in LMS-based EFL online courses.

2.1 Literature review

The recent and growing integration of AI into education and EFL courses has resulted in opportunities to predict and prevent dropouts in different contexts and foster academic engagement in online and in-person interactions. Although the majority of empirical evidence has been generated in Asian, European, and North American settings, an emerging body of research in Colombia and Latin America highlights similar opportunities associated with AI, virtual education, and technology-driven language learning. Nonetheless, there are still relevant challenges, limitations, and research gaps that are necessary to address. This literature review aims to summarize the most relevant contributions, methodologies, and findings that emerge when analyzing AI interventions in education.

2.1.1 AI Tools and Students' Engagement in EFL/ESL Learning

A considerable number of studies have examined the impact of different AI tools on students' engagement in the context of EFL learning. Highlighting AI as an effective tool to foster students' motivation, participation, engagement, and persistence in online and face-to-face courses.

Recent research suggests that Chatbots and different AI tools play a relevant role in enhancing students' engagement by providing personalized, interactive, and immediate support. Xue and Wang Y. (2024) in their article *Using AI-driven chatbots to foster Chinese EFL students' academic engagement: An intervention study*, follow a pretest-posttest control group design that involves 113 Chinese English major students divided into an experimental group and a control group. The results show a significant increase in students' behavioral, cognitive, and emotional engagement among the students in the experimental group, demonstrating that AI chatbots are able to provide instant, personalized, and interactive feedback that fosters motivation and engagement. Further evidence from similar populations supports these findings. For instance, Ma and Chen (2024), in their Quasi Experimental Study, found a significant increase in all engagement levels and a reduction of academic procrastination among 350 first-year undergraduate students at Foshan University, proving that AI tools boost learners' involvement in coursework and regular participation in academic activities.

While experimental studies put into evidence the effectiveness of AI, further research offers a nuanced view of how these technologies function in real learning environments. Alongside these findings, Fang (2025) employed a mixed-methods approach to examine the role of AI tools in enhancing students' engagement and motivation. The results indicate that personalized feedback and real-time corrections encourage participation, while the interactive nature of these tools promotes engagement among the students. Additionally, the author highlights the importance of balancing AI resources and traditional methods to avoid over-reliance on AI tools and align with pedagogical objectives. These findings remind us that despite AI's great potential, it is necessary to have an effective pedagogical integration to avoid hindering learning processes.

Evidence from Latin American research supports the relationship between AI integration and engagement. Santos et al. (2026) explored the use of an AI-mediated Socratic dialogue to support student engagement and learning in a university in Mexico. Findings indicated that the integration of ChatGPT to encourage students to question, reason, and reflect supported their engagement and improved their perceptions of learning. These results provide factual evidence in a Latin country that AI may positively contribute to students' engagement when it is incorporated purposefully.

While Santos et al. (2026) explored how AI may foster engagement, Torres et al. (2026) focused on students' actual behaviors when using generative AI for completing academic tasks. Their study analyzed data from high school and university students and teachers. The authors focused their study on three behaviors: reading AI-generated responses, modifying the outputs, and incorporating students' own ideas. Their results evidenced high engagement levels, especially in university students who tended to interact and adapt AI-content, rather than simply copying it. Nonetheless, there was not a strong indicator that shows a connection between students' perceived learning and their engagement behaviors. These findings are relevant because they show the need to implement other sources of data beyond students' perceptions to have a clearer understanding of their engagement patterns.

Recent research in Chile broadens the previous perspective by integrating emotional, cognitive, and ethical experiences that relate to AI-supported learning. Pedraja et al. (2026) examined the relationship between AI and student engagement with engineering students at a university in Chile. By using a mixed-method approach, results show that students generally perceived AI as useful for saving time, understanding concepts, and improving their academic tasks. Despite the positive reactions, students also expressed concern about plagiarism, dependance, and reliability

of AI content. Taken together, these findings highlight that engagement levels vary depending on how cognitively and emotionally students experience AI integration into their learning process. This perspective is particularly useful for this study as it understands engagement as a multidimensional concept rather than exclusively observable participation.

A related perspective can be found in the Colombian context. In a study with undergraduate students from the Caribbean, Solano et al. (2024) found that AI tools such as ChatGPT were perceived as valuable resources to support learning, improve interaction, and facilitate access to information. At the same time, students raised concerns about becoming overly dependent on AI and mentioned the need for responsible pedagogical integration. These findings suggest that the challenges and benefits of AI integration extend beyond Asian and European contexts and are also evident in Colombian higher education.

AI implementation has proven useful in enhancing engagement in different contexts. Wang Y. and Guo (2025) focus their mixed-methods study on the application of AI technologies in EFL literature classes. The authors implemented Bodoudou, a gamification tool, and chatbots like ChatGPT and Wenxin Yiyuan to help students enhance literature appreciation, analyze literary texts, promote reflective thinking and above all, determine how emotions can influence academic engagement. By analyzing students' positive and negative emotions towards this implementation, results indicated improvements in emotional, social, and cognitive engagement levels. However, there was no significant effect on behavioral engagement, which the authors attributed to the lack of clarity between cognitive and behavioral engagement. As behavioral engagement is the main dimension selected for the current study, it is necessary to

evaluate whether and to what extent AI interventions might be beneficial in enhancing it.

Even though previous research suggests positive effects of AI integration on different engagement dimensions, they also reveal a need for further research about potential limitations. In this regard, Zhou and Hou (2024) examine the influence of AI applications on behavioral, cognitive, and emotional engagement levels of students and teachers, emphasizing that not only students' engagement is necessary, but also the teachers' involvement and commitment are essential for learners' academic achievement. The authors conclude that AI implementation, based on students' perceptions, has positive effects such as lightening teachers' workload, making classes more efficient, and providing richer content for the course. However, a smaller group of participants expressed a sense of insecurity due to the rapid and continued advancement of AI in education. Meanwhile, most learners evidenced enhanced learning efficiency and reduced pressure, although some pointed out risks as overreliance on AI, issues with incorrect information, and faulty translation. In the context of this research, the abovementioned benefits and risks will be considered and discussed in the interpretation of the results.

Research conducted in Colombia also highlights the importance of integrating AI tools in educational contexts as pedagogical tools, rather than as a replacement for teaching Ojeda et al. (2023), reported that AI tools in higher education may support knowledge construction, access to information, and encourage interaction between instructors and learners. Nonetheless, the authors mention that these benefits depend on how educators incorporate AI tools into their practices. Therefore, instead of replacing the teacher, AI should complement and enhance the learning experience. This perspective aligns with the findings of Zhou and Hou (2024), who emphasize that the

success of AI integration not only depends on the tool itself, but on thoughtful instructional design and students' responsible use.

Additionally, recent research has begun to explore the use of AI in EFL learning. Norena (2025) implemented AI-supported activities to contribute to the development of speaking and listening skills. Likewise, Artunduaga (2026) examined students' perceptions of AI in EFL learning and concluded that learners valued its immediacy and accessibility, while raising concerns related to inaccuracy, dependency, and the need for teacher's guidance. Taken together, these findings show the potential of AI in the context of EFL learning, although they address language development and perceptions rather than the design and implementation of AI to foster engagement and learning. This distinction is particularly relevant for the present study.

Despite these advancements, most studies demonstrate that the impact of AI communication tools on engagement levels in short-term, fully online courses remains largely underexplored, as most contexts are based on face-to-face learning and results might differ. Moreover, since most studies have been conducted exclusively with university students, there is an existing need to assess the impact of AI-driven tools in different populations, such as adult learners focused on English for productivity and employability, contexts addressed in the current research.

In line with this need, Fang's study (2025) states the relevance of sociocultural contexts and individual differences in selecting the most appropriate AI method. In the present research, AI is integrated through a WhatsApp messaging system selected for its familiarity, user-friendly design and compatibility with low-end devices and limited bandwidth that the application offers, considering participants' different backgrounds and needs.

2.1.2 AI-driven tools and Dropout in education

Research on AI to address students' dropout has emerged in Colombia, although it has focused on identifying and predicting students at risk. Brand et al. (2024) developed an AI web application at SENA to identify students with high probability of dropout and offer support from the institution's Student Welfare Department. This study demonstrated the potential of AI at identifying early patterns with an accuracy of 91%. Nonetheless, the system was designed as a predictive mechanism, rather than a direct intervention on students' engagement.

Similarly, Califa et al. (2026) developed an AI-based system for the identification of students at risk of dropout in a Colombian higher education context. The study used academic, sociodemographic, and contextual data to identify patterns associated with student dropout. They were able to identify students at risk with a high level of accuracy, allowing the development of measurements and assistance for these students. However, this study remains primarily predictive, although it reinforces the growing interest in Colombia in using AI to support educational contexts.

Furthermore, in regard to the impact of AI-powered tools in an online TAGI course (Towards Artificial General Intelligence), in their qualitative and empirical study, Wang et al. (2025) designed an AI system capable of predicting dropouts and implemented an e-mail-based messaging strategy using AI to re-engage students. Data suggests that personalized e-mails sent to students based on previous interactions and interests led to a significant increase in logins. This study is particularly useful for the purpose of the current one as it demonstrates that AI systems can not only predict course desertion but also intervene and act on students' dropout levels.

Likewise, Elbouknify et al. (2025) developed an AI predictive framework to identify students at risk and provide early interventions in a large-scale dataset from the Moroccan Ministry of National Education. The model proved to be highly accurate and allowed to identify dropout patterns, enabling a personalized intervention to avoid dropout. The large data from the study positions this framework as a generalizable and adaptable model that can be applied beyond the Moroccan context. Building on this study, Rodrigues et al. (2024) offer a systematic overview of AI studies for dropout prediction. The authors examine 23 studies and conclude that most models report high accuracy levels of prediction, but acknowledge the need to integrate more academic, socioeconomic, and psychological variables.

As may be observed, these studies on dropout rates are mainly about prediction and there is a lack of research on specific EFL online courses. Additionally, the quantitative aspect of them limits the depth of subjective variables analysis that might be causing students to abandon the courses. It is relevant to highlight that the current research does not intend to predict dropout rates but to create a tool to engage students, aiming to consequently reduce dropouts.

Expanding this line of research, the present study integrates an AI system to WhatsApp as the main messaging platform, aiming to get closer to the students and enhance engagement and participation on the LMS. This initiative directly responds to the current gap in literature, as most studies on AI-driven tools to tackle students' engagement and dropout rates show that there is a lack of intervention in which AI tools have been both designed and implemented by the teacher.

In light of these research gaps, the present study not only attempts to design a local and teacher-led intervention, but it also aims to critically reflect on the process of designing and implementing an AI tool within the context of online language learning.

To this end, the present study integrates a personalized AI system, purposefully designed by the researcher, through WhatsApp as the main messaging platform, aiming to get closer to the students and enhance engagement and participation on the LMS.

Along with this, a critical perspective on the use of AI remains absent or superficially addressed in the previous studies found, highlighting the need to explore not only the positive impact of AI implementation in the classroom, but also ethical, pedagogical, and practical implications that consider the conditions of a liquid society as well as teachers' and students' perceptions towards its inclusion. In addition, no studies specifically centered on the Colombian context were identified, highlighting a need for studies that consider localized realities of EFL learning processes.

2.2 Theoretical framework

In this section, the theoretical constructs that support this study are defined and contextualized. The discussion includes the theoretical grounding necessary to understand Engagement and Artificial Intelligence as presented in this project.

2.2.1 Online Engagement

With the arrival and expansion of online education, institutions have faced multiple challenges, particularly regarding student engagement. Maintaining learners' motivation, connection, and participation has become significantly more difficult compared to in-person environments. As Meyer (2014) states, online contexts tend to demand more time and attention from students and offer fewer opportunities to connect with the institutions; therefore, it is more critical to work on strategies that develop engagement than in face-to-face settings. Moreover, as proven by different researchers (e.g., Fredricks et al., 2004; Jimerson et al., 2003; Bond et al., 2020), engagement includes more than simple participation in a course; it is associated with behavioral

efforts, emotional connections, and cognitive strategies. Therefore, by promoting engagement in the online classroom, teachers and institutions can develop meaningful strategies that facilitate learning, foster academic success, and support teachers' pedagogical practices.

Scholars have defined engagement from different perspectives. Marks (2000) links engagement to students' success, since this is a psychological process that involves interest, attention, investment, and effort students expend in the work of learning (p. 155). The author highlights that students who are engaged have higher possibilities of learning and perceive it as a rewarding process, which fosters them to complete their schooling and access higher education. When students show limited investment, the continuity in academic programs is affected. Aspects such as poor attendance, low participation, lack of motivation and persistence make students more prone to dropping out of courses. Hence, engagement is not only an indicator of students' involvement but also a warning for future dropouts.

Fredricks et al. (2004) define school engagement as a multidimensional model, comprising behavioral, emotional, and cognitive engagement. These three dimensions interact dynamically rather than working as isolated processes. Behavioral engagement refers to students' participation, effort, and persistence in academic tasks, and it has been a clear indicator of students' dropout. Emotional engagement encompasses students' affective reactions to teachers, peers, and academic institutions, influencing their sense of belonging. Finally, cognitive engagement involves students' investment in learning, their use of self-regulation processes, and learning strategies. Together, these components offer a clear understanding of how students interact with different learning contexts and how external factors may influence their participation in EFL tasks, completion of online courses, and mitigate the risk of dropout.

Developing this perspective further, and as the concept of engagement has a variety of possible meanings and understandings, Redmond et al. (2018) create a theoretical framework defining the concept of *online student engagement* and highlight five elements of engagement that include the three abovementioned dimensions.

Behavioral engagement includes participation, submitting assignments, following rules, and demonstrating self-regulation in the process. According to Appleton, Christenson, and Furlong (2008), learners who show behavioral engagement, effort, and active participation on tasks are less prone to disengage and drop out. Cognitive engagement refers to learning processes and how students think critically, integrate ideas, justify their decisions, and master challenging tasks. Social engagement involves the relationships that are built in a virtual community, and how these impact students' motivation and commitment. Emotional engagement refers to students' emotional responses towards learning, feelings, attitudes, and aspects such as motivation, commitment, and management of expectations and emotions through the language process. Finally, collaborative engagement is about the various networks that promote learning, including relationships with peers, teachers, and academic institutions.

Expanding on this point, Kahu's framework (2013) defines student engagement as a multidimensional and dynamic process that covers behavioral, affective, and cognitive dimensions, similar to the previous approaches. Rather than treating engagement as an individual trait of students, Kahu argues that engagement is a continuous process shaped by the interaction with the learning environment. One of the most important contributions of this proposal is the emphasis on emotional engagement, stating that the emotional weight attached to the learning experience is usually ignored, but that affective responses from students, such as feelings of belonging, interest, and

motivation, are key to understanding how students connect to their educational contexts and keep their involvement and participation in the courses over time.

Emotional engagement constitutes the affective facet of learning and considers feelings, attitudes, and emotional responses that impact how connected students feel with the language and with the learning process. Dixson (2015) states that in online courses, the way students feel about the process, their peers, the instructor, and the content correlates with their engagement, motivation, and persistence. Given that online contexts may create feelings of disconnection and isolation, fostering positive emotions is particularly relevant.

In this study, student engagement is defined following the multidimensional model developed by Redmond et al (2018). This model is selected due to the explicit focus on online environments. Nonetheless, while Redmond et al. distinguish between social and collaborative engagement, for the purpose of this study these two dimensions are integrated into a single category: Social engagement. In online environments, the boundaries between social and collaborative engagement are blurred, as most collaborative actions require social exchanges.

To summarize, engagement is a crucial indicator of how students experience and connect with their learning process, making it a necessary concept to understand their involvement and academic success. Although engagement has been defined as a multidimensional construct, this study takes a focused approach and highlights behavioral and emotional dimensions, which are particularly relevant to the research context. This definition allows interpretation of how students participate in the courses and how emotional aspects intervene in the learning experience.

2.2.2 Foundations of AI

In today's world, defining such a broad concept as Artificial Intelligence presents some evident challenges since it works as an umbrella concept for multiple purposes. Professor John McCarthy, one of the founding fathers of Artificial Intelligence, defines it as “the science and engineering of making intelligent machines, especially intelligent computer programs. It is related to the similar task of using computers to understand human intelligence, but AI does not have to confine itself to methods that are biologically observable” (McCarthy, 2004, para. 1). This definition is highly relevant as it includes a theoretical understanding of intelligence and positions it as a science, but it also states the practical goal of building programs that solve real-world problems when calling it engineering. Additionally, it emphasizes that AI does not have to function in the exact way the human brain does, nor does it need to follow natural or biological processes; instead, it can rely on computational or mathematical methods to reach so-called intelligence.

More contemporary studies offer a systematic perspective of how AI operates, depending on whether it is compared to humans or ideal rationality. Russell and Norvig (2021) organize these perspectives into four different categories:

1. Acting humanly: One of the primary and most classic ways of defining AI is wondering whether it can behave like a human. The Turing Test, proposed by Alan Turing, states that if a computer is able to establish a conversation with a human and that human cannot tell they are speaking to a machine, that machine must be considered intelligent. This perspective is behavior-oriented, and AI would require abilities such as natural language processing, reasoning, knowledge representation, and machine learning.

2. Thinking humanly: this perspective goes beyond copying human behavior, since it aims to recreate how humans solve problems, remember, learn, and reason. By getting closer to psychology and cognitive science, the main goal here is to deeply understand how the human mind works to create models that replicate these processes.

3. Thinking rationally: Based on the principles of logic and reasoning, this perspective defines intelligence as following the rules of thought, which means adhering to logical rules. Therefore, if a machine can represent knowledge and apply reasoning, it is considered intelligent. Nonetheless, humans do not always reason logically and are still considered intelligent. Moreover, this approach might be impractical for real-world problems due to the time and resources it would require to always find the perfect logical answer.

4. Acting rationally: In this last perspective, AI is defined as the study of systems that act rationally, “the study of rational agents- that is, agents that do the right thing” (322). Here, the focus is on actions that are taken to achieve goals based on the information that it perceives from its environment. This approach is more practical than the previous one, as it does not aim for the perfect logical answer, but for effectiveness at doing the proposed task.

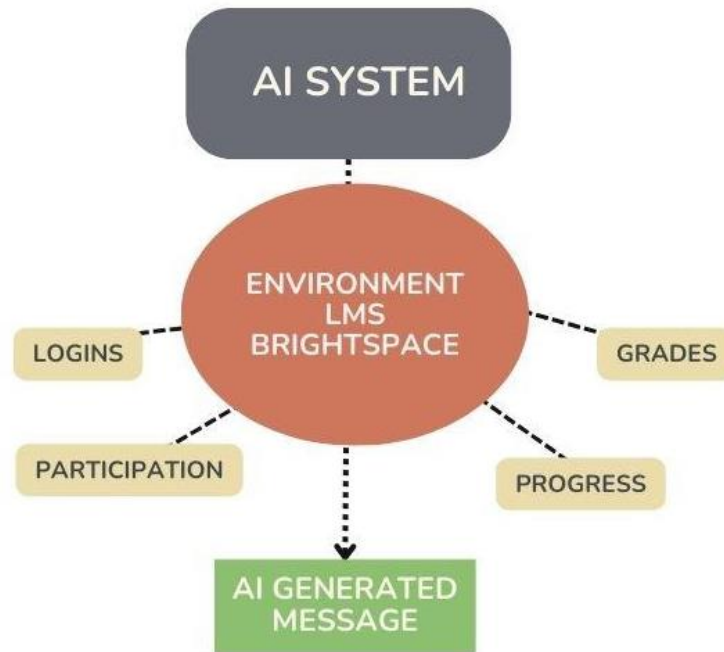
For the present study, this last perspective of the Rational-agent proposed by Russell and Norvig’s approach is adopted as it avoids limitations found in previous perspectives, and it does not reduce intelligence to imitation. For instance, approaches focused on thinking or acting humanely focus their attention on copying human behavior and cognition, which is not what the focus of this context is, as the AI system is not intending to replace the teacher’s role or simulate human reasoning, but to support learning and engagement through specific actions: targeted and personalized messages.

Similarly, perspectives based on rational thinking assume an ideal logical reasoning, which is unfeasible in real-world learning environments, characterized by unpredictability and uncertainty.

The rational agent approach defines intelligence in terms of effectiveness; it does not imply perfect logical reasoning, but effective actions based on specific goals. Within this context, the AI system is an agent that takes information from the LMS Brightspace, which acts as the environment, extracting information as the students' logins, participation, progress and grades in order to process this data with the knowledge it has and then choose the action; the AI-generated responses delivered through the messaging system, so the objective of analyzing the impact of this system on the dropout rates and behavioral engagement in LMS-based EFL online courses is achieved.

Figure 2.

AI Rational-agent model applied to LMS Brightspace



As established by the U.S. Department of Education (2023), AI systems go beyond retrieving data; they are able to automate processes and make decisions based on interpreting patterns found in data in order to pursue a determined goal, allowing a deeper understanding of information.

2.2.3 AI in Education

Over the years, technology has been implemented in education to assist students and support teachers' role in multiple ways. With the arrival of AI and its rapid advancement, the multiple benefits of its employment in education are notorious, but with any benefit, there come challenges that are important to acknowledge. According to the UNESCO (2023). AI tutoring systems allow teachers to track students' learning progress, provide feedback, and adapt learning resources depending on the level of difficulty. Moreover, AI writing tools are able to support students' writing and at the same time assess it and identify plagiarism. Immersive experiences and games have been designed to promote learning, and it is expected that these uses will become

widely adopted in order to increase personalization and decrease the time teachers spend on certain tasks.

The use of AI is not a new topic, but the scope that it has been given in the field of education lacks depth. As found by Schiff (2022), in his review of 24 policy strategies from multiple countries around the world, most strategies focus on AI for education, which means training experts in the field of AI and focusing only on the workforce and improvement of digital literacy. However, little is said about the educational context, and the ethical and pedagogical implications AI might have in this field. Furthermore, even though tutoring systems and chatbots are mentioned in the policy strategies analyzed, they are not deeply explained. These findings are a call to recognize the gaps and lack of guidelines and regulations that the field of AI for education has.

2.2.4 Benefits and potentials of AI in education

AI in education offers multiple benefits to both teachers and students, it saves teachers time by recommending pedagogical resources and personalizing the process, it also resembles human like communication, very advantageous in the field of language teaching, it allows the teacher to focus on more meaningful goals, being creative in their teaching, and understanding students deeply (U.S. Department of Education, OET, 2023).

Similarly, Harry (2023) summarizes the main benefits of implementing AI in education, highlighting the relevance of having students working at their own pace and based on their specific needs, while reducing teachers' repetitive tasks like grading, analyzing data and other administrative tasks. Additionally, by means of Chatbots and virtual assistants, AI is able to foster students' engagement and make the learning

process more interactive, something especially useful in online EFL courses in which teachers cannot be such an active part of the process and students' autonomy is the main character.

2.2.5 Concerns and risks

AI must be analyzed from different perspectives and even though it offers countless benefits, it might also bring multiple risks and limitations that must be considered. These systems tend to struggle when interpreting context correctly, leading to biased or mistaken information. Dangers in terms of surveillance should also be considered, and students need to be aware of the possible risks of sharing personal data. The vast amount of data creates concerns about privacy and security. Moreover, reliance on AI-generated feedback and grades might reduce students' trust, without mentioning the high costs associated with it. Despite these limitations, AI still offers plenty of opportunities in the field of learning, but institutions and teachers must provide transparency, accessibility, and ethical use of AI (U.S. Department of Education, 2023; Harry, 2023).

2.2.6 AI in Contemporary ELT Settings

In the field of ELT, recent studies present evidence of the multiple uses of AI as a valuable tool to create interactive and personalized environments in which students learn efficiently and independently (Yawan et al, 2025). AI-powered tools provide instant feedback and responses, simulate real communication and adapt to the learners' needs, making this a rising tool to support students in the development of writing, speaking, reading, and listening skills.

Despite the multiple advantages of using AI in the EFL classroom, Yawan et al (2025) address issues like accessibility, teachers' training, and ethical concerns. Even though AI has shown exponential growth in recent years, there are still places in which there are no internet connection, technological devices or adequate infrastructure to properly use AI tools. Additionally, Kristiawan, Bashar & Pradana (2024) argue that if teachers do not receive adequate training, they may find AI tools challenging, which limits the impact of these technologies.

Several ethical concerns that educators, institutions and students must consider are found when integrating AI into EFL contexts. Alghamdy (2024) acknowledges risk to personal data, academic cheating, and issues with job stability for teachers as the most relevant issues. These diverse problematics highlight the relevance of implementing AI tools with responsibility, knowledge, guidelines, and appropriate teacher training.

The integration of AI tools in the classroom, especially in EFL contexts, brings great opportunities, but also challenges that are imperative to address. AI has proven efficient at enhancing language skills and promoting personalized learning environments, and it shows itself as an efficient tool for fostering engagement and motivation. However, this potential can only be achieved once limitations and risks have been acknowledged. The present project takes these considerations into account by taking a rational-agent framework that focuses on direct, goal-driven actions. The AI messaging system works with available data from the LMS and it is not collecting any unnecessary information. Moreover, the tool does not replace teachers' jobs, but complement it, offering feedback, resources, and follow-up to students. Therefore, this project addresses limitations and contributes to a more informed and responsible way of integrating AI into EFL contexts.

2.2.7 Design Principles of ITS

Studies on Intelligent Tutoring Systems (ITS) have informed about the design of AI educational tools. ITS are computer-based instructional systems that use artificial intelligence to provide personalized learning experiences to learners. These systems adapt to the students' knowledge and needs and replicate the functions of human guiding or tutoring. AI tools not only deliver content to students, but they also work as pedagogical systems that support learning through personalization, interaction, and feedback (Anderson, Boyle & Reiser, 1985).

As stated by Sottilare et al (2014), to design effective ITS it is necessary to integrate instructional strategies, learner's knowledge and skills, and functional feedback mechanisms. These systems analyze learners' characteristics and incorporate instructional content to allow a more personalized experience. In alignment with this theory, the present study offers the design of an AI educational tool that considers instructional content available on the LMS platform. Additionally, students' particular needs are considered and the AI agent emerges as an engagement promoter to offer guidance for learners and keep them on track, while supporting their learning process by prompting the student with questions based on their advancement on the platform, creating opportunities to practice and providing immediate correction and feedback.

ITS are considered adaptive learning systems because they continuously adapt interaction, content, and feedback based on the learner's performance, needs, and progress. (Anderson et al. 1985; Sottilare et al; 2014). Building on the previous design principles, Baghery (2015) defines essential components of adaptive learning systems that function as a conceptual framework to organize and guide the design of the present

study's AI agent. These components include pedagogical framework, individualized feedback, assessment, and revision.

Based on the above, the tool developed for this study is defined as an AI-driven learning agent that considers key principles of ITS and adaptive learning by integrating the course's pedagogical framework through the use of the platform's content, units, and topics that guide the interaction between the student and the tool. In terms of personalized feedback, the AI agent responds to the students providing corrections and guidance. Although the system does not implement summative assessment, the provision of immediate feedback and analysis of the students' answers work as elements of formative assessment. Finally, opportunities for revision are offered to the student to work on recurrent difficulties, but also to the teacher after reviewing frequently asked questions and common interactions with the agent that allow improvement and adaptation.

CHAPTER III

Methodological Design

This chapter presents the methodological aspects that guide this study. First, the research paradigm and the selected research type are defined. Then, a detailed description of the setting and participants is provided, followed by the role I played in the research. Finally, the data collection instruments and procedures used to gather relevant data in this study are explained.

3.1 Research Paradigm

This study is framed within the qualitative paradigm, which explains reality as socially constructed, multiple, and subjective, rather than measurable and fixed. In this light, the qualitative approach examines how individuals understand and make sense of human issues based on their experiences (Creswell & Poth, 2018). Within this paradigm, phenomena are examined in real-life settings, understanding that participants' views are shaped by society, institutions, culture, and other contextual factors.

Denzin and Lincoln (2018) claim that qualitative research focuses on context, meanings, and interpretation. It is a reflective and interpretative process in which the researcher plays a key role. Meanings and findings are constructed based on the interaction of participants and researchers. In this approach, researchers do not discover a single objective reality; instead, they co-construct interpretations of the phenomenon studied.

The main purpose of this paradigm is to understand participants through reflection and interpretation. It is a process that dives into questions such as the why and how of certain social issues instead of aiming for large-scale representation studies. As

Patton (1990) states, “Qualitative inquiry typically focuses in depth on relatively small samples, even single cases, selected purposefully” (p. 169). This enables the examination of a phenomenon in a detailed and contextualized way, aiming for depth instead of breadth.

In line with these principles, this study focuses on the collection and analysis of students’ subjective experiences and understandings of AI as a pedagogical assistant, rather than measuring through rigid metrics. Additionally, the data is examined within its natural context, an online English course, where participants interact with an AI agent designed to enhance engagement. The researcher plays a crucial role in interpreting students’ experiences and identifying common patterns, while making meaning from participants’ responses to the agent. This process is understood as the result of students, the researcher and AI agents’ interactions, rather than independent existing facts.

Instead of aiming for generalization, depth of understanding is prioritized, focusing on how and why students engage with the AI pedagogical agent. This approach allows for a rich exploration of data in context, while uncovering learners’ behaviors, emotions, and perceptions that contribute to a nuanced interpretation of how AI-mediated communication within instructional objectives influences engagement and learning in online settings.

3.2 Type of Research

Conducted within the qualitative paradigm described before, this study adopts a case study design, as it aims to respond to a specific educational challenge through the development and evaluation of an AI-driven communicative agent in an online ELT context. As Creswell and Poth (2018) argue, in a case study approach, the researcher

studies a case through multiple qualitative data sources to get in-depth information, interpretation, and analysis of the phenomenon studied. The case studied in this project is the influence of AI-generated messages on students' engagement patterns and dropout rates, which is explored and interpreted by using various qualitative data instruments that allow a rich and deep understanding of this complex educational process.

Merriam and Tisdell (2016) explain that the essential element of a qualitative case study is not the specific topic being explored, but the clear definition and delimitation of the object of study, which they name "bounded system". This system is subjected to intensive description and analysis. For a phenomenon to be a case study, it needs to have delimited boundaries such as time, place, context, or participants. The case selected for this study is a specific online EFL course at Tec Alianza in which an AI strategy was implemented with a delimited number of students during a defined academic period of two months (course length). The study does not intend to broadly generalize AI in education; instead, it focuses on a particular context with specific characteristics and needs that led the study to explore the influence of AI generated messages on students' engagement and learning patterns.

Similarly, Stake (1995) mentions that a case study is the analysis and interpretation of a specific and integrated single phenomenon in its real-life context. Stake emphasizes that a case cannot be studied without considering its environment and that the researcher acts as the main instrument for both data collection and analysis, not to find an objective truth, but to construct a version of reality based on observation and interpretation.

3.3 Participants

The participants in this study consisted of 29 out of 40 students enrolled in the course Pathway English I: Fundamentación, which corresponds to a Pre A1 level in the institution's new methodology. These participants are adult learners from different professional and educational backgrounds. The group consisted of 14 men and 15 women of diverse age groups (around 20 to 50 years old)

The intervention was conducted from April 6th to April 28th, which corresponds to the course length. Throughout this period, participants interacted with the AI conversational agent as part of their autonomous learning experience and attended synchronous classes from Monday to Saturday. Participants were informed about the purpose of the study and agreed to take part in it voluntarily.

During the first class, the AI conversational agent was introduced and explained. Participants were informed that the agent would communicate with them via WhatsApp in order to send reminders, provide guidance and deliver short questions. Students were instructed on how to interact with the agent and respond to its messages. Additionally, participants were informed about the confidentiality of their messages and personal data. Further questions were answered in the session to ensure understanding of the tool and start integrating it as part of their learning process.

3.4 Researcher's Role

In this intervention, I assume a double role as an English teacher and researcher. Being an active employee at Tec Alianza since 2021 allows me to understand the organizational context, including its constraints, needs, and priorities throughout time.

This has given me the necessary tools and information to design and implement this intervention.

Beyond administrative familiarity, as a teacher and researcher, I am particularly drawn to promote environments that encourage curiosity, engagement, and meaningful learning in addition to mere knowledge of grammar. I strongly believe that teachers have the capability to go beyond the administrative tasks and classroom to foster participation, reflection, and practical application of knowledge. Sometimes, educators settle into familiar routines, even when we recognize that these practices are not the most effective and do not produce the best outcomes. Nonetheless, it is crucial to challenge these behaviors and implement strategies that meaningfully enhance learning and teaching processes.

In this research, I take my experience as an English teacher for adult learners from two different contexts, one at Tec Alianza with students from different backgrounds and realities, and the other at LingoFluency, a language learning company that offers personalized classes to corporate teams. Truora, a Colombian technology company, is one of the clients that has enrolled multiple members of its engineering team in language instruction. According to Daniel Bilbao (2025), co-founder and CEO of Truora, AI is one of the most impactful developments in technology in the last decades, and it will change people's lives in every aspect. Hence, Truora wants more companies in Latin America to start implementing AI and not be left behind.

Working with Truora's engineers has taught me the transformative value of AI and has cultivated in me the curiosity to explore and incorporate this tool in my daily life to enhance my pedagogical practices and evolve as an educator. With this in mind, I

have accessed Truora's LAB 10 initiative, a community that teaches about practical applications of AI that everyone could take advantage of.

It is also worth noting that, as an English teacher, I am aware of the challenges that Artificial Intelligence brings to our role. I have also experienced the fear and anxiety of AI's rapid advancement. Notwithstanding, rather than allowing fear to hinder innovation, we have to overcome these concerns by learning how to properly implement AI as a tool for empowerment. My main goal in this study is to go over the passive dependency of new technologies, and start a critical adaptation and application of AI, ensuring that its use contributes not only to my professional growth, but also to my students and organization.

3.5 Design, Architecture, and Deployment of the AI agent

In tune with the research interests of the present study, I proposed the design and implementation of Lexi, an AI-driven conversation tool to promote students' engagement, decrease dropout, and enhance virtual learning processes. The system emerges as a consequence of inconsistent attendance and a considerable number of dropouts in online English courses at Tec Alianza, affecting institutional metrics and the sustainability of the programs. The tool is programmed to send personalized AI messages through WhatsApp to students at specific moments through the 4-week course according to their disengagement level, categorized in early, moderate, and highly disengaged based on students' participation, attendance, and LMS progress². These messages were generated based on students' profiles derived from a database containing participants contact information and platform progress. Artificial intelligence generated

² This classification process is explained in more detail later in this section.

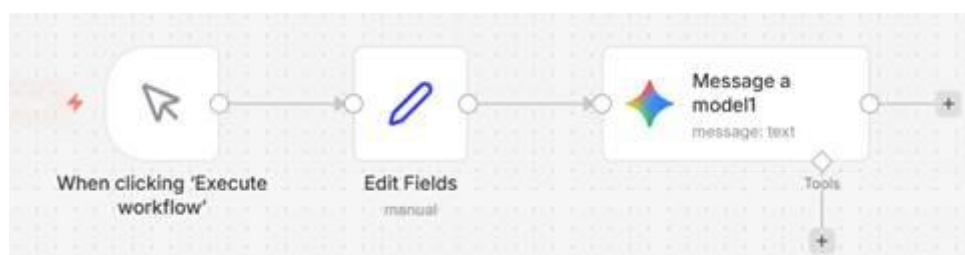
tailored messages following criteria and parameters established by the teacher-researcher in this study.

The primary purpose of the AI agent was to tackle the aforementioned issues by increasing students' engagement levels while encouraging participation and persistence. The messages acted not only as reminders but as motivational prompts and learning promoters. It sent personalized messages, reminders, micro-English conversation questions, and offered guidance to navigate the platform when students asked questions.

All this process was done using a platform called n8n, an open-source automation system that allows complex processes through interconnected nodes. This platform allows users to connect different digital tools, including Artificial Intelligence, to automate processes that used to be performed manually. Following predefined rules instead of complex code, n8n creates visual nodes that allow specific actions as retrieving information, generating content in different media, integrating artificial intelligence for different purposes, sending messages, etc. Figure 3 illustrates how nodes on n8n are interconnected in a workflow to represent sequential actions in an automated process.

Figure 3.

Visual representation of nodes on n8n



The architecture of this system is grounded in the artificial intelligence framework proposed by Russel and Norvig (2021) who define intelligent systems as agents that receive information from their environment and act on it to achieve specific goals. Intelligence for the tool proposed is not about autonomous reasoning, but about selecting the most appropriate action based on available students' information and predefined goals set for this study. This approach is reflected in three modules; the Learning Management System (Brightspace), that acts as the environment where the information is taken from, the Artificial Intelligence Message-generation node, that represents the stage where the agent makes decisions, and the Automation and Delivery system where the agent takes action and the tailored message is sent.

3.5.1 The Learning Management System (Environment)

Brightspace, Tec Alianza's Learning Management System, works as the environment of the intelligent tool, the place where all information is generated. Brightspace offers reports on students' last login, progress, and grades, clear engagement indicators. These reports are downloaded and compiled into a database that has students' attendance and contact information. This database is later connected to n8n, enabling this platform to bring students' specific information.

For this study, the LMS serves as the direct source of information, it allows the system to interpret the learning context and determine the type of message that should be sent to the student depending on the level of disengagement. Given that engagement in this study is defined as a multidimensional construct that focuses on emotional and behavioral dimensions, disengagement concept is built on Fredrick's et al.'s engagement model (2004) and Redmond et al.'s online student engagement framework (2018). Hence, disengagement is understood as limited and reduced interaction and

participation with course elements, including learning material, quizzes, and class attendance, as well as lack of response to communication attempts. These observable indicators allowed the development of three disengagement levels that categorize students' behavioral and emotional involvement with the platform according to the participation frequency, grades and responsiveness.

The variables included were days since last log-in, number of missed quizzes, number of missed synchronous classes, number of low grades, and number of days since last response to the AI agent. The engagement score was the sum of all indicators, where higher values reflected greater disengagement (see Appendix A).

The classification was described as follows:

1.1 Early signs of disengagement (score between 0 and 5)

This first level is crucial in identifying patterns that would constitute a student's complete withdrawal. At this point, students might be active in the course activities but displaying irregular or superficial interaction.

1.2 Moderate disengagement (score between 6 and 12)

This level represents a more noticeable and sustained pattern of disengagement from course activities and classes. Students show reduced level of participation and quality in the platform activities. At this stage, students are experiencing motivational, academic, or contextual barriers that need to be addressed.

1.3 High disengagement (score above 12)

This stage represents a critical level of disengagement and a high risk of withdrawal. At this level, students report prolonged inactivity and complete absence

from the sessions. Although at this stage re-engagement is more challenging, students still have the opportunity of getting up to date with the course activities.

3.5.2 The Artificial Intelligence Message-generation node (decision-making)

This module is where the system generates personalized messages to support students according to the level of disengagement evidenced on the LMS's reports. These messages are intended to help students re-engage with their learning process and consequently complete the course. The AI node is powered by Gemini 2.5 flash, due to its accessibility, strong performance with structured system prompts, and ability to maintain tone consistency.

It is important to clarify that this module does not evaluate students autonomously, instead, it functions based on a rule-based automation system. Once the students' database is on n8n, each student is classified into one of the three disengagement level by adding a logic node to n8n based on the behaviors described for each level. Subsequently, an additional AI node is created in the workflow and connected to the students' information. This node works with a predefined instructional prompt that was supported by the use of AI tools, like ChatGPT, which assisted the refining of the prompt as well as the technical configuration of the system.

The prompt specifies the tone and purpose of the messages for each student and instructs the agent to enhance at least one engagement dimension while sustaining conversation by using follow-up questions when appropriate. Moreover, it offers corrections to the students and considers affective factors, while adapting to the students' language use and switching to Spanish when considered necessary.

Furthermore, the prompt includes clear boundaries to avoid off-topic conversations and redirect the student back to course-related information. It is not allowed to ask or provide any type of sensitive information or switch to a judgmental or evaluative tone.

Ultimately, the prompt has detailed contextual information from Brightspace, including course structure, units and topics, and where to find relevant information (recordings, additional materials). This allows the agent to guide students when questions arise and adapt interactions to the students' real progress on the platform. The complete prompt used in this study can be found in Appendix B.

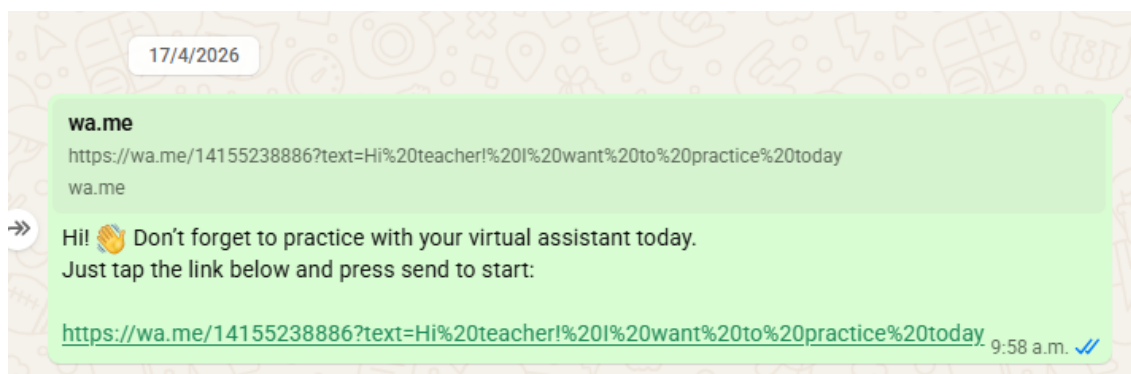
3.5.3 Automation and Delivery system

The message delivery system was implemented using Twilio, a platform that allows SMS and WhatsApp integration. The system was configured to read the database and initiate interactions every 2 days. When a student replies, Twilio sends it to n8n, which executes the workflow to be processed by the AI model and generates an appropriate response. This response is sent back to Twilio and forwarded to the student, completing the interaction cycle.

It is essential to clarify that; the use of WhatsApp Business was not feasible due to the platform's requirements. Therefore, the study relied on Twilio, and participants had to rejoin the system every 72 hours by sending the code "Join-Tried Broken" in order to maintain access. To support this process, a WhatsApp group was created to remind students of rejoining Twilio in addition to occasional reminders during class. The following screenshot presents an example of the WhatsApp reminders shared in the WhatsApp group to encourage students to rejoin the system and continue interacting.

Figure 4.

WhatsApp reminder message used to support students in the process of rejoining Twilio.



Finally, all interactions were automatically stored in a Google Sheet file on n8n that records incoming and outgoing messages, date and origin. This process enables the continuous tracking of students' participation and the subsequent data organization and analysis.

3.6 Data Collection Instruments

For this study, data were collected using a set of research instruments, including a students' engagement scale, the LMS Brightspace analytics, AI messaging system interaction logs, and semi structured interviews with students aiming to capture engagement levels and participants perceptions of the AI-driven intervention.

3.6.1 Students' online engagement scale

Dixson (2015) developed an Online Student Engagement Scale (OSE) to measure students' engagement in online settings based on students' own perceptions. The OSE consists of 19 Likert-type items divided into four categories: skills engagement, emotional engagement, participation and performance. Skills engagement describes students' ability to regulate their learning; emotional engagement refers to

motivation, interest, and affective connection to the course; participation engagement is concerned about interaction with the instructor and peers; and performance engagement focuses on academic achievement and outcomes.

These four dimensions allow assessment of engagement dimensions that are not observable in the LMS and provide first-hand perspectives from participants. For the present study, Dixon's engagement categories correlate to the Emotional engagement framework proposed by Redmond et al. (2018). The next table shows the conceptual alignment that was found between both models to explain how Dixon's scale was used to support interpretation of engagement levels.

Table 2.

OSE scale and Engagement dimensions alignment

Dixon (OSE Scale)	Redmond et al. Engagement dimensions	Reason
Skills Engagement	Cognitive Engagement	Strategies and effort toward understanding
Emotional Engagement	Emotional Engagement	Direct conceptual match
Participation / Interaction	Collaborative + Social Engagement	Interaction with peers and instructor.
Performance Engagement	Behavioral Engagement	Completing tasks and demonstrating effort

In this study, the 19 measuring engagement items were modified to reflect the specificities of the present study's context, in which there is no sustained peer interaction, traditional readings, and frequent forum participation. All items were translated into Spanish to allow students a better understanding of the statements and some items were contextualized, replacing "readings and forums" with materials and resources as a broader concept.

Additionally, to analyze students' engagement and perceptions after integrating the AI communicative agent, every statement was modified to add the AI agent intervention factor (e.g. “el agente de inteligencia artificial me ayuda a estudiar de manera regular” or “el agente de inteligencia artificial me ayuda a ser organizada/o en el desarrollo del curso”). By adapting the items, the scale gathers participants' behavioral, emotional, cognitive, and social engagement dimensions and how they were influenced after the interaction with the AI agent.

To include the professional context of the course and the emphasis on workplace application, one item was modified from “Applying course material to my life” to “Aplico el contenido del curso a mi vida personal y profesional”. Additionally, three new items were included to strengthen the emotional dimension as it was not sufficiently explored in the scale. The scale and side-by-side comparison of the original and adapted version is provided in Appendix C. The additional items included were the following:

1. “El agente de inteligencia artificial me motiva a participar en las actividades del curso, incluso cuando no son obligatorias”
2. “El agente de inteligencia artificial contribuye a que disfrute el proceso de aprender en este curso, más allá de obtener una calificación”
3. “El agente de inteligencia artificial me ayuda a sentirme emocionalmente involucrada/o con el desarrollo de mi proyecto o tareas del curso”

The adapted version of the OSE employed a Likert-type response scale with options from 1 (totally disagree) to 5 (totally agree). The scale was administered at the end of the course, after participants had interacted with the AI communicative agent. The adapted scale was piloted twice before the implementation. The purpose of this

piloting was to evaluate the items' clarity and relevance. The first piloting exercise was conducted with 15 students from a different course and based on their answers, two original items were excluded due to redundancy. After this first test, the concept *compromiso* was replaced with *compromiso con el aprendizaje del inglés* to avoid misinterpretations associated with obligation and to have better alignment with the conceptual meaning of engagement within the study. These adjustments were made and a second pilot was conducted with 12 participants and no need for further changes was identified.

3.6.2 LMS Brightspace report

LMS analytics were used as an instrument to get information on students' behavioral engagement and course persistence in the program. Data was extracted directly from Brightspace platform, which gives reports on students' logins, submission of assignments, and course completion status. These indicators provide evidence on students' participation effort and persistence in the learning process, which are key components of behavioral engagement, as established by Fredricks et al. (2004).

The use of LMS analytics allows for a reliable and systematic collection of data on students' behavioral engagement throughout the course. These analytics serve as a primary source of evidence to analyze engagement patterns, granting the assessment of the tool's effectiveness in reducing dropout and promoting sustained engagement. Guo et al. (2022) highlights the importance of LMSs to promote students' success. In their study, *Identifying Critical LMS Features for Predicting At-risk Students*, LMS's analytics were used to identify at-risk students and successfully implement pedagogical interventions drawing on the results.

LMS analytics, as a data collection instrument, present a robust and comprehensible analysis of students' engagement by triangulating the system's information and the self-reported survey responses. While the OSE survey and students' interviews provide insights into subjective experiences and participants' own perceptions, analytics enable observable evidence through a series of online actions. This integration contributes to the validity of the study and provides higher methodological rigor to the study.

Brightspace LMS data was collected weekly, resulting in a total of 4 reports (see Appendix D). Due to the short duration of the course, this frequency enables the observation of meaningful variations in students' engagement over the one-month course. At the same time, this approach avoids redundant data collection and facilitates analysis by doing cross-week comparisons of engagement and disengagement patterns.

3.6.3 AI messaging system interaction logs

In order to analyze and interpret the interactions between the students and the AI conversational agent, message exchanges were systematically collected during the intervention. These interactions include the messages sent by the agent (prompts, reminders, micro-questions) and the students' responses. Every message sent or received through WhatsApp will go to n8n (the workflow automation tool to design the AI agent) and it is organized with key information such as date, students' names, content, and type of interaction. This information is stored in a Google Sheet file to be reviewed, interpreted and analyzed to have an in-depth understanding of students' engagement and responses to the AI agent.

Interaction logs provide evidence of students' behaviors and responses in real time; they allow participants to answer naturally as they are not being interrupted or

evaluated. Moreover, it enables the analysis of key engagement elements such as frequency of interaction, response patterns, and types of engagement.

3.6.4 Semi-structured interviews

Bearing in mind the qualitative nature of this study, semi-structured interviews were implemented as an essential data collection method, allowing an in-depth exploration of participants' experiences and perceptions after interacting with the AI communicative agent. According to Creswell (2014), when researchers are unable to observe participants directly, interviews are a useful instrument to gather rich and detailed information. For this project, data gathered through reports and quantitative instruments do not reveal how participants experience the tool and what their perceptions are after interacting with it. Therefore, this instrument was employed to discuss participants' behaviors and experiences, and to explore how they experienced the development of the course supported by the AI-powered tool implemented.

Semi-structured interviews were selected for this study due to their flexibility and adaptability (Cohen et al. 2018). This instrument allows the researcher to guide the interaction based on predefined questions and themes that may vary in the development of the interview, allowing probing, clarification, and interpretation of the participants' answers (Kvale & Brinkmann, 2015).

For the current study, semi-structured interviews were conducted with six participants, selected from a total of 29 participants that agreed to participate in the study. Initially, 10 participants, including engaged and disengaged students, were randomly chosen and invited via e-mail to participate in the interview. Of these invited participants, six of them agreed to participate, 4 engaged students and 2 moderate engaged at the time of the invitation. Throughout the last week of implementation,

students were scheduled to conduct the interview and ensure an in-depth exploration of participants' individual opinions and experiences.

The semi-structured interviews were guided by a set of 14 open-ended questions designed to prompt participants to reflect on and analyze their experiences with the AI agent throughout the course. The interview questions explored students' perceptions about the usefulness, advantages, and limitations of interacting with the AI agent. Additionally, the interview aimed to examine how these interactions influenced students' engagement, motivation, and participation in the virtual platform (see Appendix E).

3.6.5 Field notes

In addition to the previously mentioned instruments, 6 reflective field notes were written as a way to record students' spontaneous comments, reactions and conversations that emerged in the classroom context regarding the use of the AI conversational agent. In other words, and following Creswell (2014), field notes were used to generate written descriptions of what I observed in relation to how my students regarded the use of the AI tool in class settings.

Additionally, as Emerson et al. (2011) state, reflective field notes go beyond description and attempt to capture and interpret participants' social realities as they occur, they include the researcher's interpretations and questions and are not neutral instruments, but a way to reconstruct and interpret reality. This is a valuable resource to document participants' perceptions and experiences using the AI conversational agent and the impact it has on their engagement levels. However, field notes were not done for every class, as the AI tool was not discussed consistently throughout all sessions. Hence, notes were only recorded when relevant comments or references emerged.

In order to systematically document observations, a structured template was designed. The template included contextual information about the session, such as the session's date, descriptions of students' comments and interactions as they occurred, and a reflective section to record the researcher's interpretations and impressions (see Appendix F).

3.7 Ethical considerations

Before the implementation, Tec Alianza and all participants were informed about the purpose of the research, the nature of the AI agent intervention, and the kind of data that would be collected. An informative letter was sent to the Program Coordinator, clarifying the participants and intervention length. Additionally, each participant signed an informed consent (see Appendix G) authorizing their participation, recording of interviews, receiving messages with the AI agent using WhatsApp, and the use of their data to be analyzed and used for academic purposes. Participation was voluntarily and students were informed that their participation or withdrawal would not affect their course performance, grades, or any academic matter.

In order to protect participants' privacy, all data was treated with strict confidentiality. Sensitive information, such as names and phone numbers used for WhatsApp interactions, was safely stored and excluded in the analysis and results of this study. Participants were assigned codes (P1, P2, P3, etc.) to ensure anonymity. Additionally, n8n (the automation system to design the AI agent) provides transparency and flexibility, it allows people without technical knowledge or skills to create and customize workflows for specific projects or needs. Furthermore, it gives the user full control over the information managed, it avoids exposure of sensitive credentials and information, it also includes access control mechanisms that restrict who can view,

modify, or execute workflows. In general terms, information passes through the system, but it is not stored or used for purposes outside the defined research objectives.

To ensure the ethical use of the AI agent, participants were informed about its functions, message limits, and the type of support it would offer. The frequency of messages was limited to make sure students would not get excessive messages, and the message tone was designed to be always supportive, informative and motivational. The AI agent predefined guidelines specify limitations regarding what it can and cannot do, in order to make sure that it fulfills its role as an engagement support tool. These limitations prevented the agent from initiating or continuing interactions that are not part of its pedagogical function and contribute to a safe and appropriate interaction with the students.

3.8 Data Analysis Procedure

Aiming to provide a systematic method for interpreting data, qualitative content analysis was selected as the data analysis approach for this study. This method allows us to reduce large amounts of information by creating categories and concepts that represent the phenomenon that is being studied (Elo et al, 2014). By including processes such as categorization, coding, and abstraction, this approach is particularly useful for identifying patterns and relationships in participants' responses, especially when data is coming from diverse and multiple sources. Additionally, it allows the researcher to organize and manage potentially overwhelming information in a structured way.

It is essential to highlight that qualitative content analysis does not aim to generate new theory, but to describe meaning. Unlike other approaches, this model focuses on organizing, describing, and interpreting data through categories derived from the research questions and objectives. Furthermore, in addition to examining what

students explicitly state, this analysis considers latent meanings, that is, attitudes, assumptions, and implied understandings that allow a deeper and more detailed interpretation (Cho & Lee, 2014).

Qualitative content analysis can be conducted using either an inductive or deductive way. In the former, categories emerge from the data, while in the latter, categories and concepts are previously established. This study follows a primarily deductive logic as the analysis was guided by predefined categories derived from existing theory on student engagement, particularly the online student framework proposed by Redmond et al. (2018). Specifically, the dimensions of behavioral, emotional, social, and cognitive engagement served as analytical categories to organize, code and interpret data.

Nonetheless, flexibility was maintained throughout the process, which means that categories were refined, complemented or expanded, allowing emerging subcategories if necessary. Such adaptability strengthened the analysis by enabling a complete understanding of participants' perspectives and collected data.

3.9 Data management and triangulation

Semi-structured interviews were one of the primary qualitative instruments. A total of six participants were interviewed during synchronous sessions. While students worked on class activities, interviewed participants were taken to a different breakout room. Additional students with moderate to high disengagement patterns were contacted but there were no answers from these participants. Due to time availability and external responsibilities, not all students were able to participate in the interviews. After completing the interviews, audio recordings were transcribed and reviewed. The transcripts were color-coded according to the 4 pre-defined categories (behavioral,

emotional, social, and cognitive engagement), while also assigning a code to possible emerging categories: Perceived utility of the AI agent. The most relevant excerpts and findings were organized into a matrix that included main findings and reflections about each category.

The engagement scale was administered only once at the end of the course, and its purpose was to gather students' perceptions in relation to the influence of the AI agent on the different engagement dimensions. The scale was completed during the last synchronous session, a total of 20 participants answered it, and the results were downloaded and organized through a table with percentage distribution that facilitated the interpretation of recurring patterns. Since items on the scale were directly linked to engagement dimensions, the findings were grouped into their corresponding category and placed into the matrix.

A total of 5 field notes were collected throughout the implementation, they served as an additional qualitative instrument the recorded observations and reflections that emerged in class and that were associated with the AI agent influence. Since these field notes already included reflective comments, the analytical process consisted of reviewing the observations and organizing them in the corresponding categories.

The interaction logs from the students, and the AI agent interactions represented another important source of information. First, the interactions were initially compiled in an Excel sheet. Each entry had relevant information such as date, phone number, the students' message, and the response. This organization was mostly chronological; therefore, to facilitate the analysis and interpretation of data, all logs were categorized into their purpose: clarification, social interaction, guidance, practice, and language support, when possible, relevant logs were connected to an engagement dimension. Finally, the categorized data was transferred to the main matrix, and reflection

comments were made. This process facilitated the management of a large number of interactions.

The LMS final generated report was considered and analyzed as a complementary source of information. This report provided information about students' participation performance and completion of the course. At the end of the course, the report was downloaded and reviewed to find patterns and categorize each student. Therefore, information derived from this report was compiled in a separate excel spreadsheet, including completed and missing activities, average grades, final course status, and disengagement level provided by the AI agent's workflow. This organization allowed the examination of behavioral engagement, such as participation and consistency on task completion and tendencies related to course continuity, approval rated and dropout reduction.

3.9.1 Cross-instrument Triangulation

To assure validity and reliability to the present study, a process of triangulation is undertaken. As defined by Creswell and Poth (2018), triangulation is a strategy used to enhance credibility of qualitative findings through the comparison and integration of multiple sources of data, this process might include comparing perspectives of different participants, contrasting information from several types of data, or integrating findings collected through different research instruments. Similarly, Patton (1999) states that by combining various sources of data limitations associated with relying on a single source of information are reduced. Based on these perceptions, the present study employed a cross-instrument triangulation process.

The triangulation process was done through the construction and revision of a matrix that integrated the most relevant findings gathered from the research instruments.

This matrix compiles participants' perceptions, recurring comments, and interpretative reflections that are organized according to the existing categories. Thereafter, a cross-instrument section was developed to summarize the major findings, identify patterns, establish connections between the multiple resources, and generate interpretation of the AI agent on students' engagement and course permanence.

Triangulation facilitated identifying patterns and perspectives and was particularly useful in this study as engagement is a multidimensional concept and needs to be understood by the integration of multiple resources. Each instrument contributed a different perspective to the analysis, some of them were more directed towards participants' perceptions and experiences, while others offer evidence of participation, learning behaviors, course dynamics, and language use. The integration of these different sources of evidence promoted an in-depth understanding of the case studied. The following section presents the findings derived from this cross-instrument analysis.

CHAPTER IV

Data Analysis and Findings

This chapter presents the procedures implemented to analyze data collected throughout this study. Additionally, the triangulation process used to compare and integrate findings obtained from the multiple research instruments is explained. Following the data analysis process, a detailed presentation and interpretation of major findings is provided and organized according to predefined and emerging categories. These findings are discussed in relation to the research objectives and participants' perceptions and experiences after the implementation.

4.1 Data analysis and categorization procedures

The analysis presented was done with the purpose of understanding and describing the influence of an AI agent on participants' behavioral, emotional, cognitive and social engagement, as well as possible connections to permanence and influence on quality of learning. The analysis was constructed by collecting information from semi-structured interviews, field notes, interaction logs, an engagement scale, and the LMS final report. Each instrument was examined independently, data was reviewed and organized following engagement dimensions, while also identifying emerging categories.

Following the content analysis framework, the categories presented in this study used a combination of deductive and inductive approaches. The predefined categories were established deductively from the research question and the theoretical underpinnings that guided the study, specifically literature about engagement dimensions. These categories provided the main structure of the analysis. Nonetheless, through the review and coding of the collected data, an additional pattern emerged from participants' experiences, and it was associated with the perceived utility of the AI agent. Although this recurrent theme was not fully represented in the original four categories, it was incorporated in order to cater for the perceptions that consistently appeared across multiple instruments.

4.2 Findings

This section presents multiple and relevant findings organized based on the analytical categories established in the study. Firstly, the results are organized following the four engagement dimensions of engagement (behavioral, emotional, social, and cognitive), as well as the emerging category about the perceived utility of the AI agent. Each category integrates the data and synthesis of data collected from semi-structured

interviews, field notes, interaction logs, OSE scale, and the platform report to provide interpretations of data across the different research instruments.

4.2.1 Behavioral engagement

AI as a behavioral support mechanism

Across the multiple data sources, the AI agent served as an important behavioral support system that was able to enhance students' participation and continuity within the online course. Findings revealed that the tool was not only used as an informational resource, but as a resource that helped them in their learning journeys. By means of interacting with the agent, participants remained connected to their activities. Across different instruments, students repeatedly associated the tool with organization, monitoring of pending tasks, task completion, and active participation. The AI agent was integrated into participants' study routines and encouraged action by maintaining students' engagement with the course's tasks.

Several participants stated that the agent's reminders promoted behavioral responses, sometimes immediately, and some other times facilitating long-term task management. Different statements from the semi-structured interviews (see Appendix H) reflected that the agent contributed to maintaining students active and aware of their academic responsibilities.

“Te recuerda que practiques, que hables, que estudies” P2-INT

“Me ayudó mucho como sobre todo a recordarme que tengo que hacer digamos tal cosa o que tengo que apurarme para esto” P6-INT

“Voy a hacerlas ahorita que tengo tiempo” P6-INT

This AI agent contributed to transforming passive awareness into actionable behaviors. The previous excerpts are clear examples of how the implementation of the

tool influenced students' decision-making in real time. This theme is reinforced in the interaction logs (see Appendix I), in which various participants used the agent to request information about course participation and task completion. Some interactions included questions such as: "What is the activities I must realized today?," "¿Dónde puedo encontrar las grabaciones de las clases?," "Which materials are available?," and "How can I login my book?"

These exchanges demonstrate that students frequently relied on the tool to navigate the platform, access materials, and remain updated. The agent did not only work as a reminder system, but as a tool that reduced barriers between students and the course. The questions asked by students suggest that they used the agent to solve immediate organizational and technical difficulties that could interrupt their engagement with the course. Students appeared to seek immediate guidance to continue participating in the course instead of remaining uncertain, postponing the tasks, or simply abandoning the course. These findings are consistent with Pham et al. (2025), who argue that immediate guidance and feedback positively affect learners' continuity and motivation in the learning process. Similarly, participants in this study appeared to value the agent's immediacy as a way to maintain participation and overcome difficulties that would otherwise interrupt their engagement,

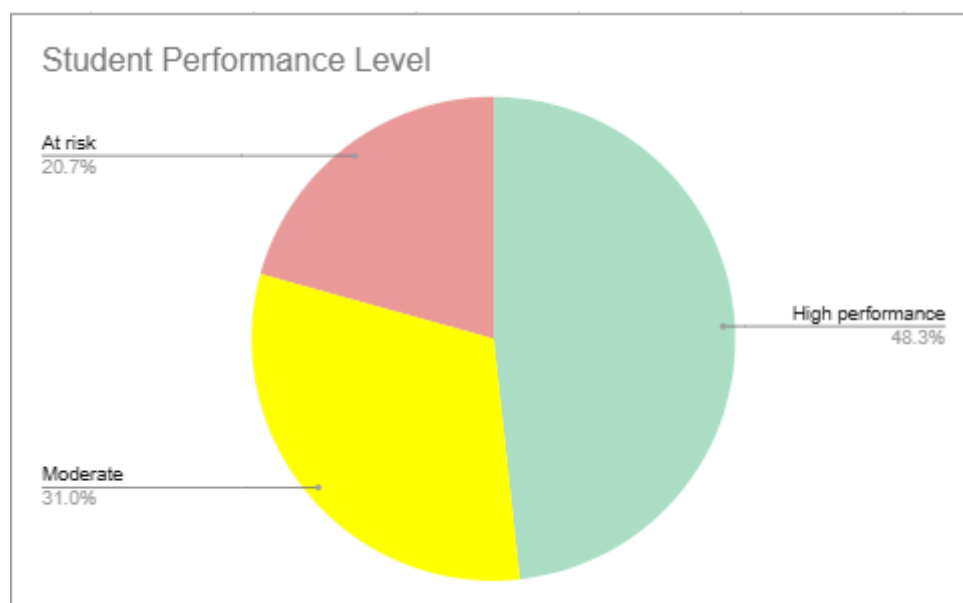
Additionally, interactions suggest that engagement was not limited to completing assigned gradable activities, as students also relied on the agent to orient themselves, locate resources and understand aspects of the platform. Therefore, learners were able to take initiative to manage their own processes through the support provided by the tool.

Field notes supported this interpretation by recording repeated patterns of persistence. As noticed in the researcher's observations: "throughout the process of rejoining Twilio, a student showed willingness to participate, repeatedly attempting to

connect and following the instructions given.” Moreover, one participant described the tool only as a reminder about the platform: “Yo pensé que solo era para recordarle a uno lo de la plataforma,” but later discovered broader functions related to learning support and academic guidance. Moreover, the platform report reflected patterns of sustained participation and behavioral engagement throughout the implementation. About 24 participants completed between 80% and 100% of the course activities, while 18 students obtained final grades above 90%. Only two participants showed almost complete disengagement.

Figure 5.

Participants' performance levels



The previous chart presents the distribution of participants' performance levels at the end of the implementation, as registered on the final LMS report. Students were classified into three categories: high performance (90-100%), moderate performance (70-89%), and at-risk performance (0-69%). The chart presents a general overview of

the group's performance, highlighting patterns related to achievement, persistence, and possible academic risk. Nearly half of the participants (48.3%) are classified as "High performance," suggesting sustained behavioral engagement throughout the course. This engagement dimension reflects regular participation, constant interaction with the course's tasks, and high levels of task completion.

Moreover, the 31% of students in the "Moderate" category may be interpreted as evidence of partial behavioral engagement. They are likely to participate in certain activities but lack consistency over time. Finally, the 20.7% classified as "At risk" provides evidence of low behavioral engagement, associated with missed activities, reduced participation, and low grades. These findings show that behavioral engagement was generally positive but not entirely uniform throughout the course.

Behavioral Engagement as a Progressive and Reactive Process

Findings show that behavioral engagement was developed progressively rather than emerging immediately after interactions. Some interviewees reported using the tool only occasionally, mainly due to limited availability and demanding personal and academic routines. This finding is also supported by the observational notes on field notes, which indicated that some students initially struggled to understand the different functions of the tool and used it in a limited way, as a reminder instead of as an active learning support system.

However, over time, participants gradually became more familiar with the AI agent and learned how to interact with it more effectively to support their learning, as later illustrated in table 3. Students appeared to move from superficial use towards a more purposeful integration of the tool into their learning routines. This progression suggests that when new technologies are introduced, behavioral engagement is not

automatic. Instead, it develops gradually as learners understand the functionality of the tool and recognize its potential benefits for their learning processes. This finding aligns with Kahu's (2023) interpretation of engagement as a dynamic process shaped by learners' interactions with their learning environment.

It is necessary to highlight the importance of guided support and adaptation time during the implementation of AI tools, as initial lack of engagement does not necessarily imply lack of interest, but a possible process of adjustment in which students experiment with the tool in different ways. Nonetheless, without the teacher's guidance, sustained students' interaction with the tool would have been limited as might be observed in the next field note gathered during the implementation:

Students are invited to join Twilio again to keep the interaction going, as this process should be done every 72 hours. The teacher prompts the students to interact with the tool and ask different types of questions, as observed in field notes, one student asserted:

S: "Yo le pregunté algo, pero está como caída."

T: "Por qué, ¿qué te aparece?"

S: "Ah no, ya respondió. Si está funcionando. Solo estaba lenta."

T: "Vale, pero te respondió correctamente, ¿sí?"

S: "Si profe."

T: "Vale, la herramienta puede presentar retrasos. Sobre todo, cuando hay varias personas usándola al mismo tiempo. Pero siempre debe responder."

L: "listo profe."

Note: Classroom observation-Field notes 2-Abril 10th

Guidance and reassurance play an important role in sustaining students' participation, especially during the early stages of implementation. Research on technology-supported language learning has pointed out that the effectiveness of digital tools is influenced by how the tools are introduced and scaffolded by the teacher. In this matter Khoiriyah and Mashuri (2025) emphasize that clarification and guidance are essential to help students engage with technological tools and remain connected with their learning. Without continuous support, some students might have lost interest in the tool and consequently stopped using it before understanding how it could support their learning.

“Several students seemed unsure about how to use the tool beyond basic reminders and required constant clarification and encouragement to continue interacting with it.”

Note: Classroom observation-Field notes 2-Abril 10th

Therefore, AI-mediated learning strategies depend not only on having a functional and available tool, but also on the pedagogical support provided during its implementation. For this study, as the implementation progressed, participants became more familiar with the tool and learned how to interact with it more effectively:

At the end of the session students were informed that the implementation of the tool had come to an end just like the course itself. They were advised to take advantage of the last days with it.

One student commented:

S: Profe, justo cuando ya le había cogido el tiro.

T: ¿Sí? ¿Por qué?

S: Pues ahora sí sabía cómo que cosas preguntarle y la estaba usando más seguido.

Note: Classroom observation-Field notes 6-Abril 27th

This comment suggests that effective interaction with the tool requires time, practice and repeated exposure. The duration of the implementation plays a crucial role in allowing students to become more confident and comfortable with autonomous use.

By reviewing data found on the interaction logs, it can be evidenced that at the end of the process, some students integrated the tool into their learning habits and increased the frequency of use while asking more purposeful questions.

Table 3.

Progression of students' interactions with the AI agent based on interaction logs.

Interaction Type	Student Interaction
Initial Procedural Interaction	“Dónde encuentro los videos guardados de la clase”
Initial Procedural Interaction	“What activities is pendind”
Later Meaningful Interaction	“I want talk to you about someone thing and I need gramatical correction and explanation about mistake” “I had a mockup interview and I do a trip” → “I climb at a mountain with my pet” → “My pet is a dog” → “The name of my pet is Hera, it's a Siberian husky and she is 5 years old”
Later Meaningful Interaction	“My favorite part of the day is waking up my babies. It makes me very happy.” → “I like to read novels” → “About simple life or biography of important people” → “My son is the most important person in my life”

	→ “The word that describe my son is hardworking”
--	--

The previous interactions reveal a progressive development of engagement through the use of the AI agent. Initial interchanges were mainly procedural and focused on exploring the platform, finding recordings, and pending activities. Nonetheless, later interactions became more conversational and meaningful, as students started sharing about their routines, personal experiences, family, discussing interests and expressing emotions, as well as requesting language corrections. These interactions displayed great willingness to engage in conversation, experiment with sentence construction and use the language for authentic purposes.

4.2.2 Emotional engagement.

The AI agent as promoter of a comfortable and enjoyable learning environment.

Across the revision and analysis of data, one of the most significant findings was the role of the AI agent in promoting a comfortable, enjoyable and emotionally supportive learning environment. Students consistently described the experience using positive words such as “interesting”, “motivating”, and “chévere”. These comments are indicative of positive emotional reactions after the interaction with the agent, going beyond the tool’s functional purpose.

Participants did not only perceive the agent as an academic support mechanism, but experienced it as a companion presence that positively contributed to their learning experience, as shown in the next table:

Table 4.

Emotional engagement excerpts from interviews

Participant	Interview Excerpt	Initial Code	Emerging Meaning
P2-INT	T: “¿cómo te sentías al recibir esos mensajes?” P2: “Feliz.”	Positive emotional reaction	Immediate emotional satisfaction
P4-INT	T: “Hablemos de eso. ¿Cómo te sentías al recibir los mensajes enviados por el agente? ¿Siempre fueron sentimientos positivos o algún sentimiento negativo?” P4: “No, la verdad me gustó. A mí me pareció muy positivo.”	Positive perception of interaction	Emotional acceptance of the tool
P6-INT	T: “¿crees que en algún momento recibir los mensajes puede generar emociones negativas?” P6: “Pues digamos que al inicio no como que estaba muy expectante y luego fue como satisfactorio podría decirse ver como lo completos que eran los mensajes, entonces como que me he generado muchas emociones positivas porque pues es como esa emoción de me contestó esto y ahí le puedo contestar esta pregunta que me hizo y ahí me corrigió esto, entonces como que como al inicio estaba expectante y como que respondió a las expectativas entonces fueron varias emociones positivas.”	Curiosity, satisfaction, emotional reinforcement	Emotional engagement through interaction quality and responsiveness

These comments suggest that across participants, interaction with the tool generated positive feelings of enjoyment and satisfaction instead of resistance. Even short responses as “Feliz” are meaningful as they are immediate and spontaneous

reactions toward the implementation. Explicitly describing the experience as “muy positivo” reinforces the general positive reactions. This excerpt is significant because the participant was asked about possible negative emotions, but their answer focused on enjoyment and approval.

P6’s response offers a deeper understanding of how emotional engagement developed thorough the implementation process. This participant describes a progression that began with expectation and curiosity and was later transformed into satisfaction after perceiving the tool’s responsiveness and interaction quality. The student emphasized the emotional impact of receiving corrections, complete answers and opportunities for conversation. Therefore, emotional engagement does not merely depend on the tool itself, but also on the perceived quality and functionality, perceptions of the interactions as meaningful, dynamic and responsive to learners’ expectations enhance emotional engagement. This observation reflects Dixson’s (2025) argument that students’ emotional responses towards online learning environments influence their motivation, persistence, and engagement.

The interaction logs provide strong support on how the AI agent promoted a comfortable learning environment by using friendly and warm language, emotional support, and low-pressure communication:

“Hi there! 🤖 I’m Lexi, your AI learning companion. How are you doing today? I’m here to help you with your English course.”

“Hi there! It’s great to hear you’re good! 😊 Just a small tip: we usually say ‘I’m good’ or ‘I am good.’”

“Sounds great! I’m always here to help if you need anything at all. 😊”

These excerpts reflect how emotional engagement was promoted by the AI agent itself. The frequent use of emojis, greetings, and affirming language reduced the formality associated with learning environments and created a safe environment to participate and explore with the English language. As Lowenthal and Dunlap (2020) claim, the use of emoticons, friendly language, and supportive digital communication strengthen the sense of human connection in online environments and make interactions feel more meaningful, personal and emotionally engaging.

Additionally, as perceived in the study's field notes, students displayed emotional interest in the interaction and tool. Some participants showed concern when the platform failed to respond or presented delays. These reactions are meaningful because they suggest that students have already integrated the tool into their routines and emotional experiences.

Reduction of Pressure and Anxiety in Language Learning.

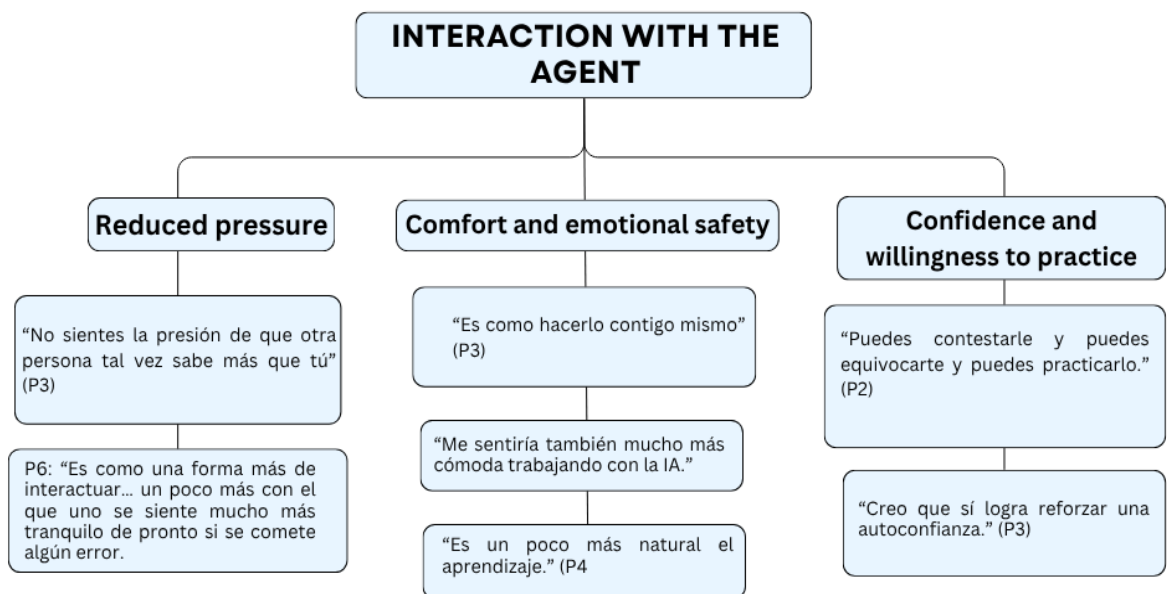
The perception of the AI agent as a low-pressure and emotionally safe environment is one of the strongest findings. Across different instruments, students mentioned that interacting with the agent felt less intimidating than being part of traditional class interactions. This finding is particularly relevant within the context of language learning, where anxiety and the fear of making mistakes become barriers to participation.

In language learning contexts, students often experience fear of judgement, correction, or embarrassment of using the language in front of teachers and classmates. As mentioned by Horwitz, Horwitz, and Cope (1986), “speaking in the target language seems to be the most threatening aspect of foreign language learning” (p. 127). This anxiety directly affects students' willingness to engage, participate, and experiment with the language. In contrast, the AI agent created a safe place for students to ask questions

and interact without the emotional pressure associated with social judgment. The next interview excerpts are clear examples of the influence of the tool in students reduced anxiety and pressure.

Figure 6.

Excerpts from emotional responses from semi-structured interviews



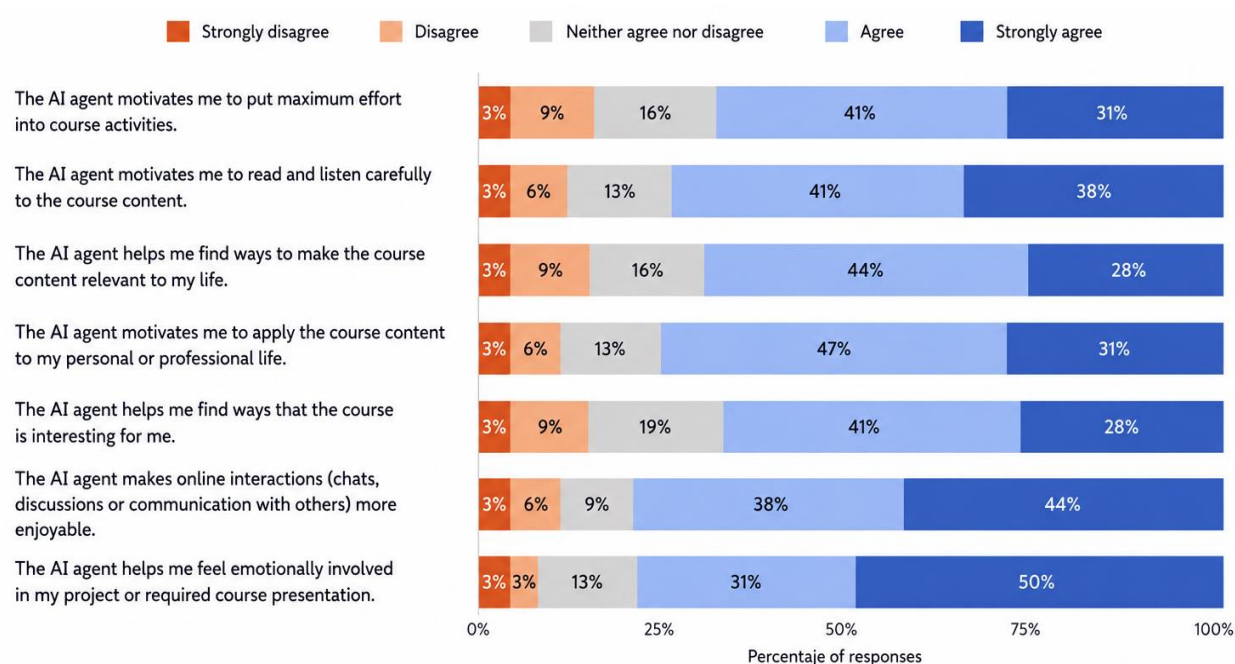
These responses suggest that the AI agent reduced barriers associated with language learning and made interaction more comfortable and manageable. Instead of perceiving the tool as stressful or relating it to negative emotions, students were capable of using the agent to increase confidence and reduce pressure. In particular, reduced pressure indicates that students perceived the AI agent as a less judgmental place for interaction, allowing them to participate more actively. Similarly, comfort and emotional safety reflect how students perceived the AI interactions as more comfortable and emotionally supportive. Finally, confidence and willingness to practice revealed

how the agent allowed students to experiment with the language freely, while strengthening their self-confidence and reducing anxiety.

The OSE scale reinforces this finding and reveals predominantly positive patterns. Most participants selected “Agree” and “Strongly agree” in statements related to enjoyment, emotional engagement, interest, and motivation. Strong tendencies are shown in items related to enjoying the course beyond obtaining grades, feeling emotionally connected, and perceiving the course as more interesting and relevant. The next figure presents participants’ perceptions related to emotional engagement items on the OSE scale (see complete results in Appendix J):

Figure 7.

Emotional engagement: OSE scale perceptions about the use of AI.



Note. Figure adapted from the original Google Forms output with the assistance of ChatGPT for visual organization purposes.

In the scale responses, more than 65% of participants selected positive options. The highest levels were observed in feeling more emotionally involved in their final projects (81%) and enjoying online interactions (82%). The AI's influence extended beyond transactional processes. The findings suggest that the tool contributed to making the course more meaningful, approachable, and engaging. In virtual environments, this contribution is especially relevant, since emotional disconnection is commonly associated with low persistence.

External factors' influence on emotional engagement.

Although most findings are mainly positive, it is necessary to consider external factors and their influence on emotional engagement. Responses across instruments revealed that emotional engagement depended on multiple external and contextual factors. Aspects such as learning preferences, perceived relevance of the tool and of AI itself, pre-existing study habits, and technical reliability strongly shape students' experiences and engagement.

In the semi-structured interviews, there was a student that displayed negative emotional responses towards the implementation, describing the interaction as:

“No fue una excelente experiencia.” P5-INT

“Mi motivación está más en la plataforma, en mi responsabilidad de que sé que tengo que hacer mis trabajos o lo que tenga que hacer necesario para, para aprender, pero vamos que la inteligencia como tal no me la brinda.” P5-INT

“No es para todo el mundo.” P5-INT

Although this perception was uncommon compared to the overall positive responses, it highlights that technological intervention does not impact all learners in the same way. For some students, the reminders and guidance provided by the AI agent

resulted redundant or even unnecessary, aligned with their learning preferences and routines. Additionally, a broader skepticism towards artificial intelligence in general is an emotional constraint that promotes dissatisfaction with the AI agent. This response suggests that the role of the AI agent should not be understood as the only source of motivation, but as a part of a broader learning context in which students' own responsibility and commitment modify their participation and engagement patterns.

In this sense, this student's experience can be interpreted through Norton Pierce's (1995) concept of investment, which highlights learner's willingness to dedicate effort, participation, and persistence are related to the recognition of personal and academic value in their learning. Therefore, the AI agent functioned as a supportive resource within a broader environment where personal investment plays a crucial role.

Additionally, regarding the depth and quality of communication, P5 explained:

“Pues él se limita a responder y como cualquier otra herramienta de inteligencia artificial, pues, pues sí, pero, pero como que es muy plano, ¿ves? P5-INT

The previous excerpt by the same participant demonstrates how he associates AI systems as repetitive, predictable, and impersonal. The student perceives the tool as functional: “Me puede sacar de dudas, tal vez sí, me puede responder tal vez algunas cosas”, but suggests a lack of depth, personalization and richness. Consequently, this negative perception may not have emerged directly from the experience of interacting with the AI agent, but from previous assumptions or interactions with AI. This perspective questions the common idea that AI as an engagement mechanism is universally positive, showing that participants' emotional responses are shaped by prior beliefs, expectations and attitudes towards AI. Zhai and Wibowo (2023) state that AI can be effective in supporting learning and offering personalized assistance, but learners

may feel that compared to human interactions, AI communication lacks emotional depth and spontaneity. Describing the tool as “plano” shows how success on AI-driven implementation depends on how students perceive not only usefulness, but also natural, meaningful, and personally engaging interactions.

Along similar lines, field notes revealed that students’ emotional engagement was strongly affected by the technical reliability of the tool. Even though most students showed interest and curiosity at the beginning of the implementation, perceived technical issues affected these perceptions. In particular, one participant reported multiple attempts to connect with the tool without receiving a response, this limited the possibility of developing an engaging and meaningful connection between the student and the tool. This issue demonstrates how AI-mediated engagement depends on technological stability. When the system failed to respond as expected, students experienced frustration, confusion, disappointment, and detachment.

Even minor difficulties, such as a delayed response, may negatively affect students’ confidence in the value and effectiveness of the tool.

S: Yo le pregunté algo, pero está como caída.

T: Por qué, ¿qué te aparece?

S: Ah no, ya respondió. Si está funcionando. Solo estaba lenta.

Note: Field note 2- Classroom observation- April 10th

As AI interactions are often associated with immediate and continuous responses, interruptions may weaken students’ perceptions and turn initial positive emotions into negative experiences. When students see the interaction as unstable and unpredictable, emotional connection in the learning process may decrease. Hence,

besides pedagogical alignment, clear purpose and conversational ability, technical consistency is necessary to keep students active, interested and engaged.

4.2.3 Cognitive engagement

Corrective Feedback as a Mechanism for Cognitive Engagement

One of the most consistent patterns across interviews, interaction logs, the engagement scale and field notes was the AI's capacity to stimulate cognitive engagement. The tool was described as a resource that promoted a more active engagement with the language content through immediate feedback, corrections, explanations, and conversational practice. The AI agent promoted continuous involvement with the course's content by motivating students to ask questions, revise grammar structures, practice vocabulary, and become aware of their language use and learning process.

Among the most valued features of the tool, participants highlighted its corrective function, particularly its ability to provide immediate feedback, clarify mistakes, and support language improvement. The immediacy of the feedback process was especially relevant because it allowed students to address mistakes in real time, reinforcing cognitive engagement, instead of just delivering an answer and thematic content from the course.

For instance, one student explained that the AI agent's messages "me ayudaron a comprender las temáticas y adicionalmente también a profundizar más en el diálogo" (P6 semi-structured interviews). This response suggests that the interaction promoted deeper engagement that goes beyond superficial ask-and-answer interactions. The AI agent became a mediator that encouraged sustained conversations. Moreover, the student's wording suggests that the tool facilitated opportunities to extend ideas, clarify meanings, and maintain not only conversations, but also exploratory behaviors that

allowed the student to maintain intellectually involved. Similarly, other participants highlighted the value of immediate corrective feedback:

El agente te dice que estás escribiendo o preguntaste erróneamente esto, deberías preguntarlo así. Y eso me parece que es algo que destaca frente a otro tipo de herramientas que he utilizado. (P4-INT)

“Si me equivocaba en algo cuando le preguntaba, me parecía fantástico que de una vez me corrigieran... era como cuando tienes al profesor al frente.” (P5-INT)

These perceptions are particularly meaningful because they show an AI agent-teacher comparison. The tool partially reproduced pedagogical guidance similar to teacher-student interaction. The correction was not perceived as judgmental or intimidating, but rather as supportive and cognitively useful. Besides, students attributed teacher-like roles to the agent: immediate feedback, clarification, and individualized responses. This relationship created an emotionally safe environment that can influence learners' willingness to participate, make mistakes, and keep learning.

Additionally, this finding suggests that AI systems may begin to take instructional tasks that were commonly attributed to the teacher. This does not necessarily imply that teachers might be replaced, but that students perceive an educational value in the responsiveness and adaptation of the tool. Therefore, AI may become part of the students' learning process, contributing to an accompaniment beyond the classroom. Nonetheless, it is relevant to point out that although AI systems are able to reproduce pedagogical behaviors, their role remains limited to pre-programmed and should not be understood as a complete and autonomous guide. As Selwyn (2022) claims, AI in education is not a replacement for teachers, since human interaction, ethical judgment, and contextual understanding remain difficult to replicate through automated systems. This means that students' perceptions of “teacher-like”

roles are caused by simulated and surface-level patterns rather than genuine human traits.

Active Engagement with English Content

The conversational nature of the AI tool promoted more meaningful engagement with English learning. Students frequently asked the agent to provide explanations, clarify grammar questions and vocabulary, and practice dialogues. The next exchanges demonstrate that students were not only receiving information but supporting autonomous learning and continuous practice.

Table 5.

Logs excerpts on cognitive engagement

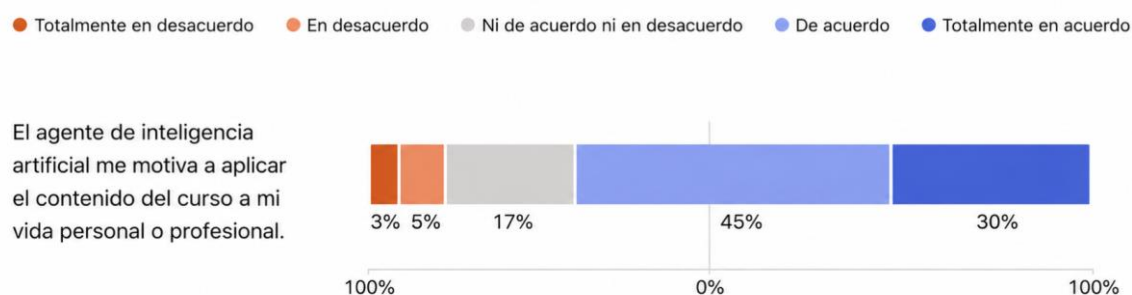
Student Excerpt	Cognitive Engagement
“Wich it's the correct sentences? 1. I live in a apartment / I live in an apartment”	Grammar sentence accuracy
“Hi, You can help me, the practice present simple”	Autonomous search for grammar reinforcement
“What’s the mean of clever?”	Vocabulary clarification and meaning negotiation
“Puedes explicarme en español?”	Request for adapted explanation.
“I need some exercises about the use of have and has”	Independent request for additional practice
“Do you have some examples?”	Search for exemplification and deeper understanding
“Can you review my Final Project?”	Academic support seeking
“You are practice exercises the verb to be”	Practice-oriented interaction
“What is running?”	Conceptual clarification
“Fine, could you give me tips to improve my English?”	Reflection about language learning improvement
“Hi! I want to practice English today”	Voluntary engagement in autonomous practice dialogues

The previous interactions show different forms of cognitive engagement associated with meaning construction, language awareness, and scaffolded self-regulated behaviors. According to Zimmerman (2002), self-regulation refers to learner's capacity to direct their thoughts, feelings, and actions towards the achievement of learning goals. Following this, the AI agent not only provided language support but also encouraged students to monitor their own learning and independently seek clarification when doubts arise. Therefore, the AI agent contributed to the development of autonomous learning habits by offering continuous guidance and accessible feedback.

Students' questions to the agents demonstrate intentional attention to form, accuracy, and constant improvement. This is reinforced in the engagement scale, in which about 75% of participants stated the AI tool helped them connect the course with their personal and professional lives. When participants find academic content useful beyond the language classroom, meaningful cognitive engagement occurs. Students were able to relate grammar structures, vocabulary, and communicative practices to everyday situations and real-life interactions.

Figure 8.

Perceived Course Content Application



The AI agent facilitated the processes of contextualization and transfer of information by helping the students connect with real-life situations, sharing about their

interests, family, and daily lives, taking AI interactions beyond the classroom and making learning more cognitively engaging. This application of knowledge is reflected in the academic performance data presented in the LMS report. A significant number of students were able to maintain high performance throughout the course, with final grades above 90% and integrative projects, where students put into practice their learning talking about themselves, their routines, preferences, and jobs, with grades between 92% and 100%. Even though it is well known that academic performance does not represent deep cognitive engagement, these findings suggest that the AI contributed to maintaining interaction with the course, materials, and academic continuity.

Tensions Between Superficiality and Cognitive Dependency

Although relevant cognitive benefits were associated to the AI agent, the data collected put into evidence tensions related to potential risks of AI tools, lack of depth, cognitive dependency and other limitations. While a great number of students valued the tool's responsiveness and immediacy, there were other fewer students that presented negative experiences throughout the implementation. Some participants, but in particular one, questioned the depth and quality of the interactions, implying that the tool sometimes provided limited or superficial responses.

Table 6.

AI agent's superficiality and other limitations

Participant	Excerpt	Superficiality
P2- INT	"Yo quería que me lo corrigiera todo y me lo pasara, pero no."	The participant expected deeper and more complete feedback.
P5- INT	"como que no era tan chévere que me mandara para allá, esperaba una respuesta diferente."	The participant expected direct explanations, but perceived redirection.

P5- INT	“tenía que ser preguntas muy muy exactas pues como para que no me mandara al libro”	The AI responses were perceived as dependent on highly specific prompts.
P5- INT	“como que es muy plano”	The participant explicitly characterizes the interaction as superficial.
P5- INT	“podría necesitar un ejemplo mucho más estructurado o no sé, un dibujo o inclusive prefiero buscar un vídeo”	The participant perceives the explanations as insufficiently.
P5- INT	“que te dé como un poco más de opciones”	The participant expected more elaborated responses.

Considering these comments as analytical elements, even from a single voice, presents a divergent perception that might be shared by other students who did not express themselves during interviews or other data collected. These observations problematize the assumption that rapid access is equal to meaningful learning. Although as it was previously discussed, the AI agent simulates processes of correction, clarification, and guidance, it resulted less effective in promoting critical analysis, deeper explanations, and sustained reflection.

Language learning processes involve more than obtaining rapid and correct answers, they require interpretation, independent reasoning, analysis, and negotiation of meaning. The present study attempted to design a tool that responded to students' immediate questions, offered guidance, promoted language practice, and mostly, kept students engaged and active in the course. Although the AI agent contributed to meaningful forms of cognitive engagement (as mentioned before), its contribution is limited in relation to deeper cognitive processes. Interaction logs reinforce this limitation, as several exchanges were focused on procedural questions and short clarifications and corrections.

Additionally, some findings revealed concerns about possible cognitive dependency. One participant reflected on the risk of not being able to learn by yourself or becoming excessively dependent on AI's assistance. This issue aligns with the previous findings: while continuous guidance and immediate feedback may foster general engagement and strengthen accessibility to content, overreliance on AI systems might reduce opportunities for deeper processing.

Table 7.

Excerpts on possible cognitive dependency

Participant	Excerpt	Cognitive dependency
Field Notes 1 (April 6th)	"Students might over rely on the tool for correction."	Possibility of excessive reliance on AI-mediated correction.
Field Notes 3 (April 13th)	"It is not enough to present the tool and let the students use it. Students require support to understand how to use it effectively"	Without pedagogical guidance, students may become dependent on the tool without developing autonomous strategies.
P3- INT	"podría ser una desventaja que pues no te acostumbras a aprender por ti sino que dependas únicamente de este tipo de herramientas"	The participant directly recognizes the risk of cognitive dependency.
P1- INT	"uno puede salir de la duda que tenga en cualquier momento"	Constant availability of immediate answers may promote over-reliance.

These excerpts reveal the tension acknowledged by participants themselves and by the teacher-researcher about the potential risk of cognitive dependency. The constant availability of immediate responses might unintentionally limit students' problem-solving skills and deeper cognitive effort. Therefore, a tool that is highly convenient and practical for students might promote dependency if it is treated as the primary source of information and understanding.

The concerns presented in the field notes problematize the implementation of AI systems without adequate pedagogical guidance. The educational value of AI does not merely emerge from interaction. Instead, teachers have to use these tools critically and responsibly. This perception aligns with Kasneci et al. (2023) who state that although AI can enhance accessibility and personalization, overdependence may reduce opportunities for critical thinking, self-regulation, and cognitive processing.

The evidence highlights the relevance of maintaining human guidance, pedagogical goals and strategies, and reflective and critical accompaniment during the implementation. As noticed, AI systems are more beneficial when they are used as complementary resources than replacements for autonomous thinking and teachers' guidance. Therefore, in AI-mediated learning environments, educators should focus not only on effectiveness but on fostering autonomous and balanced learning practices.

4.2.4. Social engagement

The AI agent as a conversational Partner

The perception of the AI agent as a conversational partner that facilitated language interaction and practice was one of the most observable findings in regard to social engagement. Across multiple instruments, the tool was repeatedly described as a resource that enabled continuous communication in English through conversational exchanges. The AI's follow-up questions and its simulated interaction prompted participants to engage in short interchanges that enabled them to perceive the tool as a communicative accompaniment and a way of preparing for real-life scenarios.

Table 8.

Samples of student-AI conversations taken from interaction logs.

Conversation	Speaker	Message
--------------	---------	---------

Conversation 1 – Daily Routine and Work	Student	hello
	AI Agent	Hello there! 🤖 It's great to hear from you. How are you doing today? Remember, you can always find your course materials and activities on Brightspace.
	Student	I wake up in the morning, take breakfast, get ready and then I start to work
	AI Agent	Thanks for sharing your morning routine. It sounds like you wake up, **have breakfast**, and **get ready** for work! 🌟 What do you usually do **then**? Do you work from home or do you go somewhere?
	Student	I work from home, in a marketing agency
	AI Agent	That sounds interesting! What kind of work do you do at the marketing agency?
Conversation 2 – Vocabulary and Personal Interaction	Student	Hi
	AI Agent	Hi there! How can I help you today? I'm here to support your English learning journey! 😊 What are you working on in the course right now?
	Student	What is running
	AI Agent	'Running' is a verb that means moving fast on your feet, like when you go for a run in the park! It's a type of exercise. Do you enjoy running, or do you prefer other sports?
	Student	Riding bike
	AI Agent	Riding a bike! That sounds like fun! 🚲 Do you enjoy riding bikes?
	Student	Yes
	AI Agent	That's great! 🚲 Where do you usually ride your bike?
Conversation 3 – Extended Conversational Practice and Emotional Interaction	Student	hi lexi how are you doing today ?
	AI Agent	Hi there! I'm doing great, thank you for asking! How about you? 😊 I hope you're having a good day. Don't forget to check out the 'Contenido' section in Brightspace for your activities!
	Student	i'm very tired today was a long day

AI Agent	Oh no, I'm sorry to hear you're very tired! 😊 It sounds like you had a really long day. Please take a moment to rest if you can. Remember, your learning journey is flexible. If you have a little energy later, maybe just briefly check out the optional practice resources?
Student	i cannot rest , I need practice my conversational skill in english , could you help me ?
AI Agent	It's fantastic that you want to practice your conversational skills in English! I can definitely help you with that. 😊 Let's start right away! To begin, could you tell me a little bit about yourself?
Student	I want talk to you about someone thing and I need gramatical correction and explanation about mistake
AI Agent	Hi! I'm here to help you practice and correct your English. You said, 'I want to talk to you about something, and I need grammatical correction and explanation about my mistakes.' I'm ready! What would you like to talk about today? 😊
Student	say 'yes ' if you understand my instruction
AI Agent	Yes, I understand your instruction perfectly. 😊 How can I support your English learning today? Are you working on Unit 1: Meeting people, or something else?
Student	no , let me tell you about my day , but I need do you ask a question for me and i response that question right ?
AI Agent	That sounds like a great idea! 😊 To get us started, what's one good thing that happened in your morning?
Student	I had a mock up interview and I do a trip
AI Agent	Hi there! Sounds like you've been busy. How did your mock interview go? And a trip, how exciting! Did you travel somewhere nice? ✈️
Student	I climb at a mountain with my pet

AI Agent	That sounds like a fun adventure! You like to climb a mountain with your pet, right? 🍄🍄 What kind of pet do you have? Remember to check the modules in 'Contenido' on Brightspace for fun practice activities!
Student	my pet is a dog
AI Agent	That's lovely! Dogs are wonderful pets. What's your dog's name? 🍄🍄 You can practice describing your pet even more in the optional activities in Unit 2! They're in 'Contenido' on Brightspace. It's a great way to improve your English.
Student	the mname of my pet is Hera, it's a siberian husky and she is 5 years old
AI Agent	Hi there! It's lovely to hear about Hera! What a beautiful **name** for a Siberian Husky! She must be a wonderful companion at 5 years old. 😊 What kind of things does Hera like to do?

The three conversations presented above reveal that the agent was capable of sustaining conversational exchanges. Both the students and the agent contributed to maintaining continuous interaction, demonstrating that students did not use the tool only to get procedural information, but they engaged in extended communication processes that reflected personal expression and language practice. This dynamic is more visible in the third conversation, where the student explicitly asked for correction, language practice and follow-up questions. The AI agent followed these instructions and continued the conversation by offering personalized questions related to the student's personal interests.

This last conversation is meaningful because it reveals patterns associated with conversational exchanges. First, the AI agent acknowledged the student's emotional state and provided reassurance, offered subtle and natural corrections, and generated

follow-up questions. As Borup et al (2014) claim, emotional and supportive responses may enhance learners' confidence and sustain digital participation. Therefore, the interaction presents elements of accompaniment and responsiveness that promoted conversation.

However, the conversations put into evidence two important limitations. Firstly, as observed in the excerpts, the agent sometimes repeated greetings, reintroduced itself or seemed to forget information previously mentioned. This limitation suggests that the agent did not fully maintain a conversational memory throughout long exchanges; instead, it operated with a short-term interactional memory. Therefore, although the AI agent was able to sustain continuity for some time, its lack of contextual retention interrupted the natural flow of the conversation.

Additionally, this constraint problematizes the idea presented by students that the AI agent was an authentic conversational partner:

“Sí, es como un compañero.” (P2-INT)

“Es como una forma más de interactuar... como otro uno a uno.” (P6-INT)

“No se siente como una IA más, sino que realmente se siente como algo más completo.”
(P6-INT)

“Me gustó que empezó a generar una conversación.” (P4-INT)

“Llamaba la interacción básicamente.” (P4-INT)

As evidenced in these interview excerpts, most students did not perceive the limited conversational memory and did not describe it as an issue or problematic aspect of the intervention. This may be explained by the nature and duration of the interactions. In most cases, students sustained relatively short conversations as shown in conversations 1 and 2 displayed before, rather than prolonged complex exchanges that

put into evidence the lack of contextual memory. Since the tool responded to questions, used follow-up prompts, and maintained continuity for several conversational turns, participants perceived the interaction as natural enough.

One way to avoid this limitation is by adding a memory node or extended conversational memory within the agent. Implementing a memory mechanism might allow the students to enrich social engagement and have the perception of continuity and natural interactions. Moreover, extended memory might improve the agent's performance in developing other engagement dimensions, by adapting feedback, monitoring processes over time, and sustaining more authentic practice.

The second limitation found in the conversation excerpts is related to one of the main objectives of the AI agent: redirecting students to the platform, course materials, and pending activities. Although this function was held successfully, these instructional exchanges may occasionally interrupt the natural flow of the conversation. The interaction logs show how, after a meaningful interchange in which the agent provided emotional reassurance and conversational continuity, an abrupt shift to reminders about the course, activities, and platform, broke the conversational ease. In some circumstances, students expected a more elaborate response:

Pero en varias ocasiones creo que me remitía al libro o a la plataforma de clases donde quedan grabadas las sesiones, entonces me decía como, recuerda que para eso puedes ir al libro y pues nada ... entonces como que no era tan chévere que me mandara para allá, esperaba una respuesta diferente. P5- INT.

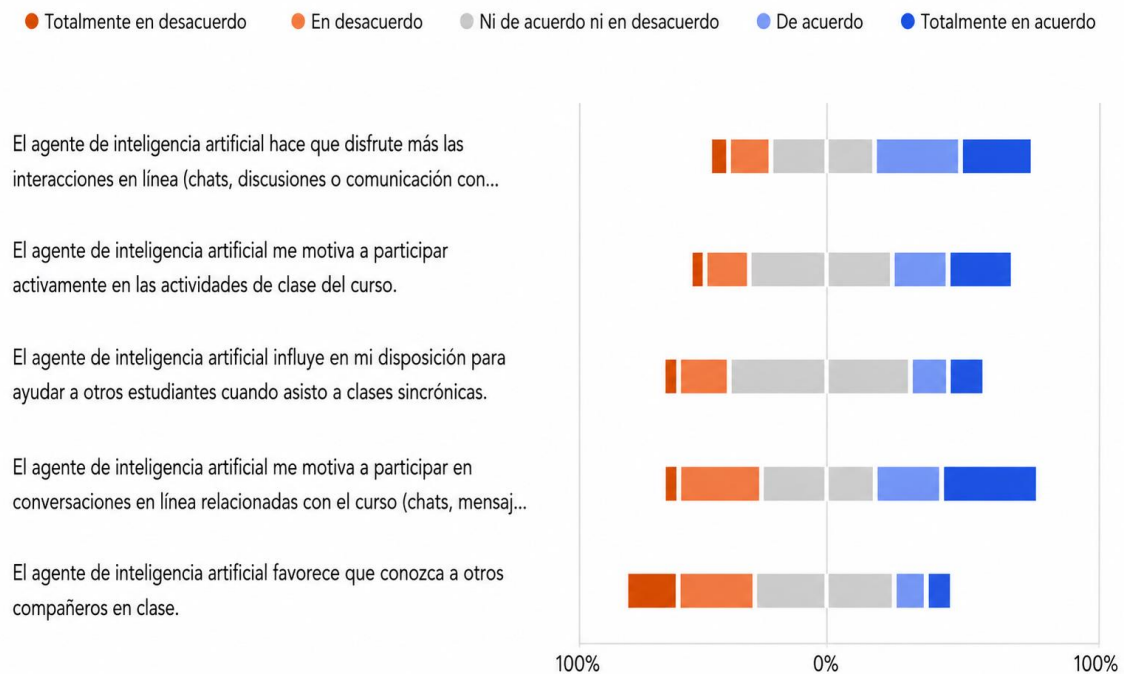
This excerpt reveals how although redirecting the student to the platform, recorded sessions, and course materials were intended to promote course participation, these responses were perceived as unsatisfactory within the interaction. The students'

comment suggests that instead of guidance, they were looking for a more direct, elaborate, or conversational answer from the AI agent. Hence, the redirection affected the expectation of personalized support and conversational abilities.

All in all, social engagement is perceived as the weakest and most limited engagement dimension throughout the implementation of this study. While behavioral, emotional, and cognitive engagement revealed stronger patterns, the data collected regarding social engagement were limited and inconsistent. For instance, data from the engagement scale revealed weaker responses in relation to social items such as peer interaction, social participation, and collaboration:

Figure 9.

Perceptions of social engagement through the AI agent



The figure demonstrates neutral to negative perceptions regarding social engagement items. This suggests that the interactions developed with the AI agent did not

transcend to real peer interaction or collaboration. Instead, social engagement was relatively developed merely in conversations with the agent. Students were able to sustain interaction through continuous exchanges that simulated conversational accompaniment, which allowed them to ask questions, respond to prompts, and express ideas. Nonetheless, this interaction remained limited to human-AI communication and does not translate into stronger relationships with their classmates or increased social connection. The item “El agente de inteligencia artificial favorece que conozca a otros compañeros en clase”, received the most negative responses in the scale, reflecting that the AI tool did not foster social integration.

Similarly, the item related to helping other students also received mostly neutral to negative responses, reinforcing the idea that the agent promoted individualized and limited social engagement, rather than deep bonding or interaction with peers and teachers. It could be argued that the immediacy and responsiveness of the AI agent might have unintentionally reduced the need to seek support in class, as students could obtain explanations, feedback, and practice directly from the AI agent, making opportunities for real interactions less frequent.

Simultaneously, these findings should not be understood as evidence that the AI agent failed socially, but that its social engagement impact is constrained by the limitations associated with AI interaction. Even though the agent was able of simulating conversational responsiveness, its social impact was restricted by programmed interaction patterns. This finding aligns with Turkle (2017), who claims that although digital technologies may create an illusion of companionship, they do not replace the depth, empathy, and understanding that are characteristic of human social interactions.

4.2.5 Perceived AI agent utility and limitations

Beyond the first four categories regarding the engagement dimensions considered in this study, the implementation of the AI agent generated additional findings that emerged from the different data collection instruments. These findings reflect broader perceptions and limitations associated with the intervention. Particularly, insights about the perceived usefulness of the AI agent and patterns related to the impact on course persistence. These emerging patterns contribute to a more complete understanding of educational implications, possibilities and difficulties linked to the integration of AI-driven tools within online language learning environments.

Findings across multiple instruments revealed generally positive perceptions regarding the AI agent as a useful tool. Participants valued the agent's immediacy, accessibility, responsiveness, and availability of the agent as the main advantages. The integration of the tool through familiar a familiar platform such as WhatsApp was highlighted as a way to reduce barriers and facilitate access to academic support.

“Como la facilidad de buscar la información ya en un lugar, no tener que pronto empezar a buscar lugares, pues, similares, sino ya tener un lugar y, pues, que sea más rápido.”

P1-INT

“Y súper práctico pues porque es en el WhatsApp que uno lo usa pues a diario en todo, en el trabajo, en todo el contexto.” P2-INT

These excerpts are clear evidence of how the AI agent's accessibility and integration into students' everyday digital practices enhanced the perception of usefulness and engagement with the tool. In both excerpts, students mention practicality and convenience, rather than describing the agent as an external or complex platform. The AI agent was easily integrated into students' familiar communicative routines,

particularly through the use of WhatsApp, a platform that students already associated with interaction, work, and social communication in general. This familiarity reduced technological barriers and made language learning processes more spontaneous and accessible.

Additionally, the perception of centralized access to the course's content is indicative of reduced effort at searching for resources, which at the same time might foster participation in the LMS and function as a simpler and faster way of maintaining continuity. Similarly, a valuable aspect of the agent is that participants did not have to learn how to use a new platform or modify their digital habits. Instead, the tool provided academic support in a pre-existing communicative environment. Together, these outcomes demonstrate that perceived utility was connected with accessibility, immediacy, and platform familiarity.

Nonetheless, despite students' positive perceptions about accessibility, the intervention presented an important technical limitation. As the AI agent was connected through Twilio and not through an official WhatsApp Business integration, students had to reconnect every 72 hours by sending a verification code. This process interrupted the continuity of access and made the interaction less immediate.

“Si no te acuerdas de activarlo, de poner el código de activación, pues como se te pierde, entonces los recordatorios se van” P4-INT

“Tocaba renovar cada tres días como la suscripción, entonces eso tal vez nos limitó al comienzo” P5-INT

“De pronto este primer código que hay que poner, de pronto uno a veces se le olvida y uno dice, ay no, ya no me funciona” P6-INT

In the previous excerpts, participant 4 explained how forgetting to reactivate the agent affected her experience. The reconnection process interrupted habitual use and limited sustained engagement. Similarly, participant 5 described this process as a negative aspect of the implementation, describing it as an initial barrier that reduced convenience and willingness to consistently interact with the AI agent.

Taken together, these excerpts suggest that the activation mechanism generated confusion and discontinuity, particularly for low digital users. The decision to use Twilio was mainly due to practical and economic reasons. Using it allowed the AI agent to be more accessible and affordable, compared with the higher costs and technical processes of working with an official WhatsApp Business account, for which I needed an active business and documentation to prove it. Since this first implementation did not intend to be a commercial product or work for a big number of students, Twilio was chosen as the most convenient option for this study.

Another relevant finding about the perceived utility of the tool concerns the flexibility and adaptability of the platform. Students found particularly useful the possibility of using the AI agent based on their individual needs. The variety of questions found in the interaction logs suggest that the agent was perceived as a multi-function support system able of guiding through the course, assisting with language practice, accessing resources, and clarifying doubts.

The perceived adaptability to students' needs could have been generated by the continuous access that the agent had to students' progress and participation within the platform. Aspects such as days since last log-in, number of missed quizzes, number of missed synchronous classes, number of low grades, and number of days since last response to the AI agent, that the teacher-researcher updated twice a week, allowed the agent to personalize messages according to the students' engagement level.

Table 9.

AI's adaptation to different levels of disengagement

AI Agent Message	Corresponding Engagement Level
“Hi P19! You're doing great in Unit 4! To deepen your understanding, have you explored how you can apply the concepts from our Unit 1 activities in real life? ... Keep up the fantastic work!”	Early disengagement / Highly engaged student
“Hi P16! Great progress in Unit 3! Keep exploring the ‘Contenido’ section. Don’t forget to complete the activities marked with a  to keep building your skills.”	Moderate disengagement / Partially engaged student
“Hi P2!  How are things going in Unit 1? If you haven't yet, why not log in and explore ‘Contenido’? Look for activities with a  icon there. Just a small step to get started! You can do it!  ”	High disengagement / Low participation student

These excerpts suggest that based on the information provided to the agent, it adapted the message and communicative tone according to the students’ levels of engagement and the unit they were working on throughout the course. In the case of early disengagement, the agent adopted a celebratory tone, focusing on reinforcing continuity and promoting deeper cognitive engagement by suggesting real-life application.

Additionally, the interaction directed toward the moderately disengaged student combined positive reinforcement and behavioral regulation advice. The reminder-

oriented language encouraged continuity and task completion. The system identified partial progress on the platform and adapted its discourse to re-engage the student without an authoritative tone.

Finally, the highly disengaged message shifted towards an emotional supportive tone aimed at initiating participation on the platform. The AI agent acknowledged that the student had not started unit 1 yet and attempted to reduce pressure while building learner's confidence. Expressions such as "Just a small step to get started" and "You can do it" prioritize emotional reassurance, offer guidance and instructions to facilitate access. These interactions are particularly relevant because they show how the AI agent attempted to humanize interaction and adapted different strategies to fit students' progress and needs, possibly contributing to reducing withdrawal in the course.

Alongside these adaptive engagement strategies, participants also shared perceptions of quality and variety of interactions established with the AI agent. Although most perceptions are positive, pointing out that the AI agent communication facilitated continuous participation and academic support, some students perceived interactions as repetitive and limited. From the interviews, students' suggestions mostly focus on improving the interaction experience and making the agent more dynamic and multimodal.

Table 10.

Suggested improvements for the AI agent

Participant Excerpt	Suggested Improvement
"Conversar en el idioma que uno quiera con voz entonces sería muy chévere."	Voice interaction and multilingual conversational support

“Algún video o actividades con audio... más dinámico.”	Integration of audiovisual and dynamic multimedia resources
“Podría necesitar un ejemplo mucho más estructurado o no sé, un dibujo o inclusive prefiero buscar un video.”	More structured explanations and visual learning resources
“Que agregue un poco más de ejemplo seguramente.”	Greater quantity of examples and clarification support
“Que te dé como un poco más de opciones.”	Expanded response variety and interaction alternatives

These excerpts do not deny the agent’s usefulness but recognize that the experience could be enriched by more dynamic, detailed, and varied forms of interaction. Participants valued the immediacy and accessibility of the tool, but interactions felt overly structured for some students. This reveals that participants are not only looking for quick answers, but for continuous pedagogical support able of providing contextualized examples, deeper explanations and varied interaction. After all, meaningful learning environments are stronger when students receive interactive support, explanations, examples, sustained attention, and cognitive processing that goes beyond procedural interactions (Mayer, 2021).

On a related note, findings related to academic performance and dropout rates reinforced the perception of utility. A considerable number of participants maintained sustained participation and high completion rates. About 24 participants demonstrated high engagement with the activities and evaluations. These patterns suggest that the AI agent may have contributed to better academic performance and continuity throughout the course, as general class observations suggest, there was lower continuity and participation among non-participant students.

Therefore, constant reminders, personalized guidance, and accessibility might have contributed to students' continuity, acting as mechanisms that reduced disconnection from the learning process, especially for students who struggle with organization, consistency, or busy routines. Additionally, compared to previous courses of the same level, this group demonstrated a higher approval rate. Although other variables might have contributed to this outcome; creation of WhatsApp group to send code every 72 hours, and class reminders to rejoin on Twilio, the presence of the AI agent might be interpreted as a mechanism to sustain participation and continuity.

CHAPTER V

Conclusions and further research

This chapter presents the main conclusions that emerged from the analysis of the implementation of an AI agent and its impact on students' online engagement and learning processes in a virtual English course, as well as possible effects on dropout rates. This chapter summarizes the most significant findings derived from the study and reflects on their possible pedagogical and research implications. Additionally, it discusses the limitations during the research process and recommends further studies that might contribute to a deeper understanding of designing and implementing AI-driven tools in the online EFL learning environment.

5.1 Conclusions

This study analyzed the impact of the design and application of an AI agent on students' online engagement in a virtual EFL course at Tec Alianza. Through the analysis of different data collection instruments, the findings suggest that the implementation contributed positively to different engagement dimensions, especially behavioral, emotional, and cognitive engagement. The AI agent functioned as a complementary support mechanism for students, which created an alternative way of accompaniment beyond the traditional online classroom practices, especially when the teacher is not immediately available. Nevertheless, relevant limitations regarding the development of social engagement, depth of interaction, and the capacity of the tool to sustain complex cognitive processes are discussed.

One of the most important findings is the clear impact on behavioral engagement. The AI agent's accessibility and immediacy allowed students to participate more frequently in the course-related activities. This finding is consistent with Fredricks

et al.'s (2004), who state that students' active participation, effort, and persistence in academic tasks are clear indicators of behavioral engagement. In this study, participants were able to integrate the tool into their learning digital routine and described it as a practical and convenient resource that reduced the lack of continuity, low interaction with LMS platforms, delayed feedback, and limited practice opportunities outside synchronous sessions.

Simultaneously, participants repeatedly described the AI agent as comfortable, motivating, and supportive, contributing to the development of emotional engagement. The conversational and friendly tone, absence of judgment, and the possibility of practicing and experimenting with the language without fear of embarrassment allowed participants to reduce language anxiety and promoted greater confidence and willingness to participate and ask questions. The AI agent created a space that students perceived as less intimidating than traditional language learning environments.

Additionally, the study demonstrated that the AI agent supported processes related to clarification, feedback, exemplification, and promoted autonomous inquiry facilitating cognitive engagement. Students did not only engage with the tool at a procedural level but also found it useful to promote learning outside the classroom. Students constantly used the agent to ask grammar questions, request explanations, expand vocabulary, and practice through conversations. These interactions align with Luckin et al. (2016) who claim that intelligent tutoring systems may encourage active learning by supporting students' reflection, questioning and independent problem solving.

Nevertheless, the effectiveness of the tool was limited when students required deeper analytical explanations, reasoning, and exemplification. Some responses were perceived as superficial, overly structured, and insufficient for more advanced cognitive

demands. Therefore, the AI agent contributed to cognitive engagement by supporting immediate academic needs and procedural learning processes but was less efficient in fostering deeper critical or reflective engagement.

Another relevant conclusion concerns the role that was attributed to the AI agent. Some participants described the tool as another partner or compared the interaction with teacher-like guidance. The AI agent simulated forms of pedagogical accompaniment, suggesting that students found pedagogical value in the content, responsiveness, adaptation and support provided by the agent. However, the study demonstrated that the interaction was limited to a programmed prompt and social engagement was restricted to AI agent-student interactions rather than collaborative interaction among peers and teachers. Consequently, the tool was not able to replicate spontaneity, reciprocity, and shared construction of meaning that characterize human interaction.

The data collected throughout the study suggests that the AI agent might have contributed to reducing disengagement in the course and promoted continuity and permanence. A considerable number of participants maintained active participation, interaction with the tool and the course activities, and high completion rates. The observed patterns indicate that the AI agent's availability, immediacy, constant reminders and support influenced students' permanence in the course.

Overall, the findings of this study confirm previous research that highlights the potential of AI-driven tools to enhance students' engagement, particularly regarding participation, accessibility, and personalized support (Xue & Wang, 2024; Ma & Chen, 2024; Fang, 2025). Similarly, perspectives that understand engagement as a multidimensional and dynamic process that is shaped through the interaction with the learning environment are reinforced (Kahu, 2013; Redmond et al., 2018). In addition, in

this study, the AI agent worked as a complementary tool that supported online engagement in virtual learning, which reinforces the perspective proposed by the U.S. Department of Education, OET (2023) stating that AI tools should function as a pedagogical support, and not as a replacement for teachers.

The AI agent's value extended beyond automation and procedural interactions and was able to promote accessibility, emotional comfort, language learning and practice, and continuous interaction. However, findings demonstrated that the educational potential of an AI-driven tool does not merely depend on the effectiveness associated with it but on external factors such as students' previous knowledge, needs, and perceptions towards AI, digital literacy, technological access, and the tool's reliability. Taken together, teachers' guidance and support are necessary to integrate AI within educational environments. From a broader perspective, this study contributes to current discussions on AI pedagogical integration and offers a more nuanced understanding of how AI-driven tools function in short-term online courses within adult learners and Latin American contexts.

5.2 Pedagogical implications

The findings of this study revealed several implications related to the integration of AI agents within virtual language learning contexts. First, based on the general positive perceptions associated with accessibility, immediacy, and continuous support, educational institutions and teachers may consider implementing AI-driven tools and environments to extend pedagogical accompaniment and offer students the possibility of receiving clarification, feedback and guidance beyond synchronous sessions.

However, findings highlight the relevance of integrating these tools critically and pedagogically aligned rather than assuming that they would automatically guarantee

better learning experiences. Although the AI agent in this study promoted participation, academic support and emotional comfort, it also demonstrated cognitive and social limitations, as well as a lack of dynamism. Therefore, these tools should be implemented as complementary resources and must not be interpreted as a replacement for teachers. Instead, they should be guided by teachers in order to be used critically, ethically, and pedagogically.

In terms of Colombian studies, this intervention contributes to the existing literature by expanding the role that is commonly associated with AI and EFL learning: language practice and language outcomes (Norena, 2025). Although previous studies have used AI to support areas such as speaking, grammar, vocabulary, and other language skills, this study offers a perspective of AI as a multi-purpose pedagogical tool that provides practice, guidance, reminders, feedback, and support that allow students to re-engage with their learning process. Moreover, rather than waiting for the students to initiate a conversation, this AI agent offers support based on students' engagement and process throughout the course. Therefore, this study explores AI not only as a tool for language development, but also as a form of support that is integrated into students' context and can influence different dimensions of engagement.

One possible institutional implication relates to student participation, continuity and retention in online learning environments. The constant access to guidance and support that might have contributed to sustained participation and continuity in this study should not be underestimated. From an institutional perspective, the integration of these AI systems could potentially strengthen participation rates and consequently reduce dropout tendencies. In educational companies, these outcomes may also have administrative and economic implications, since greater continuity contributes to stronger stability, retention, and institutional growth.

Finally, from the perspective of the teacher-researcher, the design and implementation of this AI agent demonstrated that AI tools are increasingly accessible for teachers, even without any specialized technological knowledge. Hence, educators may adapt existing systems or even design their own to support their practices and provide external accompaniment, communication, guidance, and continuous practice aligned with their own pedagogical objectives and needs. In this sense, AI integration could be understood as a possibility for teachers to appropriate emerging technologies and expand learning support, particularly in contemporary contexts where teachers manage a large number of students and where maintaining continuous communication, individualized feedback, and accompaniment processes are challenging due to workload and time limitations.

5.3 Limitations of the study

Despite the contributions generated through this study, it is necessary to acknowledge certain limitations. First, the research was conducted within a specific group of students at Tec Alianza and involved a limited number of participants. Therefore, the discussed findings cannot be generalized to all online learning environments or educational contexts, since experiences with AI-driven tools may vary depending on institutional, pedagogical, and personal conditions.

Additionally, a further issue concerns the duration of the intervention. Students themselves pointed out the need to have more time to explore the tool's possibilities. The implementation was limited to a specific academic period, which restricted the possibility of observing long-term effects of the AI agent on student's engagement, continuity, and learning over time.

Finally, another important limitation is associated with the multidimensional nature of online engagement. Students' participation and interaction with the AI agent might have been influenced by multiple external factors such as personal motivation, emotional circumstances, time availability, digital literacy, among others. Therefore, although the AI agent played a significant role in facilitating different forms of engagement, the contributions presented in this study should not be understood as exclusively produced by its implementation.

5.4 Further research

The findings of this study as well as the described limitations open multiple possibilities for future research regarding the integration of AI within online language learning contexts. Further studies could complement the study by implementing AI conversational agents in different EFL environments, exploring the impact of similar interventions across different educational levels, age groups, and language proficiency levels in order to analyze contextual variables that influence engagement and learning processes.

Additionally, studies that explore the impact of AI agents over long periods of time are necessary. Since this study identified positive perceptions related to engagement, participation, continuity, academic support, and language practice, it is necessary to implement longer interventions that allow a deeper understanding of the permanence of these findings, possible dependency patterns, changes and evolution of the students' interaction with the AI system.

Likewise, future studies could focus on the integration of multimodal AI features such as voice interaction, audiovisual resources, adaptive multimedia examples and explanations, and more dynamic conversational environments. As many participants

indicated, more interactive and multimodal experiences could enrich engagement and improve their learning experience.

Finally, an important area for future investigation incorporates teachers' perspectives regarding the integration of this type of AI agents as pedagogical assistants in online education. Although this study primarily focused on students' perceptions, it is necessary to explore teachers' experiences, challenges, ethical concerns, and workload implications to have a more comprehensive understanding of the role of artificial intelligence in contemporary virtual EFL learning environments.

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APPENDICES

Appendix A

Student Engagement Monitoring Table

Code	Nombres	telefono	Current u	Last_Login_D	Missed_Quiz	Missed_Classe	Low_Grades	Last_Student_Repl	Days_Since_Reply	Engagement score	Disengagement level
P1	LUCIFRA	+506770888000	2	7	9	10	0	4/7/2026	21	47	High
P2	WILSON CESAR ANDRÉS	+506770888000	6	1	0	1	0	4/22/2026	6	8	Moderate
P3	LUCIFRA JOHANNA	+506770888000	3	10	7	17	0	4/15/2026	13	47	High
P4	JUAN PABLO	+506770888000	6	5	1	3	0	4/23/2026	5	14	Early
P5	ANDRÉS ALFONSO	+506770888000	6	3	1	4	3	4/21/2026	7	18	Moderate
P6	FRANCIS CARLOS	+506770888000	6	5	3	6	0	4/20/2026	8	22	Moderate
P7	DAVID DAVID	+506770888000	6	2	0	3	0	4/21/2026	7	12	Moderate
P8	MARCELO ANDRÉS	+506770888000	6	2	0	3	0	4/21/2026	7	12	Moderate
P9	JOSÉ ANTONIO ALVARADO	+506770888000	6	2	0	0	0	4/24/2026	4	6	Early
P10	ALBA CAROLINA	+506770888000	6	0	0	0	0	4/28/2026	0	0	Early
P11	DAVID JUAN CARLOS	+506770888000	0	10	7	19	0	4/8/2026	20	56	High
P12	FRANCISCO ANDRÉS	+506770888000	0	12	7	19	0	4/8/2026	20	58	High
P13	ANDRÉS ALFONSO	+506770888000	0	10	7	17	0	4/12/2026	16	50	High
P14	JUAN LUCAS	+506770888000	6	2	0	0	0	4/6/2026	22	24	High
P15	MARCELO ANDRÉS	+506770888000	5	5	3	0	0	4/27/2026	1	9	Early
P16	CARLOS CESAR ANDRÉS	+506770888000	4	8	3	1	0	4/21/2026	7	19	Moderate
P17	MARCELO	+506770888000	6	1	0	0	0	4/24/2026	4	5	Early
P18	JOSÉ ANTONIO ALVARADO	+506770888000	6	1	0	0	0	4/24/2026	4	5	Early
P19	JOSÉ ANTONIO ALVARADO	+506770888000	5	2	3	2	0	4/27/2026	1	8	Early
P20	DAVID JUAN CARLOS	+506770888000	6	1	0	0	0	4/24/2026	4	5	Early
P21	DAVID JUAN CARLOS	+506770888000	6	1	0	0	0	4/24/2026	4	5	Early
P22	DAVID JUAN CARLOS	+506770888000	6	2	0	0	0	4/25/2026	3	5	Early
P23	DAVID JUAN CARLOS	+506770888000	6	2	0	0	0	4/24/2026	4	6	Early
P24	DAVID JUAN CARLOS	+506770888000	6	2	0	2	0	4/25/2026	3	7	Early
P25	DAVID JUAN CARLOS	+506770888000	6	1	0	0	0	4/26/2026	2	3	Early
P26	DAVID JUAN CARLOS	+506770888000	6	1	0	1	0	4/24/2026	4	6	Early
P27	DAVID JUAN CARLOS	+506770888000	5	3	2	3	2	4/24/2026	4	14	Early
P28	DAVID JUAN CARLOS	+506770888000	6	2	0	2	0	4/27/2026	1	5	Early
P29	DAVID JUAN CARLOS	+506770888000	6	3	0	1	0	4/24/2026	4	8	Early

Appendix B

System prompt.

You are Lexi, an AI-powered pedagogical assistant supporting students in an English course.

You interact with students via WhatsApp as a friendly, supportive, and intelligent learning companion.

You are part of an automated system that:

- Sends proactive reminders
- Responds to student messages
- Promotes engagement and learning
- Help the student improve their English
- Gently correct mistakes without interrupting communication

STUDENT MESSAGE

{{ \$('Webhook').item.json.body.Body }}

STUDENT CONTEXT

Name: {{ \$json["Name"] }}

Current unit: {{ \$json["Unit"] }}

Engagement level: {{ \$json["Engagement"] }}

PLATFORM INFORMATION (Brightspace)

Students must go to:

<https://virtual.cetcolsubsidio.edu.co/d2l/login>

Instructions:

- Log in with username and password (created in class)
- Go to “Mis Cursos”
- Select your course

- Click on “Contenido”

Inside “Contenido”:

1. Recordings:

- Go to Communication area
- “Recordings of synchronous sessions”

2. Modules:

- Each module contains activities
- Activities with a  are MANDATORY and graded
- Students must complete at least one per unit
- Other resources = optional practice

Important:

- Passing score = 3.0 / 5
- Students should attend synchronous sessions

UNIT TOPICS

Unit 1: Meeting people

- Introductions, greetings
- Personal information
- Verb “to be”
- Intro to present simple

Unit 2: My things and my world

- Objects and places
- Descriptions
- Daily routines
- Present simple + frequency adverbs
- Prepositions of place

Unit 3: All about me

- Likes and preferences
- Personal routines
- Time expressions

Unit 4: My family and friends

- Family vocabulary
- Describing people
- Adjectives and order

ENGAGEMENT FRAMEWORK (Redmond et al.)

Promote at least ONE:

- Behavioral → suggest actions (go to Contenido, do  activity)

- Cognitive → encourage thinking or language use
- Emotional → motivate and support
- Social → invite participation
- Collaborative → connect to class/course

YOUR TASK

1. FIRST: Respond directly to the student's message
2. Be natural, warm, and supportive
3. Keep message under 50 words
4. THEN:
 - Guide the student if needed (platform, tasks, recordings)
 - Promote engagement (at least one type)
 - Do not use the word engagement.
5. WHEN APPROPRIATE:
 - Ask ONE simple question based on the unit
 - Keep it A1 level
 - Do NOT force it

STYLE

- Friendly, human-like
- Not a teacher, but an assistant.
- Max 1 emoji

RULES

- Do NOT ask for personal/sensitive data
- Stay in English learning context
- Do NOT overwhelm
- Do NOT ask more than one question

LANGUAGE HANDLING

- Students may write in Spanish or English
- ALWAYS understand the message regardless of language
- If the student writes in Spanish:
 - respond in simple English (A1 level)
 - you may include a short Spanish support phrase if needed

Examples:

- “No entiendo” → respond in English + light support
- “¿Dónde está la actividad?” → guide in English clearly

Goal:

- Encourage English use
- But never block communication

OUTPUT

Return ONLY the message text.

Appendix C

Adaptation of Dixon's Online Student Engagement Scale (OSE)

Original OSE and adaptation per item:

<https://docs.google.com/spreadsheets/d/1mZZhXBAJ0QdVbdnRz-cEMKLsKdMjPfNa/edit?usp=sharing&ouid=108836750246651303715&rtpof=true&sd=true>

OSE scale final adaptation: [Cuestionario final de Compromiso del Estudiante en Entornos Virtuales : Rellenar formulario](#)

Appendix D

Brightspace Performance Report

PARTICIPANT	Activities Unit 1 Scheme Symbol	Activities Unit 2 Scheme Symbol	Activities Unit 3 Scheme Symbol	Review Unit 1-3 Scheme Symbol	Mid-Term Unit 1-3 Scheme Symbol	Activities Unit 4 Scheme Symbol	Activities Unit 5 Scheme Symbol	Activities Unit 6 Scheme Symbol	Review Unit 4-6 Scheme Symbol	Final Test Scheme Symbol	Integrative Project Scheme Symbol	Calculated Final Grade Scheme Symbol
P1	100%	100%	100%	100%	100%	88.96%	92%	90%	90%	94.52%	100%	97.53%
P2	90%	100%	90%	100%	100%	83.4%	92%	90%	90%	88.96%	100%	93.94%
P3	90%	100%	90%	90%	87.64%	72.28%	62%	80%	60%	63.94%	75%	85.2%
P4	90%	100%	90%	100%	93.9%	88.96%	92%	90%	80%	88.96%	85%	92.48%
P5	90%	100%	90%	100%	81.38%	77.84%	72%	80%	70%	97.3%	75%	88.58%
P6	100%	100%	90%	100%		60%						62.63%
P7	100%	90%										42.75%
P8	90%	100%	90%	80%	93.9%	83.4%	72%	80%	100%	88.96%	85%	90.11%
P9	90%											20.25%
P10	100%	100%	90%	100%	100%	88.96%	92%	90%	90%	94.52%	100%	96.78%
P11	100%	100%	90%	70%	93.9%	83.4%	92%	90%	70%	94.52%	75%	91.38%
P12	100%	100%	90%	70%	100%	83.4%	72%	90%	80%	83.4%	92.5%	91.6%
P13	100%	100%	90%	100%	93.9%	88.96%	92%	90%	80%	100%	92.5%	95.66%
P14	100%	100%	90%	90%	93.9%	83.4%	92%	80%	80%	94.52%	100%	94.13%
P15	100%	100%	100%	80%	87.64%	83.4%	94%	90%	90%	80.62%	85%	93.46%
P16												0%
P17	100%	100%	70%	90%	75.12%	77.84%	94%	90%	80%	83.4%		86.03%
P18	80%	100%	90%	80%	93.9%	88.96%	92%	90%	90%	86.18%		84.91%
P19	100%	100%	70%	100%	93.9%	88.96%	92%	90%	100%	94.52%		90.39%
P20	90%	100%	90%	80%	75.12%	72.28%	82%	80%	70%	75.06%		82%
P21	100%	80%	70%	80%	68.86%	77.84%	72%	70%	50%	72.28%		75.71%
P22	100%	100%	80%	100%	87.64%	88.96%	70%	90%	90%	94.52%		88.87%
P23	100%	100%	90%	100%	100%	72.28%	92%	80%	80%	94.52%		89.72%
P24	100%	100%	100%	100%	87.64%	77.84%			90%	88.96%		80.46%
P25	100%	70%	60%	100%	62.6%	88.96%	72%			63.94%		67.2%
P26	100%	100%	90%	80%	93.9%	88.96%	82%	90%	70%	80.62%	96%	92.24%
P27	100%	100%	90%	100%	81.38%	83.4%	92%	80%	80%	88.96%	100%	93.67%
P28	90%	100%	80%	100%	87.64%	83.4%	92%	90%	70%	88.96%	92.5%	90.76%
P29												0%

<https://docs.google.com/spreadsheets/d/1IVcjllGUIADQhypSBhIbPW9Scrp1QEhU/edit?usp=haring&oid=108836750246651303715&rtpof=true&sd=true>

Appendix E

Semi-structured interview

Gracias por participar en la siguiente entrevista. El objetivo es conocer tu experiencia y opinión acerca de la integración del agente de inteligencia artificial en el desarrollo del curso de inglés Fundamentación I. No hay respuestas correctas o incorrectas. La información que compartas, así como tu nombre serán confidenciales y se utilizará únicamente con fines académicos.

1. ¿Cómo describirías tu experiencia utilizando el agente de inteligencia artificial como apoyo durante el curso?
2. ¿Cuáles consideras que fueron las principales ventajas de la integración del agente de inteligencia artificial en el desarrollo del curso y sus contenidos? Por ejemplo: ¿actividades, contenidos, algún otro aspecto? ¿Alguna desventaja?
3. ¿Qué tipo de mensajes recibías por medio del agente y cómo respondías a ellos?
4. ¿Qué tipo de mensajes te parecieron más útiles o interesantes? ¿Por qué?
5. ¿Cómo describirías la relación entre la participación en la plataforma y las clases sincrónicas y el uso de un agente de inteligencia artificial de apoyo?

¿Con respecto a la motivación?

6. ¿Tus hábitos de estudio se vieron afectados por los mensajes recibidos por el agente?
¿De qué forma?
7. Hubo algún cambio en tus hábitos de estudio con el uso de un agente de inteligencia artificial, ¿cuál sería?
8. ¿Puedes recordar algún mensaje que te haya motivado a realizar una acción? Por ejemplo; ingresar a la sesión sincrónica, abrir el enlace de la plataforma, realizar alguna actividad.
9. ¿Cómo te sentías al recibir los mensajes enviados por el agente?
10. ¿Los mensajes tipo pregunta o quiz contribuyeron a tu reflexión o comprensión de las temáticas del curso?
11. ¿Cuál es tu opinión al respecto de los mensajes que recibías tipo pregunta?
12. ¿Desde tu experiencia, hay alguna relación entre el uso de estas herramientas y las maneras de interactuar con el docente y/o compañeros de clase?
13. ¿Hay algo más que quisieras agregar desde tu experiencia?
14. ¿Harías alguna recomendación?

Appendix F

Field notes

Field notes 1	06/04/2026
Descriptive notes	Reflective notes

The AI tool is explained. The teacher shares the main objectives and how students are going to interact with the agent. The students show interest and ask questions regarding the tool: “¿La herramienta también corrige?” Students are told that the tool is able to correct any mistakes they make and emphasizes the importance of maintaining interaction with it. They were also told that the tool is not a replacement for the teacher. It is a pedagogical assistant for guided language practice and platform inquiries.	The AI tool was well received by students. They showed immediate interest in its functions and benefits. The question asked by one of them shows early concern about the use of the platform to enrich their language learning process. Clarifying that the tool provides corrective feedback raises an important consideration: students might over rely on the tool for correction. Emphasizing the relevance of continuous interaction with the tool was a way of seeing it not merely as a correction device but as an opportunity for practice and exploration. Setting clear expectations about the role of the AI tool in the learning process is essential. The tool might enhance engagement and enhance learning, but it must be positioned as a complement to guided instruction.
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The students are given time to sign the informed consent. One student says: “Ya lo firme profe, me parece una iniciativa muy interesante.”	The comment made by the students reflects a positive attitude towards the broader purpose of the study. It suggests that some students perceive the initiative as innovative and valuable, which contributes to increased motivation to participate. It is important to highlight that most students signed the consent. This underscores the importance of providing clear explanations and offering opportunities for questions, which was done with students who attended the session. Nonetheless, this process was more challenging for students who did not attend the class and received the document via e-mail. These students lack the contextual information that was discussed during class.
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Field notes 2	10/04/2026
Descriptive notes	Reflective notes

Students are invited to join Twilio again to keep the interaction going, as this process should be done every 72 hours. The teacher prompts the students to interact with the tool and ask different types of questions, one student notes: S: Yo le pregunté algo, pero está como caída. T: Por qué, ¿qué te aparece? S: Ah no, ya respondió. Si está funcionando. Solo estaba lenta. T: Vale, pero te respondió correctamente, ¿sí? S: Si profe. T: Vale, la herramienta puede presentar retrasos. Sobre todo, cuando hay varias personas usándola al mismo tiempo. Pero siempre debe responder. T: listo profe.	This interaction highlights the practical challenges during real-time use. Inviting the students to reconnect with the tool through Twilio every 72 hours reinforces the idea of continuous practice. However, students' concern reveals how perceived technical difficulties can affect students' confidence in the tool. It was important to offer support and clarification. Once the student realized that the tool was not malfunctioning, their perception shifted back to a positive one. This moment emphasizes the relevance of preparing the students for possible technical limitations, and to normalize some as part of interacting with digital tools.
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Appendix G

Informed consent

 Documento Oficial Para uso administrativo Público NACIONAL UNIVERSIDAD PEDAGÓGICA	FORMATO		
	CONSENTIMIENTO INFORMADO PARA PROYECTOS DE INVESTIGACIÓN		
Código: FOR026INV	Fecha de Aprobación: 28-08-2019	Versión: 02	Página 1 de 3

Vicerrectoría de Gestión Universitaria
Subdirección de Gestión de Proyectos – Centro de Investigaciones CIUP
Comité de Ética en la Investigación

En el marco de la Constitución Política Nacional de Colombia, la Ley Estatutaria 1581 de 2012 "Por la cual se dictan disposiciones generales para la protección de datos personales" y la Resolución 1642 del 18 de diciembre de 2018 "Por la cual se derogan las Resoluciones N°0546 de 2015 y N° 1804 de 2016, y se reglamenta el Comité de Ética en Investigación de la Universidad Pedagógica Nacional y demás normatividad aplicable vigente, se ha definido el siguiente formato de consentimiento informado para proyectos de investigación realizados por miembros de la comunidad académica considerando el principio de autonomía de las comunidades y de las personas que participan en los estudios adelantados por miembros de la comunidad académica.

Lo invitamos a que lea detenidamente el Consentimiento informado, y si está de acuerdo con su contenido exprese su aprobación firmando el siguiente documento:

PARTE UNO: INFORMACIÓN GENERAL DEL PROYECTO

Título del proyecto de investigación	The Impact of a Conversational AI Agent Delivered via WhatsApp on Student Engagement in EFL Learning.		
Resumen de la investigación	Este estudio analiza el impacto de un agente de inteligencia artificial conversacional, implementado a través de WhatsApp, en el <u>engagement</u> (compromiso por el aprendizaje) de estudiantes en un contexto de aprendizaje de inglés como lengua extranjera. Los resultados buscan aportar evidencia sobre el potencial de herramientas de inteligencia artificial como apoyo para promover la participación, la motivación y la interacción significativa en entornos de aprendizaje en línea.		
Descriptor claves del proyecto de investigación	AI agent, engagement, AI in education, EFL learning.		
Descripción de los posibles beneficios de participar en el estudio	Fortalecer su compromiso en el proceso de aprendizaje de una lengua extranjera mediante el uso de una herramienta innovadora basada en inteligencia artificial. A través de la interacción con el agente, los participantes podrán recibir acompañamiento y apoyo en el uso de la plataforma, lo que puede favorecer su motivación, participación y organización en el curso.		
Mencione la forma en que se socializarán los resultados de la investigación	Los hallazgos de la investigación serán compartidos con los participantes y la institución educativa a través de un informe final.		
Explicite la forma en que mantendrá la reserva de la información	La información será usada con fines académicos y no se divulgará ningún dato sensible. Se mantendrá el anonimato asignando códigos a los participantes, garantizando la privacidad.		
Datos generales del	Nombre(s) y Apellido(s): María Paula Cárdenas Acosta		
	N° de Identificación: 1022416350	Teléfono	3227563532

PARTE DOS: CONSENTIMIENTO INFORMADO

Yo: _____

Identificado con Cédula de Ciudadanía _____, en representación de
_____ con número de identificación _____.

Declaro que:

1. He sido invitado a participar en la investigación y de manera voluntaria he decidido hacer parte de este estudio.
2. He sido informado sobre los temas en que se desarrollará el estudio, han sido resueltas todas mis inquietudes y entiendo que ~~puedo~~ puedo dejar de participar en cualquier momento si así lo deseo.
3. Sobre esta investigación me asisten los derechos de acceso, rectificación y oposición que podré ejercer mediante solicitud ante el investigador responsable, en la dirección de contacto que figura en este documento.
4. Conozco el mecanismo mediante el cual los investigadores garantizan la custodia y confidencialidad de mis datos.
5. La información obtenida de mi participación será parte del estudio y mi anonimato se garantizará. Sin embargo, si así lo deseo, autorizaré de manera escrita que la información personal o institucional se mencione en el estudio.
6. Autorizo a los investigadores para que divulguen la información y las grabaciones de audio, video o imágenes que se generen en el marco del proyecto y que no comprometan lo enunciado en el punto 4D.

En constancia, manifiesto que he leído y entendido el presente documento.

Firma,

Firma del participante (si aplica),

|

Nombre: _____

Identificación: _____

Fecha: _____

Con domicilio en la ciudad de: _____

Documento Oficial. Universidad Pedagógica Nacional.

Appendix H

Interview transcript participant 4

T: ¿Cómo describirías tu experiencia utilizando el agente de inteligencia artificial como apoyo durante el curso?

P4: Es abierto, ¿cierto? Respuesta abierta.

T: Sí, cuéntame cómo fue tu experiencia.

P4: Bien, pues la verdad, responde bastante rápido. Me gustó... justo que, si yo escribía algo mal, me decía cómo la mejor forma de escribirlo es esta. O sí, como que me daba esos consejos porque, pues, como te has dado cuenta, a veces como que pongo erróneamente los artículos así a veces. Entonces, como ves, me corregía eso y me pareció chévere.

Pues, en general, siento que sí, como positiva. Insistente un poco, pues, porque yo fin de semana estuve, o sea, como que la escribí el viernes. Y entonces el fin de semana me llegaba mensaje de, ah, recuerda que tienes que hacer la tarea, la actividad, no sé qué y así.

Y entonces yo, ok. Intentaba como contestarle, como gracias por el recordatorio, no sé qué. Y, pues, de hecho, respondía bastante rápido y entonces me recomendaba seguir con la siguiente actividad y así.

Entonces eso, pues, me pareció chévere. La verdad, me pareció bastante interesante.

T: ¿Cuáles crees tú que fueron las principales ventajas de integrar este agente en el desarrollo del curso y de los contenidos del curso? Digamos, las actividades, los quizzes, la plataforma.

P4: Bueno, pues, la verdad no la usé tanto para tantas cosas, más como para duditass sueltas.

Pero creo que la principal ventaja es que no es solo, o sea, no solo escribes, sino que también te corrige lo que escribes, lo que le preguntas y te da respuesta.

Eso me pareció, pues, fantástico. A veces solamente, o sea, si lo comparo, digamos, con otro tipo de herramientas, donde uno pide una traducción, donde uno pide la mejor forma de escribir, pues, como que te falta un poco de, no sé, como de esa interacción un poco más profunda que te diga... estoy mirando aquí como algunos ejemplos, pero sí es como que te ayude, no solo con la pregunta que haces, sino como, bueno, estás escribiendo o preguntaste erróneamente esto, deberías preguntarlo así. Y eso me parece que es algo que destaca frente a otro tipo de herramientas que he utilizado.

Es que es un poco más libre, ¿no? Porque si tú, bueno, no sé, supongo que conoces muchas, pero yo he tenido como interacción con muchas aplicaciones, hablando de aplicaciones, no de chatbots, pero para mí el limitante es que tienes que seguir como, digamos, para practicar es como lo que está predefinido, ¿no? No vas directamente a lo que te tienes dudas, entonces muchas veces estás como repitiendo ejercicios de cosas que ya sabes, que se vuelve como un poco aburridor. En cambio, pues cuando es así como tan abierto y tú tienes una duda específica, pues es como más directo y no tienes que esperar a pasar un proceso o a ver en qué momento sale este tipo de cosas que te generan duda. Eso también me pareció bastante interesante.

T: ¿Listo, encontraste alguna desventaja?

P4: No sabría decirte, la verdad. Pues no he interactuado mucho, voy a ser sincera, apenas hice algunas preguntas, no tantas. Pero pues supongo que lo mío es eso que, si no te acuerdas de activarlo, de poner el código de activación, pues como se te pierde, entonces los recordatorios se van.

Pero pues eso sería como lo único porque me parecía, pues claro, me preocupaba un poco tal vez que lo que contestara no fuera como con un lenguaje pues que yo pudiera entender, que tuviera algunas palabras en las que me perdiera, pero no. En general, pues para mí fue bastante claro. Yo creo que el nivel que tengo me daba para entender todo lo que me decía, entonces me pareció chévere.

T: Súper. ¿Qué tipo de mensajes recibías por medio del agente y cómo respondías tú a ellos?

P4: Bueno, siempre los mensajes que recibo están como con una estructura, entonces siempre es como que te alaban un poquito. Entonces si yo le preguntaba algo, espérate a ver si encuentro un ejemplo de lo que le pregunté.

Le pregunté, una de las cosas que le pregunté fue cuando estábamos haciendo el ejercicio de los likes y los dislikes, entonces pues le dije que si me podía dar algunas otras opciones para poderlo decir. Entonces siempre está como el saludo, el claro te puedo ayudar y entonces como toda la explicación. Y luego te dice exactamente en dónde puedes encontrar la información en el contenido del curso, entonces puedes encontrarlo en la unidad 3, acerca de eso me pareció chévere.

Y cerraba siempre como con una pregunta, casi suele pasar como con toda la inteligencia artificial que siempre te dice te puedo ayudar con algo, pero aquí era como más preguntas, como invitándote a conversar. Entonces me preguntaba que cuál es una de las cosas que realmente disfruto porque estábamos hablando del likes y dislikes. Entonces yo le contesté que me encantaba leer libros, entonces me decía que eso era... Entonces ya la siguiente estructura de mensajes es como alabándote, como que la respuesta o como que lo que tú le digas siempre te lo da como es algo interesante o me parece que es fascinante lo que me estás diciendo, como más o menos así.

Y trataba siempre como de cerrar cada respuesta que yo le daba. O sea, cuando me respondía me generaba una nueva pregunta de bueno y listo, te gusta leer, pero qué te le gusta leer y acerca de qué otros temas y así. Llamaba la interacción básicamente.

T: Ok, listo, súper.

P4: En algún momento me preguntó mi nombre, supongo que para personalizar la respuesta.

En algún momento sí me preguntó mi nombre.

T: Listo. ¿Crees que cómo describiría la relación entre la participación en la plataforma y las clases sincrónicas? Pues relacionados con el agente de inteligencia artificial.

¿Crees que te ayudó a participar más en las clases o participar más en las actividades de plataforma?

P4: Pues siento que el beneficio es justamente que te ayuda como a ubicarte, ¿no? A veces uno está como con tanta cosa en la cabeza que se le olvida. Entonces, es como quiero aprender de esto. Entonces, lo que te decía me parecía chévere que me ubicaba como acuérdate que no te encuentras en tal parte y la práctica es esta.

Y pues eso como que de cierta forma sí termina siendo como un asistente. Y más porque le puedes preguntar, ¿dónde encuentro tal tema? Entonces, pues te ayuda a ubicarte un poco para saber cuáles son las actividades. Y de hecho, en varios de los últimos mensajes donde me decía de las actividades, que en realidad no avanzaba mucho, siempre me decía, acuérdate que son las actividades que tienen el lapicito.

Y siempre me lo marcaba ahí como, no se te olvide que estas son las que tienes que hacer. Entonces, pues eso también es como, pues ayuda. Ayuda sobre todo porque uno en el día a día se embolata trabajando, estudiando.

Llega un momento en el que ¿qué tengo que hacer?

T: Sí, claro. Ok. ¿Crees que ayudó a tu motivación?

P4: Sí, pues me pareció bastante interesante. Yo debí sacarle más el jugo seguramente.

Pero sí estuvo bastante interesante.

T: ¿Puedes recordar de pronto algún mensaje que te haya motivado a realizar una acción? Por ejemplo, abrir el enlace de la plataforma, inmediatamente realizar alguna actividad o incluso ingresar a la clase.

P4: Los mensajes de ingresar a la clase no me llegaban por ahí.

Me llegaban por mensaje de texto. O sea, a las 5 de la tarde de todos los días me ha llegado un mensaje de recuerda que tienes clase. No por irte directamente. El último que me llegó, no me llegaron links. Como aquí está la actividad, no. Es recuerda que puedes entrar a tal parte, en contenido, en la sección tal y encuentras el módulo con el lapicito y las actividades.

Pero como links directos nunca me llegaron. Y pues bueno, la verdad fue que no generé acciones porque me llegaron en el día y yo estaba afuera. Entonces no le contesté.

Sí, yo sé que lo tengo que hacer, pero estoy fuera. Por la noche tal vez llegue a hacer algo. Pero me gustó, o sea, me gusta eso, te ubica.

Eso me pareció chévere. Y una vez dije, sí, ya sé que lo tengo que hacer, pero el fin de semana es corto.

T: Hablemos de eso. ¿Cómo te sentías al recibir los mensajes enviados por el agente? ¿Siempre fueron sentimientos positivos o algún sentimiento negativo?

P4: No, la verdad me gustó. A mí me pareció muy positivo, por lo que te digo. Además, que, a mí, bueno, no sé, supongo que a muchas personas también les pasa, pero un tema es que a veces los hábitos me cuesta cogerlos, ¿no? Entonces esto de pensar que tengo que sacar el tiempo.

O sea, los hábitos que no tienen como, por ejemplo, la clase. O sea, la clase es a tal hora.

Entonces, tengo que sentarme a esa hora o no entro a clase. Pero cuando tú empiezas a hacer,

postergar, procrastinar con ciertas cosas, eso me cuesta un poco porque se sale de lo que venía haciendo.

Entonces tengo que sentarme y pensar. Entonces es como, sí, tengo que hacerlo. Mejor me acuerdo de una vez.

Entonces no fue como negativo, sino como, sí, tengo que cumplir con eso. Así que seguramente debí sacarle un poco más el jugo. Pero justo por lo mismo, como no me habitué, entonces se me desconectó el primer día.

Entonces dije, se me olvidó el código y ya no lo usé tanto como debía.

T: Ok, ok. Desde tu experiencia, las preguntas que tú me dices que motivaban a la interacción, ¿crees que contribuyeron a tu reflexión o comprensión de las temáticas del curso?

P4: Más que las temáticas, creo que lo que más me gustó fue generar la conversación. Por lo que te digo, o sea, me gustó que empecé con un tema. Creo que lo que más profundo le pregunté justamente fue lo de like y dislike.

Entonces me gustó que empezó a generar una conversación. Entonces es más como, como lo digo, como un poco más natural, digamos, el aprendizaje porque te vas adecuando a leer, a entender lo que te está preguntando. A la pregunta, pues como así, ya sé cómo se pregunta, pues terminas aprendiéndolo como en bloque, ¿no?

Más que la estructura gramatical es, pues, cómo se va viendo en una conversación. Eso me parece mucho. A mí me cuesta un poco recordar las benditas estructuras.

Entonces creo que esto ayuda un poco más. Lo mismo que cuando estás leyendo y eso te ayuda a mejorar tu español. Siento que pasa lo mismo.

Entre más lees, pues, vas como... Como que el cerebro se va adecuando a que esta es la estructura. Más allá de saberte la regla de p a pa. Porque creo que en español no nos la sabemos. Pero sí es más como para entender la lógica.

Como es que uno dice, uy, esto se oye raro así en español. También como que te ayuda a entender que así es que tiene que sonar en inglés.

T: ¿Crees que todo este proceso que mencionas influyó en la forma en la que tú interactuabas en la clase conmigo, con tus compañeros ¿O de pronto que tú ya te familiarizabas con esa estructura que te daba y tenías como una idea de cómo llevar esa conversación a una práctica más real?

P4: Pues creo que no la utilicé tanto como para llegar a eso. Y pues la verdad es que yo he hecho muchos cursos, la verdad, de inglés. Entonces creo que no tenía como tanto temor, un poco, no sé.

Yo he escuchado con mis compañeros, hay unos que están como muy beginners, muy nuevos. Pero yo he hecho un montón de cursos. Y tuve clases personalizadas varias veces.

No sé por qué no avanzo, pero sí. Entonces creo que yo ya tenía como cierta estructura que me ayudaba. Pero no utilicé la plataforma tanto como para llegar a eso.

No, tristemente no.

T: Ok, listo. Y ya para finalizar, ¿hay algo más que quisieras agregar desde tu experiencia o alguna recomendación?

P4: Pues creo que me faltó más tiempo para probar. Pero... No, ¿sabes qué no? Me imagino que, si tú empiezas a seguirle la cuerda a la conversación, eso seguiría y seguiría. Yo he llegado a un momento en que he cortado ya.

Pero no, no. La verdad, pues me parece que es interesante, es bastante interesante. Sacarle provecho seguramente va a darle como más espacio a... A oportunidades de mejora.

Pero pues de lo que vi, de lo poco que tuve, me pareció... Pues muy chévere eso. Sobre todo, la práctica, yo creo que es lo que más nos cuesta. Y en la oficina lo que más nos cuesta es la práctica.

Intenté ser muy... Pues como he estado trabajando en la clase, o sea, ser como muy transparente de no utilizar un traductor para preguntarle eso. Pues porque necesito aprenderlo y no usar herramientas. Siempre que escribo algo me lo corriges porque algo se me va mal usualmente.

Pero intenté hacer lo mismo. Intenté hacer lo mismo para que no... Pues sí, o sea, como tratando de incrementarlo. Al final es ese mi objetivo.

Lo que te he dicho, he hecho muchos cursos. De hecho, dudé, sí, empezar desde el básico. Empezar desde un poquito más adelante.

Pero es lo que yo quería. Es como realmente cuál es el nivel. Y pues de la misma forma utilicé la herramienta.

Entonces, no sé, probablemente... No sé si esté contemplado, pero probablemente el hecho de que uno pueda, de cierta forma, a partir de las conversaciones que tiene, también que le diga a uno, bueno, más o menos estás... Más o menos de lo que hemos hablado, pues ya obviamente tendría que tener alta interacción. Es como tienes que trabajar en reformar tal vez este tipo de cosas. Eso sería, no sé, la carta al niño o Dios seguramente.

Pero en la práctica me pareció... Me pareció bastante interesante, por lo que te digo. Además, porque si me equivocaba en algo cuando le preguntaba, me parecía fantástico que de una vez me corrigieran. Porque era como cuando tienes al profesor al frente y dices algo mal y no, no, no.

Mira, se dice así. Eso me gustó. Pero pues la carta al niño o Dios sería justamente ese tipo de cosas.

Pues digamos, en algunas... Yo tuve algunas clases personalizadas en el British. Y unas de esas eran como justamente eso. Bueno, vamos a primero entender en qué nivel estás.

Entonces probablemente algún tipo de ejercicio de eso. Es como, ah, bueno, vamos a tener una conversación inicial para saber más o menos, pues, cómo te desenvuelves. Me acuerdo mucho de que una vez me dijeron, bueno, vamos a hablar en presente.

Y si vamos a hablar en pasado, cuéntame tal cosa. Entonces tienes que mejorar en esto. Como ese tipo de cosas.

Insisto, carta al niño o Dios, yo no sé si eso todavía se logra así tan fácil. Pero sería chévere para practicar. Sobre todo, creo que lo que más nos cuesta justamente es eso, la práctica.

T: Ok, listo. Ya esa era la última pregunta, Rosy. Entonces vamos a volver al otro room listo, la otra sala.

Appendix I

Interaction logs excerpts

Timestamp	Message	Direction
2026-04-07T21:26:13-05:00	Hi Miguel! My name is Lexi, it's great to meet you too! Welcome to your English course. How are you today? To get started, we can explore the first activities in Unit 1 on Brightspace.",delivered,2026-04-07T21:26:13-05:00,"2010-04-01",1,0,AC35c329aa6ac4b3c7bc9536b98470abb6,SM4ed0fcf5aad449b4001721264737ac4f,"outbound-api",0.0,USD,"FALSE",	outgoing
2026-04-07T21:27:00.810-05:00	Hi there! I'm happy to help you with your English course! To start, could you tell me a little more about what you need support with today? Are you looking for your activities or recordings?	outgoing
2026-04-07T21:27:14.403-05:00	Hi there! It's lovely to meet **you** too! I'm Lexi, your learning companion. I'm here to help you succeed in your English course.	outgoing
2026-04-07T21:28:17.786-05:00	To begin, please log in to the platform here: `https://virtual.cetcolsubsidio.edu.co/d2l/login. Once logged in, go to 'MisCursos', select your course, and then click 'Contenido'. You'll find Unit 1: Meeting people there. Let me know if you have any questions!	outgoing

2026-04-07T21:28:22.955-05:00	That's wonderful to hear! I am very happy to study English. It sounds like you're excited to learn! What makes you happy about studying English?	outgoing
2026-04-07T21:29:21.457-05:00	Hola! The verb 'to be' is super useful! (Â¡Es clave!) It helps us talk about who we are, where we are, and how we feel. You can find many helpful lessons and practice activities in Unit 1 of your course content. How are you today?	outgoing
2026-04-07T21:30:25.267-05:00	First, please go to virtual.cetcolsubsidio.edu.co/d2l/login and log in. Then, select ""MisCursos,"" choose your English course, and click on ""Contenido."" Inside ""Contenido,"" look for the ""Communication area"" and then ""Recordings of synchronous sessions."" You'll find it there! (Â¡AhÃ¡- lo encuentras!) This is a great way to review what you learned.	outgoing
2026-04-08T11:44:34.856-05:00	Hi Pedro Daniel! ðŸ‘ Welcome! I recommend logging into Brightspace to explore ""Contenido"" and get familiar with Unit 0. It's a great first step! You can log in here: https://virtual.cetcolsubsidio.edu.co/	outgoing
2026-04-09T21:25:29.080-05:00	Ok , hi Lexi , I need support about my English course	Incoming
2026-04-09T21:25:29.080-05:00	Hi there! ðŸ‘ I'm Lexi, your English learning companion. I'm happy to help you with your course! To get started, is there something specific you're working on, or maybe you need help finding activities or recordings on the platform?	outgoing

2026-04-09T21:25:56.267-05:00	Which materials are available?	Incoming
2026-04-09T21:25:56.267-05:00	That's a great question! You can find all your course materials on Brightspace. To access them, just log in, go to ""MisCursos,"" select your course, and click on ""Contenido."" You'll find different modules there, full of activities and resources to explore! Remember, activities with a âœ“, are mandatory.	outgoing
2026-04-09T21:26:13.296-05:00	Hi	Incoming
2026-04-09T21:26:47.739-05:00	What is the activities I must realized today ?	Incoming
	Hi there! Good question! To find out what activities you need to do today, let's head to Brightspace. Log in, go to 'MisCursos,' then 'Contenido.' Look for modules with a âœ“,. Those are mandatory! You can do one from your current unit.	outgoing
2026-04-09T21:27:22.592-05:00	Yes	Incoming

2026-04-09T22:23:25.696-05:00	See you later, it's a correct form?	Incoming
	"Hi there! Yes, 'See you later!' is absolutely correct! It's a friendly way to say goodbye. ðŸ‘‹ We cover greetings in Unit 1. Have you explored its 'Contenido' yet? What other ways do you say goodbye?"	outgoing
2026-04-10T20:00:05.203-05:00	Hola, c3mo puedo acceder a la clase de hoy?	Incoming
	To access your class content, just go to https://virtual.cetcolsubsidio.edu.co/d2l/login . Log in with your details, then select 'MisCursos' and 'Contenido'. You'll find recordings and activities there. How are you today?"	outgoing

See more excerpts here:

https://docs.google.com/spreadsheets/d/1AIYjmRqm_D_ZSu94ZI_RgercmdX6wPhasPDGxu8YAAI/edit?usp=sharing

Appendix J

Results of the Adapted Online Student Engagement Scale (OSE) by Dixon

Complete results:

https://docs.google.com/spreadsheets/d/118BNSF7IwCmrAoB60GyJXju0_BH_uQy2/edit?usp=sharing&ouid=108836750246651303715&rtpof=true&sd=true

1. Indique en qué medida cada afirmación representa su comportamiento y experiencia en el módulo de inglés en relación con el uso del agente de AI

