

Using Artificial Intelligence to Improve Writing Skills in Upper-Intermediate English Students at
UIS

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Abstract

Title: Using Artificial Intelligence to Improve Writing Skills in Upper-Intermediate English Students at UIS*

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Key words: Artificial Intelligence, Academic Writing, performance, writing process, attitude

Mastering academic writing is essential for students as they engage in the academic sphere. However, many students struggle with writing academically. This research project aimed to support students in developing fundamental writing skills by integrating Artificial Intelligence tools into the writing process, ultimately enhancing their performance in academic writing courses. A qualitative approach with an action research design was employed, involving a group of 17 students enrolled in an upper-intermediate English course. As part of the project, students participated in workshops utilizing AI tools and completed pre- and post-tests to assess their progress. The findings revealed that before the workshops, students faced challenges with argumentative text structures, mechanics (spelling, grammar, and punctuation), and overall clarity. After the introduction of AI tools, students demonstrated notable improvements in mechanics, text structure, and clarity. Despite these positive outcomes, the study also uncovered that some students became overly dependent on AI tools, highlighting the need for better training and the importance of nurturing students' critical thinking abilities.

*Bachelor Thesis

**Faculty of Human Sciences, School of Languages. Director: Sol Smith Fuentes Hernández

Resumen

Título: Uso de la Inteligencia Artificial para Mejorar las Habilidades de Escritura en Estudiantes de Inglés de Nivel Intermedio Alto en la UIS*

Autores: Valentina Bernal Escalante, Bibian Yesenia Espinel Alfonso**

Palabras clave: Inteligencia Artificial, Escritura Académica, desempeño, proceso de escritura, actitud

Dominar la escritura académica es esencial para el éxito en el ámbito académico. Sin embargo, muchos estudiantes enfrentan dificultades en este proceso. Este proyecto de investigación tuvo como objetivo apoyar a los estudiantes en el desarrollo de habilidades fundamentales de escritura al integrar herramientas de Inteligencia Artificial (IA) en el proceso de escritura, mejorando así su desempeño en cursos de escritura académica. Se empleó un enfoque cualitativo con un diseño de investigación-acción, involucrando a un grupo de 17 estudiantes inscritos en un curso de inglés de nivel intermedio alto. Los participantes asistieron a talleres donde se emplearon herramientas de IA y realizaron evaluaciones antes y después de las intervenciones. Los resultados mostraron que, inicialmente, los estudiantes tenían dificultades en la estructura, los aspectos mecánicos (ortografía, gramática y puntuación) y la claridad de sus textos. Tras usar herramientas de IA, mejoraron notablemente en estas áreas. Sin embargo, el estudio también identificó una dependencia excesiva de algunos estudiantes hacia estas herramientas, destacando la necesidad de una mejor capacitación y la importancia de fomentar las habilidades de pensamiento crítico en los estudiantes.

*Trabajo de Grado

**Facultad de Ciencias Humanas. Escuela de Lenguas. Directora Sol Smith Fuentes

Introduction

Contextualization of the problem

When it comes to delving into the realm of Academic Writing (hereafter AW) instruction in English at Universidad Industrial de Santander, it is significant to take a look at the Curriculum from the undergraduate program Licenciatura en Lenguas Extranjeras con Énfasis en Inglés. This analysis is especially relevant due to our active roles as students within the program and as the current researchers behind this research project.

The curriculum for the bachelor's program includes three subjects related to AW. During the first two semesters, as students we must take two mandatory subjects on reading and writing academic texts. However, these two subjects are designed to be instructed in their mother tongue (i.e., Spanish). We do not begin to write with academic rigor in the English language until the fourth semester and beyond.

According to Proyecto Educativo del Programa Licenciatura en Lenguas Extranjeras con Énfasis en Inglés (hereafter PEP LLEI), there are four main subjects related to AW. The first two are mandatory during first and second semester under the names “Lectura de Textos Académicos Universitarios” and “Escritura de Textos Académicos Universitarios”. Additionally, during fourth and fifth semester students must take two subjects under the name of “Academic writing I” and “Academic writing II”. However, the first two are given in Spanish, and it is in the 4th semester that instruction in English starts to take place.

Upon reaching the fourth semester, both we and some of our peers encountered challenges that could be summarized in the lack of literacy practices within the AW domain. This problem encompasses mastery in grammar, vocabulary, and text genres. As a consequence, we experienced

demotivation, frustration, and fear of plagiarism. One explanation of this issue is that apparently, English language courses have prioritized informal writing over emphasizing the inclusion of academic rigor in writing practices.

Our previous observations are in accordance with the findings of two scholars associated with the English language teaching program at Universidad Industrial de Santander. On the one hand, Pabón (2019) found that some of the challenges students face in AW are “coherence, cohesion, style and readability” (p. 14). Consequently, when students were required to produce a text, many students struggled to effectively craft thesis statements, develop coherent topics, and furnish their compositions with supporting sentences leading to a bad writing performance. On the other hand, Fuentes (2023) discovered that students in their fourth semester faced challenges in AW. These challenges encompassed issues such as register, grammar, vocabulary, coherence, and cohesion. Consequently, these difficulties hindered students from effectively expressing their ideas with clarity, leading to a lack of intelligibility that could make it challenging for readers to grasp the writer's intended message.

This problem is not restricted to Universidad Industrial de Santander as it was demonstrated by Marulanda & Martínez (2017), students of Universidad Tecnológica de Pereira struggle with AW because they are not familiar with academic genres' rhetorical features, academic vocabulary, and lack of previous experience in AW. To overcome this difficulty, they designed a new academic course in 2016 that incorporated a “process approach to writing, teacher and peer review, on-going tutoring in writing labs, and standardized test-taking practice” (p. 52). After implementing this new course, the researchers found that students' AW skills improved as well as the quality of their written products.

Considering all the drawbacks mentioned before, we recognize that it is necessary to prepare students for AW courses and provide them with new tools to support their process. An instrument that has been implemented to overcome these difficulties is Artificial Intelligence (hereafter AI). In a study conducted by Guo et. al (2022), they designed Argumate, an AI-powered tool, to assist students in their AW process. Argumate helps students come up with ideas and arguments to support their thesis in argumentative texts. Nevertheless, the incorporation of AI can face problems such as unfamiliarity with this technology and the misconceptions that exist about it. For instance, in a study conducted by McGrath, et al. (2023), they found that teachers are concerned about the possibility of being replaced by AI, and they believe that overconfidence in AI could lead to a decline in the quality of education.

Motivated by our personal experience in AW, the purpose of this study was to incorporate AI to help students obtain enough resources so that they can have a solid knowledge about AW leading to a better performance in AW courses.

Research Question

To what extent does the integration of AI impact the writing process of upper-intermediate English students at Universidad Industrial de Santander?

Research Objectives

General objective

To impact the process of AW in upper-intermediate English students using AI with the purpose of having students develop enough basis to have a better performance when writing academically.

Specific objectives

To diagnose the AW skills of upper-intermediate English students.

To familiarize upper-intermediate English students with the use of AI to complement their AW process.

To evaluate the impact of the integration of AI in the process of AW in upper-intermediate English students.

Justification

AW is a fundamental skill that must be learned and taught in the academic domain, as it allows scholars to document and transmit knowledge in a written form (Monippally, & Pawar, 2010; Lika, 2017). In the academic context, when understood as a process, AW involves demanding tasks such as reading, research, and analysis to demonstrate comprehension of knowledge and the ability to employ it for critical thinking, information analysis, and effective idea communication (Irvin, 2010).

We, as students enrolled in the Licenciatura en Lenguas Extranjeras con Énfasis en Inglés program at Universidad Industrial de Santander, are on a trajectory aimed at preparing us for roles as educators in the field of foreign languages, with a specific emphasis on English. This academic journey not only engages us in pedagogical practices but positions us as active participants in the broader academic landscape, aiming to share our class findings in indexed journals for a wider audience and field contribution. Therefore, it is significant that students of this program acquire the skills to have an appropriate performance in AW.

As mentioned in the contextualization of the problem, it is pertinent to delve deeper into AW within the realm of higher education and the challenges that students encounter there. Drawing upon our own firsthand experiences as students of the Licenciatura en Lenguas Extranjeras con Énfasis en Inglés program at Universidad Industrial de Santander, we have observed that this process is not one that can be mastered overnight; rather, it is a skill that requires a considerable investment of time and a meticulous approach to preparation. Considering that English courses predominantly emphasize informal writing, it becomes evident that there is a notable gap in the formal AW skills that are essential for success in higher education.

Consequently, it seems necessary to incorporate AW practices in English courses to obtain the basis needed to have a solid performance in future writing courses or experiences. To do so, teachers must seek new strategies that are in line with the current academic demands where technology is a fundamental basis for teaching (Ocaña et al., 2019). For instance, a tool that is being widely used nowadays is AI, mainly because it has a significant impact on many aspects of our everyday lives. One of these aspects is education, in which AI has been used to support students in the learning process meeting their needs and interests (Vincent-Lancrin y van der Vlies, 2020 as cited by Liu et al., 2023).

All in all, our aim is to showcase to teachers and students, mainly at Universidad Industrial de Santander but also in other educational scenarios, the valuable role AI can play in strengthening the AW journey. Additionally, we want to emphasize that getting out of our comfort zone can yield advantageous outcomes for the realm of education. By embracing new technologies and teaching methods, we can better prepare students for the challenges and opportunities of the 21st century.

1 Theoretical framework

1.1 Conceptual Framework

1.1.1 *Artificial Intelligence*

AI has had a major impact on the world in the past decade, and it is likely to have even more of an impact in the next one (Boucher, 2022). However, as a result of its popularity and its use in different contexts, it is very difficult to come up with a unified definition for this field. On the one hand, AI is defined as a system or technology that seeks to imitate human intelligence. However, AI cannot be simply defined as the replication of something we do not fully comprehend, like human intelligence (Sheikh et al., 2023). On the other hand, AI is also described as the field of computer science that deals with the creation of intelligent agents, which are systems that can reason, learn, and act autonomously (Boucher, 2020; Russell & Norvig, 2010). This previous definition can be complemented by the one given by the European Commission Communication (2018) adding that these systems are able to analyze their environment and context to achieve specific goals. These definitions of AI are wide-ranging and adaptable, so they can capture all of the current and future uses of AI. To sum up, AI encompasses a wide and ever-changing domain, with various interpretations. However, in the context of this research project, we understand AI as the discipline responsible for creating autonomous systems that possess the ability to reason, learn, and make independent decisions.

1.1.1.1 Application of AI in Education. Nowadays, the integration of AI is being widely discussed across various fields, including economy, healthcare, security, and education is not the exception. This rapid transformation is particularly evident in the realm of education, where the incorporation of AI is a relatively new and complex process. However, this does not mean including it in the educational environment is impossible. Some applications of AI in education encompass assessment, feedback, and personalized learning (Chassignol et al., 2018), using chatbots to promote written and spoken language interaction (Jiang, 2022) and to scaffold students' persuasive argumentative writing (Guo et al., 2022). The research carried out by Guo in 2022 illustrates how AI can be integrated into education. Their main goal was to enhance students' abilities in persuasive argumentative writing through the use of their creation, Argumate. This AI tool aims to assist students throughout their writing journey by stimulating critical thinking, offering helpful suggestions and ideas, and aiding in overcoming any writer's block they may encounter.

It is crucial to note that Argumate operates on a subscription basis and is not universally accessible. For that reason, we explored alternative possibilities for integration into intervention sessions, prioritizing freely available tools. We have identified several noteworthy tools that can be used to significantly enhance the learning experience. This chart aims to provide a comprehensive overview of these tools, showcasing their diverse applications and functionalities.

Table 1

AI tools and functions

AI tool	Function
Jasper	

Write and compose	
ChatGPT	This tool can be utilized for paraphrasing and editing text, enhancing the outcome.
Humata	It is effective in summarizing papers, comparing documents, and quickly extracting specific information from them.
Bing compose	It functions as a text generator, offering support for writing practices, text revisions, and constructive feedback.
Language tool	Its capabilities encompass spell-checking, grammar verification, refining writing style, paraphrasing, and correcting text.

1.1.1.2 Advantages and drawbacks. AI is already being used in different ways within educational institutions, encompassing creating personalized learning experiences, providing feedback, promoting language interaction, and assessing. Although AI has the potential to transform education, it is important to acknowledge the possible drawbacks that must be taken into account. In the subsequent paragraphs, we will delve into both the benefits and drawbacks associated with incorporating AI in the field of education.

One of the advantages of the incorporation of AI in education is the accessibility students can have to human-like chatbots that allow them to practice their language communication in diverse written and spoken contexts (Wang and Petrina, 2013). Moreover, AI provides teachers with the tools to personalize materials and activities to support students' learning process, taking into consideration their context, learning preferences, and level of proficiency. Therefore, teachers can increase students' motivation and engagement in their classes (Hwang, et al., 2020). Likewise, AI can be used to help students improve the grammar, style, and readability of their writing, making it more professional and polished. This can be especially helpful for academic writers (Golan, et

al., 2023). Additionally, teachers can also benefit from AI, this technology can be used to track students' performance, monitor their learning process, and provide feedback to students (Hwang, et al., 2020). This enables teachers to efficiently allocate their time, enhancing the review and assessment of students' work for more effective support (L. Chen et al., 2020; Baidoo-anu & Owusu Ansah, 2023). In other words, AI has the potential to make education more accessible, personalized, and effective for both students and teachers.

One of the major concerns about the use of AI in education is the increase of students using AI to complete their assignments, promoting dishonesty and plagiarism. This is a serious concern, as it can undermine the integrity of academic work and decrease the quality of education (Mohammadkarimi, 2023). This drawback is linked to the lack of readiness in teachers and students to utilize AI as a tool that can help them complete their tasks, instead of a technology that will replace them (Sumakul, et al., 2022). Another disadvantage of AI is that they are related to specific patterns of data which can cause bias in the output it provides and give imprecise results. Moreover, this limited data training makes it impossible for AI to provide an explanation of specific topics (Baidoo-anu, D. & Owusu Ansah, L. 2023; *Content Engine LLC. 2023*). Despite the drawbacks, AI has the potential to be a powerful tool for education. By using AI responsibly and ethically, we can create a learning environment where students can thrive and reach their full potential.

1.1.2 *Academic Writing as a Process*

Writing is the ability that only human beings have to communicate through written forms. In order to produce a written outcome, writing has been defined as a process that a writer follows to create a final written product (Harmer, 2003; Williams, 2003). Writing is not only an act of producing a text in its different formats but is a skill that must be taught and learned (Lika, 2017).

As writing needs to be taught and worked on, the Writing Process Approach (hereafter WPA), is one of the most used approaches for its teaching.

In the WPA “teachers work to change students’ behaviors with regard to composing, helping them identify and then emulate the behaviors of successful writers through intensive writing of entire papers” (Williams, 2003, p. 55). Therefore, to implement this process, it is essential to follow some stages or phases. A well-known model is discussed by Harmer (2003), which suggests four main stages: planning, drafting, editing (reflecting and revising), and final version.

Figure 1

Writing-Process Approach Wheel



Note. This figure has been taken from the book *How to teach writing*, written by Harmer (2006) p. 6.

The planning stage is the first step in creating a well-written text. Writers develop a clear understanding of their purpose for writing, their target audience, and the main points they wish to convey. After planning, writers begin drafting their text. In this stage, writers create their first draft, which is a rough version of their text. Once the draft is done, writers can move on to the editing stage. They revise and edit their text to ensure that it is accurate, clear, and concise. With the editing stage complete, writers can share their final text with the audience (Harmer, 2003).

Although writing follows stages to accomplish a final product, this process cannot be considered as a linear one that adapts to all types of writers. On the contrary, the process of writing is a recursive process with some dominant stages that “can be understood to be in a state of current flux” (Williams, 2003, p. 121). This means that the stages may occur at different moments of the writing process (Cury & Hewings, 2003 as cited in Coffin et al., 2003). For example, a writer may be drafting their text while they are reading and planning with new information they have found.

In the case of AW, this process of planning, drafting, editing, and producing a final version is not entirely foreign, as AW is an extension of writing itself whose main purpose is “to document and communicate knowledge in a written form” (Monippally, & Pawar, 2010, p.2). Authors such as Irvin (2010), describe this process as a way to show understanding of knowledge and the capability to use it to think critically, analyze information, and communicate ideas clearly while involving tasks that require rigorous work such as reading, research, and analysis.

As Carlino (2008) argues, AW is a vehicle for acquiring, processing, and transforming knowledge, so that individuals can take ownership of that knowledge. This means that AW is not just a way to communicate knowledge, but also a way to learn and grow as a thinker. Additionally, AW is generally more formal, dense, abstract, objective, rigorous, and tightly knit” (Fang, 2021,

p.15). Consequently, AW can be a complex process that occurs over time and results messy since writers will need to be prepared to think deeply, plan carefully, and revise their work extensively to produce clear, concise, and persuasive writing (Johnson, 2016).

1.2 Literature Review

As students of the program Licenciatura en Lenguas Extranjeras con Énfasis en Inglés at Universidad Industrial de Santander, we have identified that AW represents a challenge for us as students of the program on account of the focus given to informal writing in English courses at Universidad Industrial de Santander. In order to face this challenge, it is necessary to implement new strategies to provide students with the tools needed to have a smooth transition between English courses and AW courses. Considering the previously mentioned points, we explored in the literature several strategies that have been used to improve students' performance and/or attitudes towards AW, including studies related to the use of AI in this field as it is our theme or interest.

One of the strategies that has been implemented to help students improve their AW skills is Writing Circles (WC). WC consists of “small groups of students who meet regularly to share drafts, choose common writing topics, practice positive response, and in general, help each other become better writers” (Vopat, 2009, p. 6, as cited by Alhazmi, & Elamin, 2023, p. 611). As it was shown in a study conducted by Alhazmi, & Elamin (2023), WC seems to be a useful strategy since it helps to improve learners' writing skills, word choices, their progress in spelling and punctuation, and autonomous learning.

Another strategy that has been put into action is providing feedback. Wischgoll (2017) in one of her studies found that feedback can benefit students since discussions and peer mentoring emphasize the importance of AW as a dynamic process rather than merely focusing on its outcome.

Moreover, she highlights the importance of training students in writing structures for better performance. In the same manner, Baroudi & Hamam (2023) identified that personalized feedback, called "feedforward," can boost the AW and critical thinking skills of students. Additionally, while implementing feedforward students can effectively acquire and use information, draw valid conclusions, integrate relevant supporting materials, deepen analysis, and engage in constructive discussions. However, it is crucial to consider that feedforward should be complemented with other strategies to enhance language proficiency and reading fluency, as these factors significantly impact students' performance. Strategies like "Listening While Reading," classroom debates, and peer feedback, with proper training, can aid in improving critical thinking and writing skills (Baroudi & Hamam, 2023).

Bringing these strategies to our research project, we believe they could prove beneficial in aiding the AW process. Nonetheless, it is imperative to address all the aspects encompassing AW, rather than solely concentrating on vocabulary, spelling, punctuation, and selection of accurate resources. Furthermore, it is vital that we explore strategies that also encompass factors such as language proficiency, grammar, adherence to academic conventions, and overall coherence since they are important to produce quality written products.

To do so, it is indispensable to incorporate strategies that meet contemporary academic requirements since we are in a digital era. In response to this necessity, many scholars have incorporated AI in the realm of education. Research has shown that AI has many benefits for education such as providing students with access to information (Baidoo-anu & Owusu, 2023), offering instant support, and creating personalized materials and activities to engage students

(Flores et al., 2022). Along with that, these benefits are evident in different areas of education such as AW.

To illustrate the aforementioned, in a study conducted by Golan et al. (2023) the findings showed that AI can serve as a tool to aid students in refining and elevating their writing, offering support with grammar, writing style, and readability enhancements. Additionally, AI can be used to detect and prevent plagiarism, to raise the standard of AW to meet the expectations of professors and other scholars, and to provide students with the essential abilities for effective communication (Marchante, 2022). For instance, Katsnelson (2022) offers a diverse array of AI tools, including DeepL Translate and Grammarly. These tools can aid researchers in activities such as translating text, checking grammar, and improving their English writing abilities. Nevertheless, the author emphasizes the significance of researchers developing their own writing proficiency and avoiding excessive reliance on these tools.

In the same fashion, AI promotes students' writing engagement and motivation (Rad et al., 2023), helps them to expand ideas, enhance vocabulary, and improves coherence and logical flow in their written products (Marzuki et al., 2023). As a consequence, students can improve writing accuracy, spelling, and grammar (Guo et al., 2022). Nevertheless, it has been suggested that the incorporation of AI in AW includes some drawbacks as well. The main drawbacks mentioned are plagiarism and a lack of critical thinking skills (Mohammadkarimi, 2023; Marzuki et al., 2023) as a result of the overreliance on AI. Yet, the reason behind the improper use of AI stems from a deficiency in training for its implementation, which is compounded by the stigma associated with its utilization. As suggested by Aguilar et al., (2023) implementing educational instruction and verification methods can decrease the level of plagiarism in students' productions.

Furthermore, it is crucial to acknowledge the importance of providing both instructors and learners with a deep understanding of the various practical uses of AI and the associated benefits it offers. In a world where AI plays an increasingly pervasive role in our daily routines, adaptability becomes paramount. It is essential for us to remain open to change and not let our apprehensions hinder our ability to embrace the opportunities presented by AI.

When it comes to critical thinking, the principal reason to avoid using AI is that overreliance prevents students from thinking critically about their work, since it is believed that AI can do all the work for students. Nonetheless, as Golan et al. (2023) conclude, employing AI tools can be a valuable practice to encourage students to engage in critical thinking rather than simply replicating the content generated by AI.

In connection with the earlier-discussed need for training among educators and students, we believe it is essential to educate both parties on AI usage and its ethical considerations. While it is true that AI can be employed for plagiarism, providing this information can raise awareness about the potential repercussions. Ultimately, it places the responsibility in the hands of students to make informed decisions regarding their actions, either choosing the ethical path or engaging in misconduct.

To sum up, addressing the challenges in AW requires a well-rounded approach that combines traditional methods with the integration of modern AI solutions and a comprehensive educational approach to AI usage and ethics. This holistic approach seeks to equip students with the vital skills and knowledge necessary for achieving success in AW while simultaneously fostering their critical thinking skills and ethical behavior.

2 Research Methodology

2.1 Type of Research

The methodology for this research project was qualitative, considering that qualitative research offers a thorough, intricate, and nuanced comprehension of meanings, both observable and unobservable actions, attitudes, intentions, and behaviors (Pathak et al., 2013). Additionally, qualitative research is a method that places the researcher at the centre, using their perceptions to capture observations (Corbin & Strauss, 2015; Tracy, 2019). Moreover, it emphasizes self-reflection due to the researcher's influence on understanding context and creating detailed descriptions (Bogdan & Biklen, 2007; Marshall & Rossman, 2014; Tracy, 2019).

Building upon the aforementioned considerations, embracing a qualitative approach allowed us for a comprehensive observation and in-depth analysis of the context surrounding the AW performance of upper-intermediate English students of Licenciatura en Lenguas Extranjeras con Énfasis en Inglés program. This extensive insight contextualized findings, guiding targeted strategies and laying the foundation for effective interventions in enhancing AW performance.

Qualitative research, with its emphasis on contextual exploration and detailed descriptions, served as the perfect fit for us as novice researchers who are interested in conducting fieldwork (Tracy, 2019). Qualitative researchers seek the chance to establish a meaningful connection with their research participants and to gain a firsthand perspective of the world through their eyes (Corbin & Strauss, 2015). By engaging in this immersive exploration, we could observe and develop a sense of empathy for the real-life experiences of our study participants, leading to a more profound connection that enriched the quality and depth of our research outcomes.

2.2 Research Design

This research project considered the basis of Action Research (hereafter AR) for its implementation since it involves systematic procedures that allow educators to solve issues and challenges that are common in the educational environment (Efron & Ravid, 2013; Mills, 2013 as cited in Creswell, 2013; Dosemagen & Schwalbachas cited in Mertler, 2019). AR encompasses both problem identification and problem-solving promoting reflection and empowerment to improve students' learning (Cohen et al. 2017b; Efron & Ravid, 2013; Dosemagen & Schwalbachas cited in Mertler, 2019).

As students from the program Licenciatura en Lenguas Extranjeras con Énfasis en Inglés at Universidad Industrial de Santander, we are familiar with the challenges of writing with academic rigor and the use of AI to write academically. Bearing in mind the aforementioned, we found it essential to base our research project on AR design since being active participants in the research process provides us with a direct and subjective perspective as claimed by Efron & Ravid (2013); McNiff & Whitehead (2006).

Additionally, AR aims to enhance and refine educational practices, fostering a more effective and engaging learning environment for students and educators alike (Costello, 2003). This objective directly supported our goal of aiding upper-intermediate English students in the Licenciatura en Lenguas Extranjeras con Énfasis en Inglés program at Universidad Industrial de Santander. Therefore, we were committed to providing them with resources geared toward enhancing their proficiency in AW. By incorporating AI into their English classes, we sought to equip these students with the tools and knowledge they need to thrive in their AW courses, ultimately boosting their overall academic performance.

In alignment with the objective of our research project, adopting AR enabled us to identify the possible challenges that upper-intermediate English students from the Licenciatura en Lenguas Extranjeras con Énfasis en Inglés program at Universidad Industrial de Santander may face in the context of AW. This allowed us to familiarize upper-intermediate English students with the use of AI to complement their AW process, thereby enabling us to evaluate the impact of AI integration on the AW process of upper-intermediate English students.

In pursuit of this objective, our strategy involved the facilitation of comprehensive intervention sessions. The primary focus of these sessions was to educate and guide students on the seamless integration of AI into their AW practices. This initiative sought to empower students with the knowledge and skills necessary to utilize AI as a transformative tool, augmenting and refining their proficiency in AW.

2.3 Population and Sample

The research project focused on students enrolled in the third semester of the Licenciatura en Lenguas Extranjeras con Énfasis en Inglés program. The rationale behind selecting this specific population lied in our proximity to them, as well as the alignment of their academic stage with the objectives of the research. By concentrating on this cohort, we aimed to gain a nuanced understanding of the challenges and perspectives unique to students at this stage of their academic journey. Additionally, considering the context of the research problem, the insights gathered from this group contributed valuable information that could enhance the study's outcomes.

For sample selection in this study, a simple random sampling approach (Cohen et al., 2017b p. 334) was employed. Given the existence of two groups undertaking the upper-intermediate

English course in the third semester of the Licenciatura en Lenguas Extranjeras con énfasis en Inglés program, our method involved the unbiased and random selection of one group, without any predetermined preferences. This ensured that the chosen sample was representative and reflective of the diverse groups participating in the course. The group selected as our sample consisted of 18 students, 17 of whom volunteered to take part in this research project.

2.4 Data Collection Techniques and Instruments

2.4.1 *Survey*

Surveys are a technique used to gather data at a specific point in time. The main objectives are to describe the current situation, establish standards for comparison, and identify relationships between specific events (Cohen et al., 2017b p. 334). Surveys have the potential to collect a wide range of data concerning individuals' viewpoints, understandings, and sentiments, and they are valuable for program planning and assessment (Fink, 2009 as cited in Efron & Ravid, 2013). Moreover, surveys enabled us as novice researchers to identify specific characteristics of a clearly defined group as they move through the educational system over time (Berends in 2006, as cited by Camilli et al. in 2006 on page 624).

In the context of this research project, we believed it was essential to employ surveys as a valuable tool for evaluating students' performance in AW following the intervention sessions to incorporate AI into their upper-intermediate English course. Surveys allowed us to gather insightful data about the impact of AI on their learning experience, and the assessment encompassed their progress, achievements, and overall satisfaction with the interventions.

To assess students' performance before the commencement of the intervention sessions, our strategy involved the implementation of a pre-test (see Annex A). This pre-test was designed to

gauge the students' proficiency in AW, functioning as a diagnostic tool to ascertain their current skill levels. Through this diagnostic assessment, we aimed to obtain a clear understanding of the diverse levels of expertise among students, enabling us to tailor the intervention content to address specific areas of improvement and cater to the individualized needs of each student.

To measure the impact of the intervention sessions and the integration of AI, we administered a post-test (see Annex A). This assessment aimed to identify any observable impact on students' AW skills and ascertain whether the influence has been positive or negative. Additionally, the post-test served to capture students' perspectives on the entire process, offering valuable insights into their perceptions and experiences. This comprehensive evaluation strategy allowed us not only to measure the tangible outcomes of the intervention but also to understand the nuanced effects it has on students' AW capabilities and their overall learning journey.

Ultimately, it was crucial to gain insight into students' viewpoints on the impact of AI on their AW processes. To achieve this, four detailed questionnaires were designed, covering various aspects of their experiences with AI throughout different stages of AW—before, during, and after workshops. These questionnaires ensured a thorough understanding of how AI influenced their writing, allowing for the identification of patterns, challenges, and areas of improvement.

2.4.2 *Observation*

Observation is a method wherein researchers actively engage in the data-gathering process to familiarize themselves with the phenomenon at hand (Shkedi, 2019). Observation offers flexibility, allowing the researcher to decide whether to actively participate as a member or maintain a more distant, non-participatory stance with the research phenomenon (Creswell, 2013).

In alignment with the objectives outlined in our research project, the role that best suited us as researchers was that of an observer-as-participant. This choice was driven by our dual role as both instructors and keen observers during the intervention sessions, where we actively contributed to the class dynamic while also maintaining a vigilant observational stance (Cohen et al., 2017b).

In the process of gathering valuable insights through observation, we utilized a meticulously designed observation format (see Annex B). This format was thoughtfully crafted to align with and adhere to the predefined intervention session criteria. The purpose was to ensure that the data collected during the observation sessions not only met the standards set by the intervention criteria but also provided a structured and comprehensive framework for systematically recording and analyzing the observed phenomena.

Table 2

Instruments and techniques

Objective	Technique	Instrument and research activities
To diagnose the AW skills of upper-intermediate English students.	Survey	Pre-test: to assess the AW proficiency of students and determine their current skill level before the interventions.
To familiarize upper-intermediate English students with the use of AI to complement their AW process.	Observation	Observation format: to gather information about students' performance while using AI during the workshops to provide a structured and comprehensive system for organizing and analyzing data systematically.
To evaluate the impact of the integration of AI in the process of AW in upper-intermediate English students.	Survey	Post-test: to observe any discernible impact on students' AW skills and determine whether the influence has been positive or negative following the implemented interventions.
	Observation	Questionnaire: to gain insight into students' viewpoints on the influence of AI on their AWP while being exposed to the workshops.

	Observation format: to evaluate students' performance after being exposed to the workshops
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Note. In conducting data analysis, we triangulated all gathered information. Furthermore, the observation format was employed to collect data for two specific objectives. It is important to note that this did not imply the use of two separate observation formats.

2.5 Intervention

During the data collection phase, we implemented an intervention within an upper-intermediate English course of the program during the 2024-1 semester. This intervention was, divided into 3 stages: a pre-test, four workshops where we employed five AI tools to aid students in their writing processes (see Table 3), and a post-test. For the sake of this study workshop is understood as a valuable tool for researchers to observe and analyze interactions among students and educators. It provides a platform for collecting and interpreting participants' conceptions, practices, and shared knowledge. Moreover, workshops foster alignment between the researcher's interpretive goals and participant activities, enhancing data triangulation (Luna, 2012).

Table 3

Stages of the intervention, activities, an AI tools used.

Stages of the intervention	Activities	AI tools
Introduction to the workshops	<ul style="list-style-type: none"> ● Familiarizing participants with the research project. ● Implementing the pretest. 	-

<p>Workshop 1 (Pre-writing)</p>	<ul style="list-style-type: none"> ● Introducing argumentative text and its elements. ● Introducing the first AI tool for the planning stage (brainstorming). ● Taking a side for the argumentative text (against or in favor). ● Assessing the first AI tool. 	<p>Compose AI: Planning stage: brainstorming and outline creation.</p>
<p>Workshop 2 (Pre-writing)</p>	<ul style="list-style-type: none"> ● Creating the thesis statement. ● Introducing the second AI tool for revising the thesis statements. ● Assessing the second AI tool. 	<p>Chat GPT: Planning stage: brainstorming and outline creation.</p>
<p>Workshop 3 (Writing)</p>	<ul style="list-style-type: none"> ● Providing feedback to assess students' thesis statements (virtual session). ● Introducing the third AI tool. ● Writing arguments, searching reliable sources to support their arguments, and writing the conclusion. ● Providing feedback to assess students' arguments and conclusions. ● Assessing the third AI tool. 	<p>Copilot: Drafting and writing stage: finding sources.</p>

Workshop 4 (Revision)	<ul style="list-style-type: none"> • Writing the introduction. • Introducing the fourth AI tool for revising grammar, punctuation, and spelling. Peer revising. • Introducing the fifth AI tool for revising written texts and receiving feedback. Assessing the fourth and fifth AI tool. 	<p>Quillbot: Editing stage: grammar checking, paraphrasing, citation, translation.</p> <p>DeepL: Editing stage: grammar correction and improvement suggestion. Translator.</p>
Conclusion of the intervention	<ul style="list-style-type: none"> • Implementing the post-test. 	<p>Compose AI Chat GPT Copilot Quillbot DeepL</p>

While the majority of workshop sessions were conducted face-to-face, one session took place virtually due to the unavailability of the main campus for a day. Throughout the intervention, we conducted two types of assessments: formative and summative. Formative assessments involved continuous feedback during the workshops, supplemented by two comprehensive feedback sessions to support students' progress. Additionally, after each use of an AI tool, students completed a Google Forms questionnaire to evaluate the tools' impact and gather their perspectives (see Annex C). Regarding summative assessment, originally, student work was not slated for grading. However, at the suggestion of the English teacher, activities undertaken by the students were evaluated to contribute to their subject grades.

Prior to the workshops, students were familiarized with the research project through an informed consent document and participation requirements (see Annex D9). They also underwent a pre-test to determine students' writing skills and observe students' behavior while writing, and

they selected the topic of online dating for their workshop writing. The first workshop focused on familiarizing students with argumentative text structures. We introduced the first AI tool, Compose AI (see Figure 2), for brainstorming, during which students generated ideas for their texts deciding whether to argue for or against online dating (see Figure 3).

Figure 2

Compose AI interface.

Supercharge your writing with Compose AI

Compose AI allows you to write entire paragraphs in seconds. Try it out below, just click “//” to activate the extension.

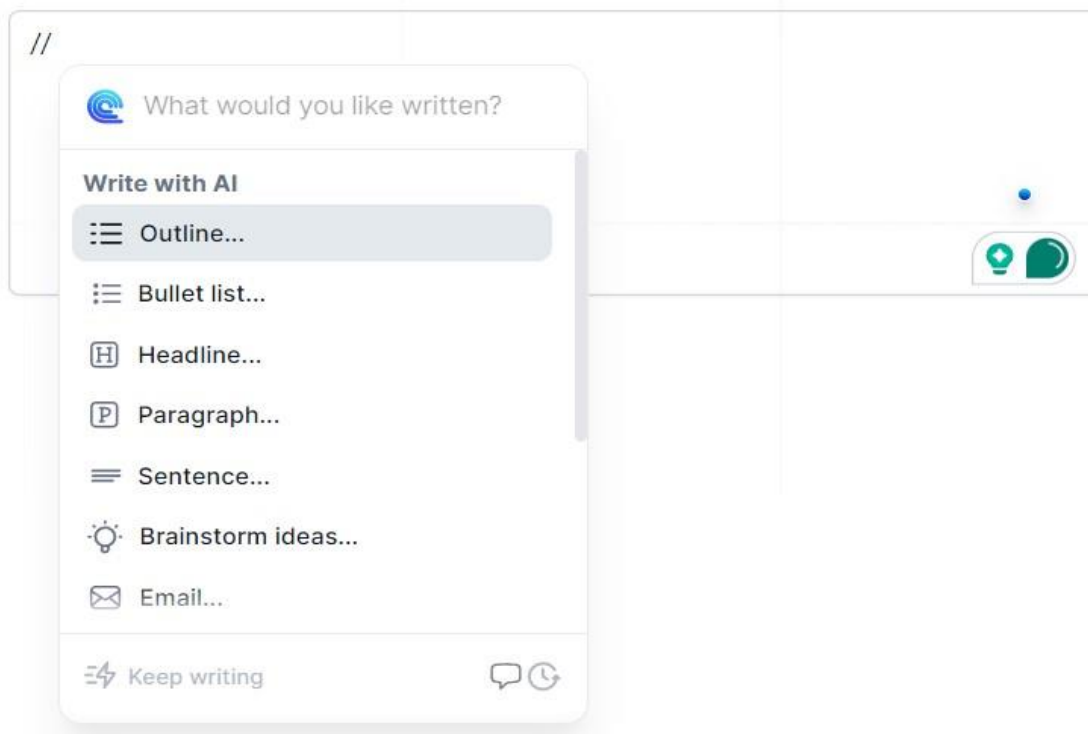


Figure 3

Suggested prompts for students to brainstorm with Compose AI.



Prompts

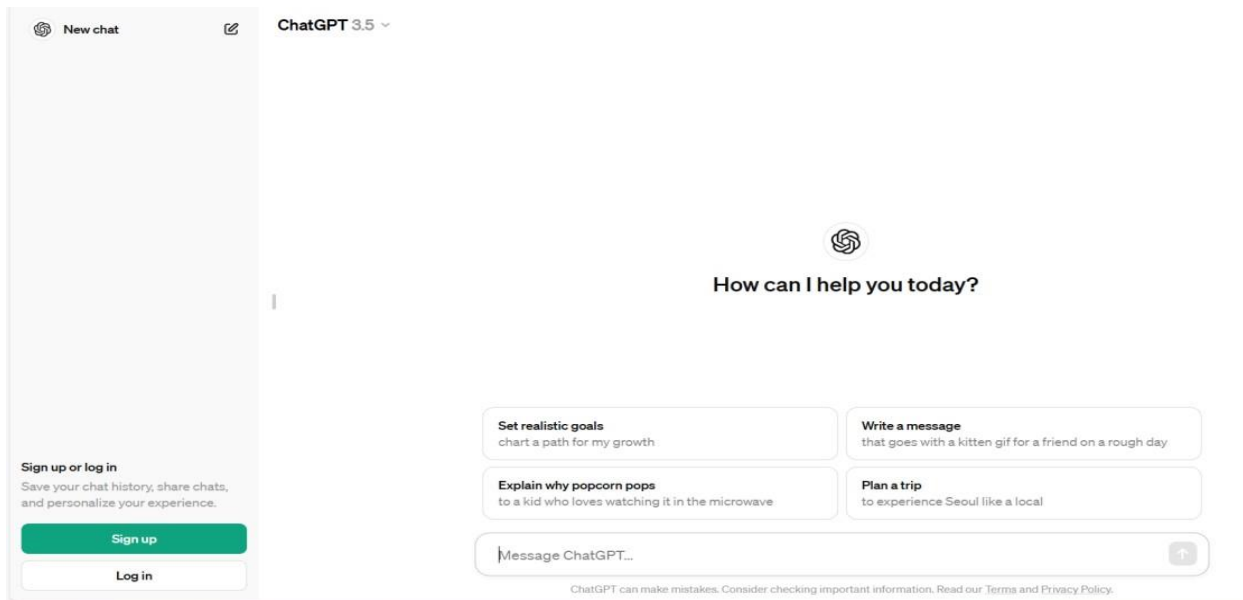
- //brainstorm ideas for writing an argumentative text about...
- //brainstorm ideas for writing an argumentative text in favor/against of...
- //brainstorm ideas for writing an argumentative text with # arguments about...

Note: You're free to try different prompts. Don't forget to write it in google docs.

Subsequently, students crafted thesis statements in the second workshop, and the second AI tool, Chat GPT was introduced (see Figure 4), to revise the thesis statement (see Figure 5).

Figure 4

ChatGPT interface.



New chat ChatGPT 3.5

How can I help you today?

- Set realistic goals**
chart a path for my growth
- Write a message**
that goes with a kitten gif for a friend on a rough day
- Explain why popcorn pops**
to a kid who loves watching it in the microwave
- Plan a trip**
to experience Seoul like a local

Message ChatGPT...

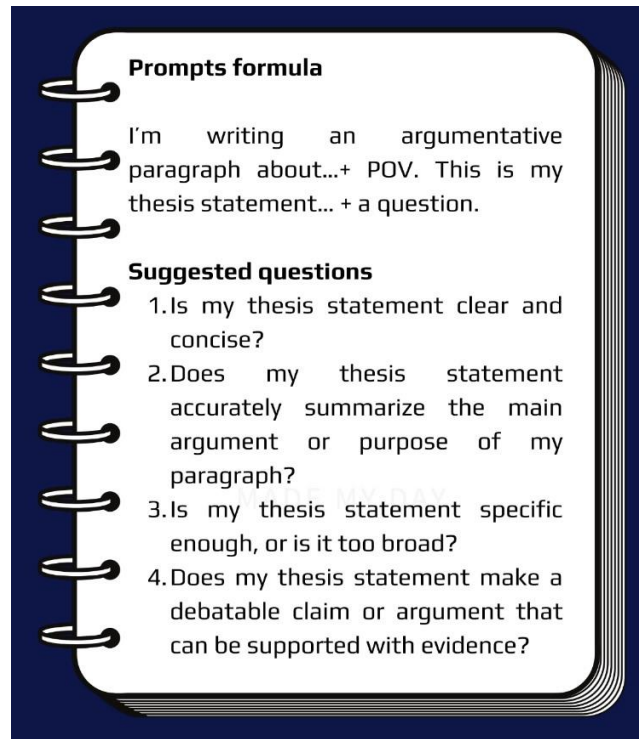
Sign up or log in
Save your chat history, share chats, and personalize your experience.

Sign up
Log in

ChatGPT can make mistakes. Consider checking important information. Read our Terms and Privacy Policy.

Figure 5

Prompts formula and suggested questions for students to check their thesis statements.



In the third workshop, students developed their arguments, utilizing the third AI tool, Copilot (see Figure 6), to search for sources that supported their ideas (see Figure 7).

Figure 6

Copilot AI interface.

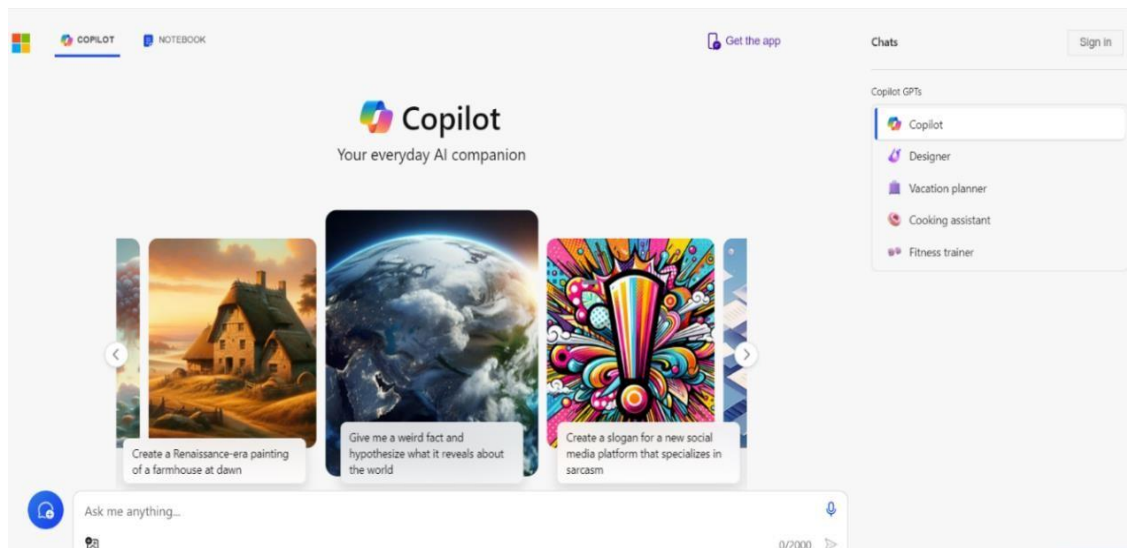
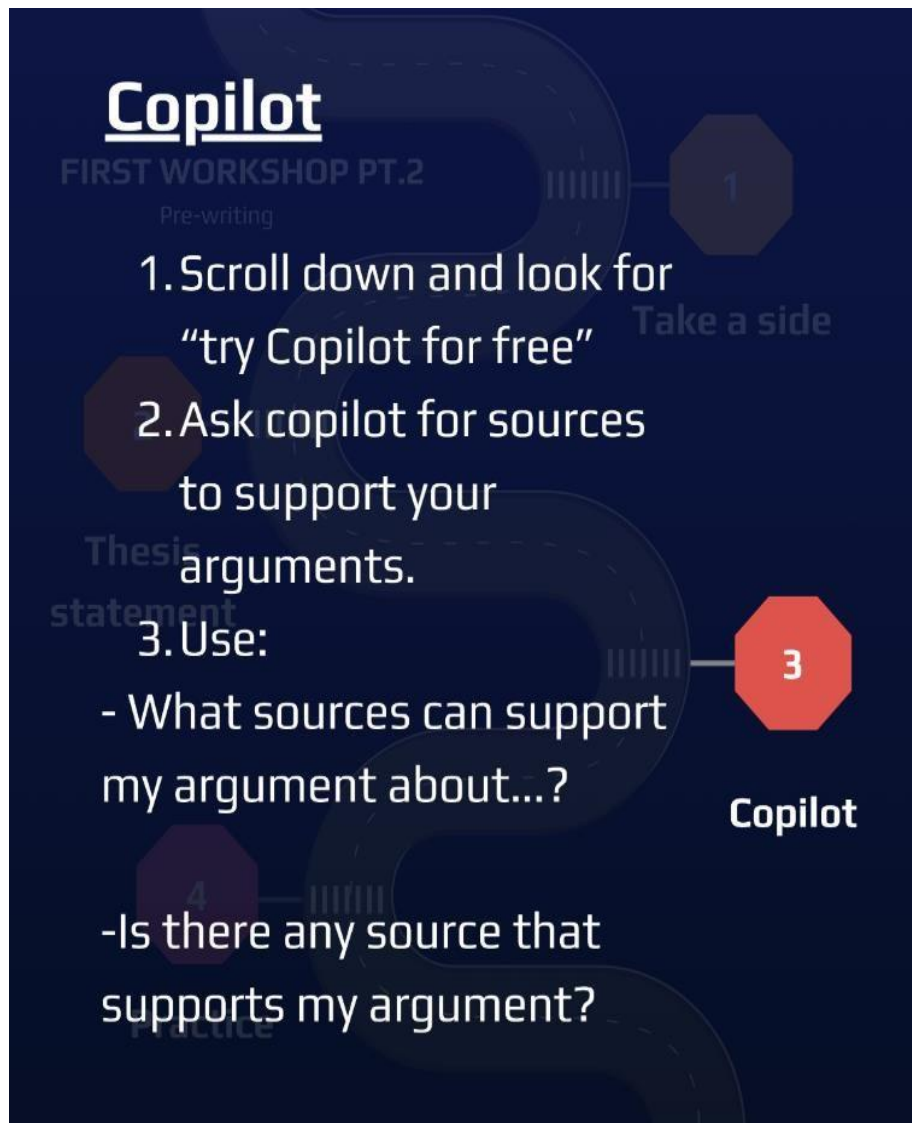


Figure 7

Prompts suggested for students to use Copilot AI.



Two feedback sessions were interwoven as students refined their thesis statements and arguments. The fourth workshop focused on writing the introduction for the text, with the fourth AI tool, Quillbot (see Figure 8), introduced for grammar and style revisions, followed by peer revision and refinement through the fifth AI tool, DeepL (see Figure 9).

Figure 8

Quillbot interface.

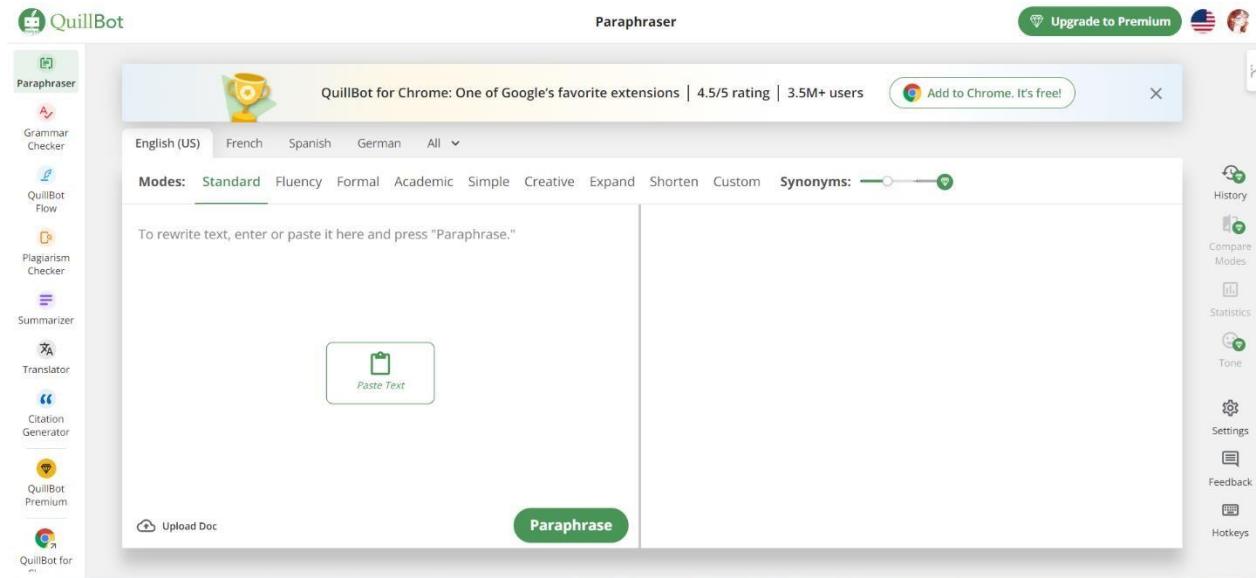
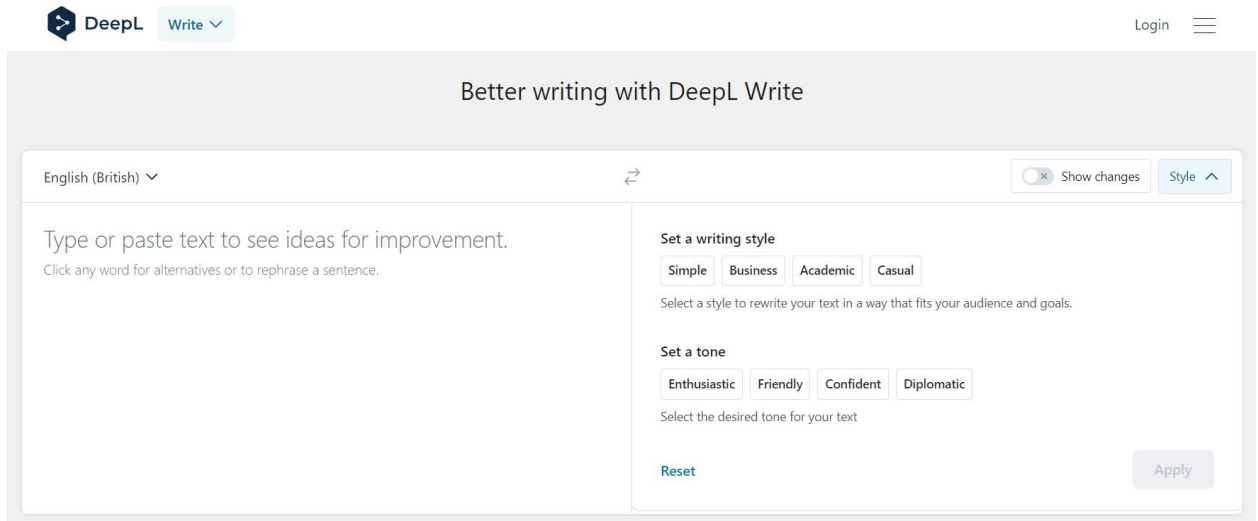


Figure 9

DeepL interface.



Finally, a post-test was administered in which the participants were permitted to utilise the AI tools that had been employed during the workshops. The purpose was to assess any discernible impact

on students' writing skills, gauging whether the interventions yielded positive or negative outcomes.

3 Results

For the data collection process of this project as it was mentioned in the methodology section, we employed two distinct techniques: surveys and observations (see Table 3). To align with our research objectives, we initiated by conducting a pre-test to gauge students' AW proficiency prior to interventions. Subsequently, during the interventions, observations were carried out to document students' performance and attitude while utilizing AI in workshops. Additionally, at the end of each workshop students were asked to answer questionnaires to know their perspective and final thoughts. This approach ensured a structured and comprehensive system for organizing and analyzing data systematically. Following the interventions, a post-test was administered to assess the impact of AI on students' AW skills, determining to what extent the influence was positive or negative. For the data analysis phase, information from the pre-test, observations, questionnaires, and post-test was codified and analyzed, resulting in three primary categories: students' writing performance without AI tools, students' writing performance during interventions, and students' writing performance after exposure to AI tools. These categories were then subjected to further analysis in terms of performance and attitude. In alignment with the stated objectives, which were to determine the extent to which students' AW performance was impacted by the use of AI tools, the main focus of this analysis was on students' performance.

3.1 Students' writing performance without AI tools

After administering the pre-test, it was found that many students struggled with the mechanics of writing. Issues identified in their texts included spelling and punctuation errors (see

Figure 10 & Figure 11), grammatical mistakes related to verb tenses, as well as challenges with collocations and article use (see Figure 11).

Figure 10

Extract of a student's text with spelling mistakes.

Nowadays technology takes a crucial role in human relationship, the way they develop, maintain or fall out. With time the use of technology in human relationships has grown to now be almost a need, not only a tool. This **necesity** of it brings many different opinions and problems to debate about, for instance, how far is this necessity of technology going to get? The consequences and causes of that is a **dayly topy** around the world. The text above prompt us to reflect about the evolving nature of interpersonal bonds as well as it's quality and **depht**. I stand with a middle opinion, **as the conections** between people could have been a blend of convenience and contemplation, but perhaps technology has helped to make it more noticeable.

Note. The spelling mistakes are “necesity”, “dayly topy”, “conections”, and “depht”.

Figure 11

Extract of a student's text with punctuation mistakes.

I'd dare say that the point of "assessing the depth and quality of these connections" is a thing that has always prevail upon what human beings want to get in their **lives, however,** I agree with the idea that technology help us to communicate among us.

Note. Wrong punctuation when using “lives, however,”.

Figure 12

Extract of a student's text with grammar mistakes.

Technology now days has a big role on society in almost every aspect. It is true to say that **it** shapes human relationships if we **base on** how technology **has change** the way humans communicate, as it gets easier every time to get to talk with someone we are becoming more prompt to establish empty and insignificant relations with the other. Because of this, **society tends to become void and useless affecting at** what already has been created and constructed by people of the world.

Note. The grammar mistakes are “now days”, “has change”, and “at”.

These problems could stem from students' unfamiliarity with writing as a process. This lack of familiarity is likely due to the program's English courses prioritizing the final written product

rather than the writing process itself. Furthermore, the writing styles emphasized are often limited to informal writing. Therefore, as Harmer (2006) mentioned, it is important to approach writing as a process that has some non-linear stages that can help students improve their writing skills. Another potential factor is the lack of exposure to AW in English, as the courses that focus on this skill (such as “Lectura de Textos Académicos Universitarios” and “Escritura de Textos Académicos Universitarios”) are taught in Spanish (see PEP LLEI). This can have a significant impact due to the inherent differences in linguistic structure and expression between English and Spanish. For instance, English often employs a more straightforward and concise approach to communication, prioritizing clarity, and brevity in conveying information.

Regarding text structure, the results revealed that students' compositions lacked clear organization; only one text displayed a clear structure, consisting of a thesis statement, argumentation, and conclusion (see Figure 13).

Figure 13

Student’s text with clear text structure (thesis statement, argumentation, and conclusion).

<p>I find the statement above somewhat true because relationships nowadays are shaped by the growing and constant use of technology, therefore they become ephemeral compared to relationships years ago. However, I don't think that it's because of technology that our relationships are a blend of convenience and contemplation.</p> <p>In the case of convenience, it is mostly because of politics and power that people create "special bonds", from which they can receive something: money, an important job, among others. Nonetheless, this already happened even before the rise of social media, AI and other important technology progresses.</p> <p>On the other hand, even if relationships nowadays are more liquid and unstable because of social media, I think that relationships have always been a matter of contemplation, people reflects a lot about how they behave with other human beings and how they respond to actions because we are social beings and we need to socialize.</p> <p>In conclusion, even if technology does shape the relationships nowadays, it's not because of it that our relationships are a blend of convenience and contemplation.</p>	<p>Some punctuation mistakes that make sentences too long.</p>	<p>Includes a thesis statement, two arguments and a conclusion.</p>
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In some cases, students incorporated one or two structural elements, while others showed little to no clear structure or simply wrote a single line expressing agreement or disagreement (see

Figure 14). As a result, it was challenging to understand their intended messages. Furthermore, the texts lacked linking words, hindering smooth transitions between ideas and overall readability.

Figure 14

Answers of two different students in which there are no clear text structures.

I agree, technology has changed a lot the way we communicate.

I agree. Tecnology affects the way we interact with each other. While it may make **easier** to "connect" with others, is important to ask how real and meaningful are these interactions.

With the aforementioned aspects, it is possible to say that due to not having solid foundations in AW and its process, students are unaware of the importance of refining their texts and only write to complete writing tasks. As authors such Johnson (2016) and Irvin (2010) have mentioned before, writing is a process that requires training to think critically, analyze information, and express ideas clearly. Consequently, not being familiar with this process can difficult students' performance, since writing is a skill that is acquired with teaching and practice and does not happen overnight (Lika, 2017). It is worth mentioning that although this section of the analysis focuses on the performance of students while writing, we also observed their attitude while completing the pre-test. It was evident that students were experiencing stress and anxiety. This reasoning has led authors such as Baidoo-Anu & Owusu Ansah (2023), Golan, et al. (2023), Hwang, et al. (2020), and L. Chen et al. (2020) to conclude that AI represents a viable solution for streamlining the writing process.

3.2 Students' writing performance during the interventions

3.2.1 *Experiencing the writing process*

In terms of performance, observations during the workshops showed that once students were assigned the topic for the text, they could easily choose a position to write about. After clarifying their side, most students began planning their text before writing. Those who followed the writing process and adhered to workshop instructions found it easier to write. However, students who struggled with instructions encountered challenges in starting their texts and creating clear thesis statements. Given that the thesis statement is central to a text, as it provides direction and states the position of the writer as explained by Cury & Hewings (2003) as cited in Coffin et al. (2003), the lack of clarity in this aspect led to difficulties, resulting in weaker compositions.

Another aspect in which students struggled was the use of sources, probably due to a lack of awareness of the importance of supporting their writing with credible information. In addition, many students found it difficult to incorporate references into their writing, possibly because they were unfamiliar with the citation practices of AW.

In terms of attitude, students initially appeared motivated at the start of the interventions. They asked questions to clarify instructions, participated actively in the workshops, and offered feedback on their peers' texts. The initial enthusiasm may have been due to the chosen topic, online dating, which was of their interests. One cause of this may be that taking into account students' preferences and their context can help to increase their motivation, as proposed by Hwang, et al. (2020). Additionally, students were surprised that the topic was not purely academic, challenging their perception that AW always involves complex topics.

However, students' attitudes shifted as the workshops progressed. They seemed to lose interest in writing and appeared anxious and stressed during the process. Some students lacked confidence in their writing abilities and doubted their language skills, possibly due to unfamiliarity with AW. Furthermore, students showed little interest in AW, likely because they did not fully

understand its importance for their academic and professional futures. As previously stated by Monippally & Pawar (2010) and Carlino (2008), the academic value of AW lies in its capacity to facilitate the transmission and creation of knowledge, as well as to enhance the critical thinking abilities of writers.

3.2.2 *Writing with AI tools*

In terms of performance while writing with AI, we observed that some students incorporated AI tools into their writing process, following the steps: as planning, outlining, writing, revising, and editing. They utilized AI for various tasks, including brainstorming ideas, finding arguments, searching for sources, checking grammar, and receiving feedback. This seamless integration of AI into their workflow was attributed to the user-friendly nature of the tools, as reported by several participants (see Figure 15).

Figure 15

Opinion of three different students on the incorporation of AI tools into their AW process.

Good, it was easy.

It's a easy and useful interface.

It was comfortable and simple

However, it was evident that some students overrelied on AI tools, leading them to transform their texts using overly complex language in an attempt to sound more academic (see Figure 16).

Figure 16

Fragments of three different texts in which students used complex language.

Text 1

Furthermore, technology offers a **plethora** of collaborative tools and applications that streamline teamwork, irrespective of individuals' physical locations. These platforms

Text 2

This **ongoing** evolution necessitates individuals to adapt to **novel** communication methods, thereby influencing the very essence of our social interactions. In this discourse, we **delve into** the impact of technological advancements on communication, illuminating its **pivotal role** in shaping modern social dynamics.

Text 3

Additionally, technological advancements have **ushered** in an era of personalised experiences through algorithmic systems...By enabling connections beyond geographical **constraints**, technology has unlocked a **myriad** of opportunities for teamwork, long-distance relationships, personalised interactions, virtual communities, and more.

Note. The use of complex language such as “plethora”, “ongoing”, “delve into”, “pivotal role”, “ushered”, “constraints” and “myriad” makes comprehension challenging.

In terms of attitude, our observations and information gathered from in-class questionnaires revealed that students generally held a positive view of AI tools. They found these tools effective for saving time, generating and organizing ideas, and obtaining information on specific topics. Some students expressed satisfaction with the suggestions provided by AI tools (see Figure 17), noting how the tools boosted their confidence by offering feedback to improve their texts.

Figure 17

One student's comment on their experience using AI tools for AW.

confident about the work I was doing since using this tool really helped me a lot.

However, few students also expressed skepticism about the reliability of AI tools suggestions, demonstrating a critical awareness that AI tools may not be entirely reliable (see Figure 18).

Figure 18

Student demonstrating a critical awareness.

It a good tool to check your text, however it sometimes makes some corrections that are not really useful, so you need to pay attention and decide whether you use them or not.

Despite this, some students continued to over rely on AI tools to complete writing tasks, potentially limiting their development of independent writing skills. Hence, it is crucial to foster the development of critical thinking skills in students as they are indispensable for harnessing the full potential of AI as a valuable tool in AW as it was mentioned by Golan et al. (2023), Katsnelson (2022), Mohammadkarimi, 2023, Marzuki et al. (2023).

3.3 Students' writing performance after the exposure to AI tools

After students completed the post-test, the findings revealed improvements in mechanics such as spelling, grammar, and punctuation. This progress can be credited to the support of AI tools, which helped reduce mechanical errors, though these did not disappear entirely.

In terms of text structure, nearly all students incorporated the elements studied in the workshops, including a thesis statement, argumentation, and conclusion (see Figure 19).

Figure 19

Text produced by one of the students who incorporated the structure of the text.

<p>In our increasingly interconnected world, technology can create a deceptive illusion of closeness, as individuals prioritize virtual relationships over genuine face-to-face interactions, potentially resulting in profound loneliness and isolation. Technology can create a false sense of connection, as individuals may prioritize online relationships over real-life interactions, leading to feelings of loneliness and isolation in the long run. Technology, while offering unprecedented avenues for connectivity, can paradoxically generate a false appearance of companionship. As people increasingly turn to virtual interactions, there is a risk that these often superficial and transitory online connections will supplant the deep engagement found in face-to-face relationships. This shift can lead to a contradictory outcome: a digitally connected person can experience profound loneliness and isolation, as the ephemeral interactions of the digital realm do not satisfy the natural human need for deep and meaningful connections. Increased use of the internet was linked to lower levels of communication between individuals and loved ones at home, smaller social circles, and higher levels of loneliness and sadness (Kraut et al, 1998). It is therefore imperative to find a balance that ensures that technology serves as a bridge to enhance real-life interactions, rather than an illusory substitute that ultimately leads to social disconnection.</p> <p>Reference</p> <p>Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukophadhyay, T., & Scherlis, W. (1998). Internet paradox: A social technology that</p>	<p>No grammar mistakes.</p> <p>No spelling mistakes.</p> <p>Few punctuation mistakes. (commas)</p>	<p>Thesis statement: it states the position of the author.</p> <p>Arguments: 2 arguments developed.</p> <p>Conclusion: the text has a concluding statement that summarizes the text.</p>	<p>Use of linking words and flow: they are well used to connect ideas, so there is a smooth transition between topics.</p> <p>Clarity: ideas are clear and are connected to the main point of the text.</p> <p>Reliable content: in-text citation to support the argument.</p>
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Many students presented strong thesis statements that clearly outlined their position, while others needed to make their thesis statements more specific and concise. When it came to argumentation, most texts showed improvement as arguments were easier to identify, better developed, and supported by sources. However, although students included sources, many struggled with proper citation. As a result, some students cited incorrectly, and others failed to cite at all, which is considered plagiarism (see Figure 20).

Figure 20

Lack of citation in the text.

<p>Check:</p> <p>In an era characterized by constant connectivity and technological advancement, the nature of human relationships has undergone a profound transformation. The prevalent influence of technology has led to a deepening of human relationships in terms of width rather than depth, foresting a culture of superficial interactions and diminishing the richness of face-to-face connections. Technology has undoubtedly enhanced our ability to connect with a wider range of people than ever before. Social media platforms, messaging apps, and video calls allow us to maintain contact with friends and family members across the globe in real-time. However, this increased width of connections often comes at the expense of depth. With the constant stream of information and communication, it can be challenging to cultivate meaningful relationships. Instead of engaging in deep conversations and truly getting to know each other, many relationships are reduced to brief interactions and superficial connections. Technology has undoubtedly brought us closer together in terms of breadth. The constant connectivity and the instant communication has promoted a culture of superficial interactions where meaningful connections are often sacrificed in favor of convenience. It is important to prioritize quality over quantity and using a tool as a technology to strengthen the depth of our human relationships, ensuring that our interactions remain authentic, meaningful and fulfilling.</p> <p>References:</p> <p>Bullock A., & Colvin A. (2017, April 27). <i>Technology, Human Relationships, and Human Interaction</i>. https://www.oxfordbibliographies.com/display/document/obo-9780195389678/obo-9780195389678-0249.xml</p> <p>Cohen M. (2023, January 13). <i>Technology and Love</i>.</p>	<p>foresting a culture: fostering (spelling)</p> <p>the instant communication: the article "the" is unnecessary.</p> <p>The constant connectivity and the instant communication has promoted: have promoted (grammar)</p> <p>to prioritize quality over quantity and using a tool as a technology: use (grammar)</p>	<p>Thesis statement: it states the position of the author.</p> <p>Arguments: the text has one argument that supports the author's POV.</p> <p>Conclusion: the text contains a concluding statement that summarizes the main point of the text.</p>	<p>Use of linking words and flow: this text lacks linking words to connect ideas and make smooth transitions between topics.</p> <p>Clarity: Since the text does not have enough connectors to make smooth transitions between the topics, sometimes the text is difficult to understand.</p> <p>Reliable content: Although the text contains references, these cannot be identified within the text since there are no citations, so one might believe that the text is based solely on opinions, or conversely, that this text is plagiarizing the authors of the references as no credit is given to them.</p>
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Note. The student utilised sources yet failed to incorporate them into the text as in-text citations.

It is unclear whether the sources were indeed utilised.

Regarding conclusions, students generally provided clear summaries of their discussions, effectively closing their texts. However, some need to work on the length and precision of their conclusions to effectively wrap up their ideas.

Improvements in coherence and cohesion were observed as well. While some students still faced challenges with using linking words, making their texts harder to understand, others applied them effectively, resulting in clearer and more cohesive writing (see figure 21).

Figure 21

Text with accurate use of linking words, coherence, cohesion, and clear structure.

It is well known that humans have the necessity of building connections with the people that surround them in order to get support, friendship, a sense of belonging, and self-improvement. **Nowadays**, with the increasing use of technology, there is a debate over whether it is going to benefit people's relationships or if it will affect them because of convenience. This text will discuss the positive effects of technological devices on improving the connections humans form.

With platforms like social media, it is possible to maintain relationships with people who are not physically there by texting them, hearing their voices, and even seeing them through a screen. **Additionally**, "technology allows people to connect with others they would never meet, especially if they're not interested in meeting them in person" (Campbell, n.d.). **As a result**, even those who are afraid of personal interactions can now meet new people and make new friends in other contexts so the friendships will be more genuine. Another incredible benefit is the possibility to share, create, and store memories, allowing us to express our love and appreciation for others in innovative ways or just to preserve those special moments.

In conclusion, the new digital era is a bridge to communication that will provide all kinds of tools to help create, maintain, and reinforce human relationships that are genuine. The key is to know how to extract the benefits from it because misuse can have the opposite effect and might end up destroying human connections with other individuals.

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Campbell, A. (n.d.). What is the impact of technology on human relationships? What effects does technology have on interpersonal relationships? The Digital Whale. <https://www.thedigitalwhale.com/blog-the-role-of-technology-in-human-relationships/>

Note. For instance, student used "Nowadays", "Additionally", "As a result", and "In conclusion".

Another aspect analyzed was the clarity of the students' texts. The lack of linking words and the use of overly complex language in an attempt to sound more academic affected text clarity. This may stem from students' continued belief that AW must be complex, as well as their uncritical use of AI suggestions without considering the impact on the text's overall sense and coherence.

Given the complexity of the writing process, it is essential to identify strategies to alleviate the anxiety and stress that students experience when writing. During the presentation of the post-test, it became evident that the students were experiencing difficulties to continue writing. In response, the authors such as Golan et al. (2023), Katsnelson (2022), Marchante (2022), Marzuki et al. (2023), and Rad et al. (2023) have explored alternative approaches, such as AIs, which assist students in overcoming these challenges and continuing to write.

In addition, students employed a variety of AI tools to facilitate their writing process at different stages. For instance, they utilized ChatGPT, DeepL, and Quillbot during the editing stage, wherein they requested the AI tools to provide feedback on the grammar, cohesion, and coherence of their existing work. This behavior may have been provoked by the importance of feedback in AW, as Wischgoll (2017) and Golan et al. (2023) pointed out, which helps writers improve their skills and writing quality. Furthermore, we observed that certain students effectively leveraged this feedback to improve the clarity and overall quality of their texts.

4 Conclusion

The focus of this action-research project was to research to what extent the integration of AI impact the writing process of upper-intermediate English students at Universidad Industrial de Santander. Through extensive data analysis, interpretation, and discussion, the results of the study indicated that AI impacted the process of AW in upper-intermediate English students. The findings of this study show that the incorporation of AI as a tool to support the writing process is possible and can have a positive impact in it. As mentioned in the findings there was an improvement on upper-intermediate English students writing performance while being exposed to AI tools. Some of the improvements were that their texts structures were clearer, mechanics mistakes decreased,

and coherence and cohesion improved. Moreover, AI tools, mainly ChatGPT, helped the upper-intermediate English student to reduce the anxiety and stress while writing academically, and gave them confidence on their writing skills.

It is noteworthy to highlight that with additional training and practice, students may have the potential to achieve significant enhancements in their AW process with the support of AI tools. It is particularly important to consider that AW is a process that requires both time and practice in order to master (Harmer, 2003). Therefore, it cannot be expected that one will become an expert overnight, even though this may seem desirable. Equally important, the growing popularity of AI in recent years has led to a variety of AI tools becoming available which can result in beneficial outcomes for the field of education that allows us to enhance students' readiness for the demands and possibilities of the 21st century. Nevertheless, for AI to be effective it is crucial to provide prior training on the use of these tools, the teacher guidance during the writing process, and foster students' critical thinking skills. This approach helps avoid overreliance on AI tools and prevents the reinforcement of existing prejudices within them.

This study encountered several limitations, including sample size and the limited time available for conducting workshops with the students. Given that the interventions were conducted at Universidad Industrial de Santander, a public institution, it is important to note that certain events can cancel classes and result in the courses being behind schedule. Consequently, the findings may not be easily generalizable to contexts outside the scope of this study. Given the growing relevance of AI and its potential impact, further research on the use of AI tools in academic settings is necessary, particularly in areas such as AW, but not limited to it. Furthermore, a larger sample size and the inclusion of a control group are essential to provide a more comprehensive illustration of

the potential impact of utilising AI tools in AW. It is important to consider the perspectives of both teachers and students within our country's educational context.

The findings of this further research could inform educational practice by enhancing teaching methodologies and supporting students' learning processes, with the ultimate aim of improving learning outcomes.

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Appendices

Appendix A: Pre-test /Post-test


 	Facultad de Ciencias Humanas - Escuela de idiomas: Lic. En Lenguas Extranjeras con Énfasis en Inglés Trabajo de grado
	PRE-TEST / POST-TEST
Name:	Date:

Purpose:

The following data collection instrument aims to assess your academic writing proficiency to determine your current skill level before/after being exposed to some workshops about the academic writing process using AI. The information gathered will be strictly used for academic purposes, ensuring your identity remains confidential and anonymous. **Writing Activity**

1. Read the following text carefully.
2. Decide if you agree, disagree, or have a middle opinion and write a response.
3. If you need to consult information, you are allowed to do it.
4. Take your time to plan, write, and revise your text.
 "The role of technology in shaping human relationships is significant. While it facilitates communication across distances, there is a growing awareness of the need to assess the depth and quality of these connections. In this digital era, our relationships are a blend of convenience and contemplation, prompting us to reflect on the evolving nature of interpersonal bonds".

Appendix B: Observation Format

	<p align="center">Facultad de Ciencias Humanas- Escuela de idiomas: Lic. En Lenguas Extranjeras con Énfasis en Inglés</p>	
<p align="center">Observation format</p>		
<p>Observer:</p>		
<p>Date:</p>	<p>Workshop #:</p>	
<p>Objective:</p>		
<p>Class activity:</p>	<p>Tool used:</p>	
<p>Digital literacy skills</p> <ul style="list-style-type: none"> <input type="checkbox"/> Students use the AI tool correctly. <input type="checkbox"/> Students overrely on the AI tool <input type="checkbox"/> Students write autonomously using the AI tool for support <p>Use of the AI tool:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Editor <input type="checkbox"/> Grammar checking <input type="checkbox"/> Ideas generator <p>Student receptivity to AI tools</p> <ul style="list-style-type: none"> <input type="checkbox"/> Students seem motivated <input type="checkbox"/> Students do not seem interested <input type="checkbox"/> Students seem indifferent 	<p>Comments:</p>	
<p>Other observations::</p>		

Appendix C: Questionnaire Format Sample

Compose AI

This short questionnaire is designed to know how was your experience using COMPOSE AI. Be honest with all your answers, this questionnaire is not graded.

[Acceder a Google](#) para guardar el progreso. [Más información](#)

* Indica que la pregunta es obligatoria

Name *

Tu respuesta

What did you use it for (Compose AI)? *

Tu respuesta

Did you use this prompt: **//brainstorm ideas for writing an argumentative text about...?** *

Yes

No

Did you use this prompt: **//brainstorm ideas for writing an argumentative text in favor/against of...?** *

Yes

No

Did you use this prompt: *//brainstorm ideas for writing an argumentative text with # arguments about...?* *

Yes

No

Did you use any different prompt? If yes, which one? *

Tu respuesta _____

Did you find the prompts useful? (which ones) *

Tu respuesta _____

How did you feel while using Compose AI? *

Tu respuesta _____

Will you continue using Compose AI outside the workshops? *

Yes

No

Otros: _____

[Enviar](#) [Borrar formulario](#)

ChatGPT

This short questionnaire is designed to know how it was your experience using ChatGPT. Be honest with all your answers, this questionnaire is not graded.

[Access Google](#) to save the progress. [More information](#)

* Indicates that the question is mandatory

Name *

Your answer

What did you use it for (ChatGPT)? *

Your answer

Did you use the *prompts formula*? *

Formula: I .m writing an argumentative paragraph about... This is my thesis statement... a question.

Yes

No, not

Did you use the suggested question 1: ***Is my thesis statement clear and concise?*** *

Yes

No, not

Did you use the suggested question 2: ***Does my thesis statement accurately summarize the main argument or purpose of my paragraph?*** *

- Yes
- No, not

Did you use the suggested question 3: ***Is my thesis statement specific enough, or is it too broad?*** *

- Yes
- No, not

Did you use the suggested question 4: ***Does my thesis statement make a debatable claim or argument that can be supported with evidence?*** *

- Yes
- No, not

Did you use any different questions? If yes, what one? *

Your answer _____

Did you find the questions provided useful? (what ones) *

Your answer _____

How did you feel while using ChatGPT? *

Your answer _____

Did you have a different outcome using ChatGPT after this workshop? *

Your answer _____

Have you used ChatGPT for writing before? How? *

Your answer _____

What are your final thoughts about the use of ChatGPT? *

Your answer _____

Will you continue to use ChatGPT outside the workshops? *

Yes

No, not

Others: _____

Send Delete form

Copilot

This short questionnaire is designed to know how was your experience using Copilot. Be honest with all your answers, this questionnaire is not graded. This questionnaire can be answered in Spanish.

[Cambiar cuenta](#)

No compartido

* Indica que la pregunta es obligatoria

Name *

Tu respuesta

What did you use it for (Copilot)? *

Tu respuesta

Did you use the suggested question #1: ***What sources can support my argument about...?*** *

Yes

No

Did you use the suggested question #2: ***Is there any source that supports my argument?*** *

Yes

No

Did you use any different question? If yes, which one? *

Tu respuesta

Did you find the questions provided useful? (which ones) *

Tu respuesta

How did you feel while using Copilot? *

Tu respuesta

Have you used Copilot for writing before? How? *

Tu respuesta

What are your final thoughts about the use of Copilot? *

Tu respuesta

Will you continue using Copilot outside the workshops? *

Yes

No

Otros:

Enviar

Borrar formulario

Quillbot

This questionnaire is designed to know how was your experience using Quillbot. Be honest with all your answers. This questionnaire is not graded and you can answer it in Spanish.

[Acceder a Google](#) para guardar el progreso. [Más información](#)

* Indica que la pregunta es obligatoria

Name *

Tu respuesta

What did you use Quillbot for? *

Tu respuesta

How did you feel while using Quillbot? *

Tu respuesta

Have you used Quillbot for writing before the workshops? How? *

Tu respuesta

What are your final thoughts about the use of Quillbot? *

Tu respuesta

Will you continue using Quillbot outside the workshops? *

Yes

No

Otros: _____

Why? *

Tu respuesta

[Siguiete](#) [Borrar formulario](#)

Quillbot

[Acceder a Google](#) para guardar el progreso. [Más información](#)

* Indica que la pregunta es obligatoria

DeepL

This questionnaire is designed to know how was your experience using DeepL. Be honest with all your answers. This questionnaire is not graded and you can answer it in Spanish.

What did you use DeepL for? *

Tu respuesta

How did you feel while using DeepL? *

Tu respuesta

Have you used DeepL for writing before the workshops? How? *

Tu respuesta

What are your final thoughts about the use of DeepL? *

Tu respuesta

Will you continue using DeepL outside the workshops? *

Yes

No

Otros: _____

Why? *

Tu respuesta _____

[Atrás](#) [Siguiente](#) [Borrar formulario](#)

DeepL

This questionnaire is designed to know how was your experience using DeepL. Be honest with all your answers. This questionnaire is not graded and you can answer it in Spanish.

What did you use DeepL for? *

How did you feel while using DeepL? *

Have you used DeepL for writing before the workshops? How? *

What are your final thoughts about the use of DeepL? *

Will you continue using DeepL outside the workshops? *

Yes

No

Otros: _____

Why? *

Atrás Siguiente Borrar formulario

Appendix D: Informed Consent**Informed Consent Form****Using Artificial Intelligence to Improve Writing Skills in Upper-Intermediate English****Students at UIS****Introduction**

You are invited to participate in a research study titled "**Using Artificial Intelligence to Improve Writing Skills in Upper-Intermediate English Students at UIS**" Before you decide whether to participate, it is important for you to understand why the research is being done and what it will involve. Please take your time to read the following information carefully and ask any questions you may have before deciding whether to participate.

Purpose of the Study

The primary goal is to impact the academic writing (AW) skills of upper-intermediate English students through the implementation of artificial intelligence (AI). The specific objectives encompass the diagnosis of AW skills, introducing students to AI as a complement to their writing process, and assessing the overall impact of AI integration on the academic writing abilities of upper-intermediate English students.

Procedures

If you agree to participate, you will be asked to take two tests (pre-test and post-test), a questionnaire, and be an active participant in the intervention sessions designed to incorporate Artificial Intelligence in English classes. The estimated time commitment for your participation is approximately 10 hours, distributed over 2 hours per week.

Risks and Benefits

This research carries no inherent risks for you as a participant, as we will safeguard your anonymity throughout the entire duration of the study and beyond. While there are no direct financial benefits associated with your participation, your involvement will significantly contribute to the advancement of knowledge regarding the integration of Artificial Intelligence in education and its potential implications in your writing process. Your valuable contribution will play a crucial role in expanding our understanding of this evolving field.

Confidentiality

All the results and your opinions will be confidential and kept in reserve. In presentations and publications resulting from this research, your name will not be associated with any specific result. Additionally, the collected data will be stored during the semester 2024-1, and your name will not be disclosed in any way.

Voluntary Participation

Participation in this study is entirely voluntary. You have the right to withdraw at any time without consequence. Your decision to participate or not will not affect your relationship with [name of institution/organization].

Contact Information

Researcher's name: Valentina Bernal Escalante

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Email: bibianespinel15@hotmail.com

Consent

I have read the above information, and I voluntarily agree to participate in the research study. I have had the opportunity to ask questions, and they have been answered. I have no doubts about it.

Participant's Name: _____

Participant's email: _____

Date: _____