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# Postgraduate EFL Writing with GenAI across Scientific Domains: A Qualitative Approach to Faculty and Doctoral Student Feedback

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## Abstract

To understand the impact of Generative Artificial Intelligence (GenAI) on the academic writing of English as a Foreign Language (EFL) students in higher education, more research is required across all academic levels, including postgraduate writing. Therefore, this qualitative study begins to fill this gap by examining a group of postgraduates at the University of Extremadura, Spain. Twenty-one participants, all with a B2 or higher English proficiency level, enrolled in a 10-hour hybrid course during October and November 2024. The course focused on using GenAI and Broad Data-Driven Learning (BDDL) resources, such as simple online corpora tools, to assist their academic writing. We collected participant feedback through qualitative means, including in-class discussions, annotated writing tasks, and a final survey. The overall findings show that participants responded positively to these tools and used them to improve their texts in key areas: linguistic analysis, lexical-grammatical refinement, and writing style. We also observed that participants in Social Sciences and Humanities appraised these resources and approaches distinctively more positively, coping with more linguistic nuances. Writers in Experimental Sciences and Engineering, in contrast, revealed a more lukewarm stance while acknowledging the importance of these tools for their academic writing. Despite the study's small sample size, these preliminary findings suggest that postgraduate EFL writers can successfully combine linguistic and expert knowledge with GenAI tools to enhance their writing in their respective fields.

## Keywords

Postgraduate EFL Writing, GenAI, BDDL, Domains, Micro-Level, Macro-Level

## 1. Introduction

The rapid adoption of Generative Artificial Intelligence (GenAI) tools in higher education necessitates rigorous and systematic investigation to fully comprehend their impact, particularly on L2 English/English as a Foreign Language (EFL) writers. Recent systematic and scoping reviews have documented diverse educational community responses to GenAI (e.g., Alhusaiyan, 2025; Chanpradit, 2025; Crosthwaite & Sun, 2025; Feng, Li, & Zhang, 2025; Luo, Xia, & Lu, 2025), revealing that research predominantly focuses on undergraduate levels. Studies highlight benefits, such as reduced workload and tailored support, alongside challenges, including overreliance on text output, academic integrity breaches, and insufficient development of higher-order skills and critical digital literacy. Research concentrating on the effects of GenAI-generated feedback on L2/EFL writers' cognitive and mental processes has described positive outcomes for meta-linguistic and writing skills, but also identifies the need to strengthen student writers' authorial voice, personalization, contextual relevance, and topic-specific references in their texts (e.g., Azennoud, 2024; Huang & Deng, 2025; Luo, Xia, & Lu, 2025).

In contrast, postgraduate L2/EFL writers may be better equipped to evaluate GenAI-generated content due to their stronger epistemological awareness and better judgment within their specific fields (Ruff et al., 2024). At these advanced academic levels, important skills for L2/EFL writing include metacognitive and metalinguistic processing along with the effective integration of critical digital literacies (Pérez Paredes, Curry, & Ordañana-Guillamón, 2025; Williams, 2024). Consequently, the analysis of postgraduate EFL writing is an increasingly interesting area of study.

Furthermore, due to postgraduate writers' better recognition and use of higher-order learning skills, GenAI can be utilized effectively through a Data-Driven Learning (DDL) approach. This framework allows for the exploitation of GenAI in developing these higher-order academic skills, such as the evaluation of textual and linguistic patterns. The underlying argument is that L2 users' interactions with GenAI can be viewed as an exercise in digital corpus literacy skills (Cheung & Crosthwaite, 2025; Pérez-Paredes, Curry, & Ordañana-Guillamón, 2025). Writing competence at the postgraduate level may therefore benefit significantly from a Broad DDL (BDDL) perspective (Pérez-Paredes, 2024) by exploiting accessible and free corpus-based resources, such as simple corpus interfaces, web concordancers, and collocation finders, to support L2/EFL writing skills (Ordoñana-Guillamón, Pérez-Paredes, & Aguado-Jiménez, 2024). The integration of these BDDL resources with GenAI to specifically target critical thinking and digital literacy skills warrants further investigation in academic contexts.

This article addresses this gap by presenting a qualitative case study focusing on the EFL writing processes of postgraduate students across scientific domains. The study tracked 21 participants after they completed a 10-hour course on utilizing GenAI for academic writing. This research is important because most postgraduate L2/EFL writers already employ GenAI for academic writing, yet limited

research exists on how their strategies and attitudes evolve after receiving instruction that integrates critical digital literacies, such as interactional GenAI and BDDL skills.

This qualitative case study aimed to elicit feedback from postgraduate EFL writers regarding their engagement with GenAI tools in academic writing. Specifically, the study addressed these three research questions: 1) How do a small group of doctoral and postdoctoral EFL writers integrate GenAI tools into their academic writing processes? 2) How do these writers evaluate the usefulness and appropriateness of such tools for developing English academic texts within their disciplinary contexts? 3) Are there any significant differences in developments and attitudes between scientific domains? If so, what are they?

## 2. Literature Review

### 2.1. GenAI for Academic L1 and L2 Writing

The rise of GenAI tools has impacted the writing process and tasks, including summarizing texts, synthesizing literature, locating research gaps, and simplifying complex information (Pigg, 2024). Their effectiveness for academic English writing in L1 and L2 contexts is related to users' skills with prompt interactions, which allow them to refine texts for their specific needs (Cordero, Torres-Zambrano, & Cordero-Catillo, 2025; Ingley & Pack, 2023). This competence creates a "distributed agency" (Godwin-Jones, 2024) with the tools, where L1 and L2 academic writers rely on GenAI to assist them at pre-, during-, and re-writing stages (Nordling, 2023; Pigg, 2024; Zou & Huang, 2024).

L2/EFL writers generally find these tools helpful for improving vocabulary, grammar, tone, and overall textual cohesion (Barrot, 2023; Ji, Han, & Ko, 2023; Nordling, 2023). However, human oversight remains essential. L2/EFL writers must constantly scrutinize their texts to correct linguistic errors and to find genuine authorial voices (Markey et al., 2024). For example, a common shortfall of GenAI output is its lack of personal engagement and meta-discursive elaboration (Jiang & Hyland, 2024; Jiang & Hyland, 2025), as its texts often miss key self-referencing strategies (Mo & Crosthwaite, 2025; Zhang & Crosthwaite, 2025). A key pedagogical challenge is therefore making L2/EFL writers aware of these deficiencies so that this growing awareness helps them to develop the critical thinking skills needed to evaluate and revise their texts effectively, combining both disciplinary and linguistic approaches. This type of guided evaluative practice can lead to successful writing with GenAI in both L1 and L2 academic contexts (Pigg, 2024).

### 2.2. L2/EFL Writers' Use of GenAI at Postgraduate Stages

A search of mainstream databases (Scopus, DOAJ, and Google Scholar) in August 2025 for research on postgraduate L2/EFL writing with GenAI yielded few results (with keywords such as "postgraduate L2/EFL writing," "graduate L2/EFL writing," "Generative AI L2 writing," "EFL writing with GenAI," and "Generative AI university writing"). The studies identified are described below according to three

major scientific areas.

In the domain of Experimental Sciences and Technology, some studies (Khuder, 2025; Kramar, Bedrych, & Shelkovnikova, 2024; Liu & Wang, 2024; Ruff et al., 2024; Smit, Bond-Barnard, & Wagner, 2025) have examined the use of GenAI tools in postgraduate L2 research writing primarily through the analysis of survey data. Findings consistently indicate that postgraduate writers value ChatGPT chiefly for its support in enhancing grammatical accuracy and lexical range, while expressing lower levels of trust in its ability to ensure thematic and conceptual alignment with their research topics. Participants in Ruff et al. (2024) and Smit, Bond-Barnard and Wagner (2025) also reported using translation and paraphrasing tools; however, their reliance on ChatGPT increased as they gained greater familiarity with GenAI technologies. Across these studies, ethical concerns and issues of academic integrity emerged as recurrent topics (Kramar, Bedrych, & Shelkovnikova, 2024; Smit, Bond-Barnard, & Wagner, 2025).

In Health Sciences, Williams (2024) observed that postgraduate students found ChatGPT particularly useful for the planning and revision stages of L2 academic writing, notably in improving textual organization and adherence to disciplinary conventions in their contexts. The most frequent weakness observed in GenAI was the incorrect use of specialized terminology and limited contextual appropriateness. When compared with alternative tools such as Bing or Bard, ChatGPT was perceived as the most effective platform for addressing postgraduate L2 writing needs. Similarly, in a large-scale survey of more than 300 postgraduate Health Sciences students at an Indian university, Milton, Lokesh and Thiruvengadam (2024) reported predominantly positive attitudes toward the use of ChatGPT for English academic writing. Nevertheless, participants expressed concern about the risk of over-dependence on GenAI, which they feared could impede the development of independent writing practices.

Within the Social Sciences, Jacob, Tate and Warschauer (2025) presented a case study of an L2 postgraduate researcher in Education who critically evaluated ChatGPT's limitations—such as factual inaccuracies and algorithmic bias—while selectively adopting its linguistic recommendations to revise her work. The participant also refined repetitive phrasing and incorporated peer feedback throughout the revision process, demonstrating a sustained awareness of the need for human oversight. In a related qualitative study, Curado Fuentes (2025b) examined four postgraduate EFL writers in Tourism and found that these users, already experienced with digital writing tools, were able to integrate GenAI effectively into their revision workflows.

Collectively, these emerging studies suggest that postgraduate L2 English writers demonstrate a balanced understanding of both the affordances and the limitations of GenAI. They tend to engage with these tools critically, drawing on their disciplinary expertise to evaluate and refine AI-generated output. As Costa, Costa and Carvalho (2024) and Zou and Huang (2024) identify, ethical concerns—particularly those related to plagiarism and the potential erosion of authorial iden-

tity—remain central in postgraduate L2 writing contexts. Consequently, effective pedagogical approaches may require a shift from product-oriented models of academic writing toward process-based frameworks that emphasize contextual awareness and the development of individual scholarly voices (Godwin-Jones, 2024).

### 2.3. Broad Data-Driven Learning for Academic L2/EFL Writing

As noted in Section 1, integrating a Broad Data-Driven Learning (BDDL) approach into postgraduate EFL writing can contribute to the development of critical digital literacies. This pedagogical orientation encourages L2 writers to engage in linguistic inquiry and exploration, fostering analytical skills that parallel those required for effective interaction with GenAI. BDDL leverages accessible digital resources—such as collocation extractors, user-friendly concordancers, and bilingual databases—that enable learners to address language-related questions independently (Curado Fuentes, 2025a; Pérez-Paredes, 2024; Ordoñana-Guillamón, Pérez-Paredes, & Aguado-Jiménez, 2024). These tools typically draw upon extensive corpora of academic texts across disciplines, granting writers direct exposure to authentic disciplinary writing (Cheung & Crosthwaite, 2025). This approach is significant in postgraduate L2 writing contexts because doctoral and postdoctoral EFL writers usually possess advanced disciplinary knowledge and familiarity with specialized terminologies and conceptual frameworks but tend to have more difficulties with linguistic challenges involving the mastery of phraseological pattern usage, discipline-specific lexico-grammatical features, and formulaic language strategies (Fatima & Ahmad, 2025; Laso Martín & Comelles Pujadas, 2025).

Importantly, the BDDL approach can complement feedback provided by GenAI systems as regards the validation of authentic linguistic input from controlled academic texts within specific disciplines (Crosthwaite & Baisa, 2023). One of its principal advantages lies in the accessibility of BDDL, which emphasizes practical EFL learning and skill development rather than more complex corpus analyses (Pérez-Paredes, 2024). In doing so, it supports both linguistic accuracy and the cultivation of critical digital literacies. Furthermore, BDDL promotes independent learning and reflective engagement—skills essential to postgraduate research and scholarly writing (Criollo et al., 2024). Ultimately, this approach fosters flexible, self-directed learning environments that align with the communicative and analytical needs of advanced L2 writers. When integrated with GenAI, BDDL can facilitate more informed, accurate, and contextually appropriate academic writing.

## 3. Methodology

### 3.1. Research Design and Context

The present study employed a qualitative case study design to examine postgraduate EFL writers' engagement with GenAI tools in academic writing. Data were collected from a short course on GenAI for academic writing offered at the Uni-

versity of Extremadura (Spain). A convenience sampling strategy was adopted to recruit participants. This method was used because these writers included different postgraduate levels (before, during, and after doctoral degrees), and because they were interested in taking a course on GenAI for academic writing. Therefore, this method was based on treating these participants as a convenient focus group for providing detailed, experience-based insights into their use of GenAI before, during, and following the instructional intervention. Also, the number of participants was evenly affiliated with different disciplines across domains and included both young and experienced researchers (see Table 1 below). As a result, the study incorporated a disciplinary-based perspective that enabled the analysis of domain-specific writing practices and attitudes.

Table 1. Participants' academic profiles across domains and disciplines.

| | | Participants' profile | | |
|---|---|---|---|---|
| Domain | Discipline | Doctoral researcher/ assistant | Tenured Lecturer/Senior Lecturer | Professor |
| Social Sciences & Humanities | Education | 1 | 1 | 1 |
| | Tourism | 1 | 2 | |
| | Business Management | | | 1 |
| Experimental Sciences & Engineering | Biology | | | 1 |
| | Computer Science | | 2 | |
| | Food Science & Technology | | 1 | 1 |
| | Physics | | 1 | 1 |
| Health Sciences | Nursing | 1 | 1 | |
| | Sports Medicine | | 1 | 1 |
| | Occupational Therapy | 1 | | |
| | Veterinary Medicine | 1 | | |
| | Medicine (Toxicology) | | 1 | |

The instructional intervention consisted of a 10-hour course—eight hours of guided instruction and two hours allocated for independent task completion—delivered in October and November 2024. The course integrated in-person seminars, online discussions, and hands-on activities. Instructional content focused on prompt engineering, linguistic analysis, and critical reflection on the ethical and pedagogical implications of GenAI use in academic writing. A central component of the course involved the integration of GenAI applications with Broad Data-Driven Learning (BDDL) tools. These tools were introduced as accessible corpus concordancers and collocation finders in different collections of academic texts. We used the following: COCA (Corpus of Contemporary American English), Corpus Mate, Linggle, MICUSP (Michigan Corpus of Upper-Level Student Papers), SKELL (Sketch Engine's examples and collocations for learners of English), and

NetSpeak.

The methodological framework followed established conventions for qualitative case study research (Mabry, 2008; Sena, 2024) and drew on three complementary data sources: (1) classroom observation notes, (2) analysis of participants' written tasks, and (3) a post-course survey. The triangulation of these data sources provided a basis for exploring participants' learning trajectories, writing behaviors, and evaluative stances toward the use of GenAI in academic writing contexts.

## 3.2. Participants

The study involved 21 postgraduate EFL writers, all native speakers of Spanish and active researchers and faculty across the three scientific domains mentioned above, with the participants belonging to various disciplines and holding different academic positions (**Table 1**).

All the participants claimed to have a B2 English level or higher. They attended both the in-person and online components of the course. However, two participants (one Computer Science lecturer and the Food Science and Technology lecturer) did not submit the final written task, even though it was required to obtain the course certificate.

## 3.3. Data Collection Instruments

### 3.3.1. In-Class Observation

Classroom observation was conducted during two main instructional sessions: a four-hour in-person seminar and a four-hour online session delivered via Zoom. During the face-to-face seminar, the author of this study recorded field notes on participant interactions and contributions, while the main instructor—an invited lecturer from another Spanish university—delivered the session in both English and Spanish. Instruction was primarily lecture-based, supported by a slide presentation, but included some interactive discussions and question-driven exchanges. Following the session, the observational notes were reviewed collaboratively by both instructors to ensure validity and reliability.

The subsequent online session was video-recorded. The first half of this session focused on guided instruction about writing approaches with GenAI, while the second half involved activities by pairs in virtual breakout rooms. During this stage, the author observed participants' engagement and tool usage by rotating among the rooms and providing technical and linguistic support as needed. The recording was later reviewed to identify patterns of participation, tool interaction, and pedagogical outcomes.

### 3.3.2. Final Writing Task

Participants completed a final written assignment integrating GenAI and BDDL tools to produce an academic text aligned with their respective research areas. The task prompt instructed participants as follows:

"Use GenAI for any stage(s) of your academic writing process—pre-writing, drafting, writing, and/or rewriting—and for any type of academic text (e.g., re-

search paper, teaching material, technical document). In addition to GenAI, use concordance tools to support your writing. Clearly describe each step you followed and explain how the tools were used."

The analysis drew upon annotations from both course instructors, who examined the participants' writing processes at two main levels: 1) Micro-level, registering their lexical explorations, grammatical refinement, and cohesion strategies in the texts, and 2) Macro-linguistic level, including text structure queries, organization, thematic coherence, and authorial stance strategies. Comparative analysis of these annotations yielded key findings across three main stages: pre-writing, drafting, and rewriting. The results are thus organized by writing stage, reflecting the evolving purposes and linguistic foci of participants' academic texts with both micro- and macro-level elements.

#### 3.3.3. Final Survey

Upon course completion, participants were invited to complete an online survey (administered via Google Forms) designed to elicit their evaluations of the tools and approaches. The instrument was anonymized, but it required respondents to indicate their academic or professional position and field of study. It comprised 33 Likert-scale items (rated 1 - 5), with 17 items addressing perceptions of GenAI and 16 items concerning BDDL tools. Designed according to a similar framework established by Hua, Lu and Guo (2024), the survey measured participants' general attitudes, perceived usefulness for language development, ease of use, and intention for continued adoption. All 21 participants answered the survey, and their scores indicated that the survey items had strong internal reliability (Cronbach's $\alpha > 0.96$).

In addition, the survey included three open-ended questions prompting participants to: (1) identify the most useful tool; (2) specify the types of texts for which the tools were used; and (3) reflect on the main advantages and limitations encountered. These qualitative responses provided contextualized insights into participants' experiences and perceptions of GenAI- and BDDL-supported academic writing.

## 4. Results

### 4.1. Classroom Observations

During the in-person seminar, discussions were primarily led by senior faculty participants, while the doctoral researchers tended to listen attentively, agree with others' contributions, and take notes. One theme throughout the session concerned issues of academic integrity and the ethical use of GenAI. Some participants across the three domains expressed enthusiasm for the potential of GenAI to assist in EFL writing. The Nursing lecturer praised the benefits of GenAI for summarizing research literature and providing detailed analysis. One of the Tourism lecturers cautioned that GenAI often produced inaccurate or fabricated references. Some people also agreed that, although GenAI serves as a valuable start-

ing point for idea generation and conceptual exploration, it cannot substitute for authentic research processes. The Occupational Therapy researcher explained that she primarily used the tool for brainstorming and developing preliminary conceptual frameworks but could not use it for any in-depth research analysis in her area.

One of the participants from Tourism studies also raised concerns about the course guideline requiring students to use GenAI-generated text in a way that did not sound "robotic". We pointed to examples of this type of machine-sounding language with the overuse of vocabulary such as "delve into" and "navigate," and redundant language about the same idea. The lecturer then noted that for non-native English-speaking researchers—who already face significant challenges related to language revision for journal publication—these expectations of linguistic authenticity could be a bit discouraging. He argued that linguistic naturalness should not outweigh message clarity, particularly when the content is accurate and coherent. This comment echoed a well-documented challenge in L2 academic writing: chiefly, that maintaining a clear authorial voice while adhering to disciplinary norms is a key issue with GenAI (Berber-Sardinha, 2024). The task and survey results below highlight this dichotomy further.

The second half of the class focused on specific writing strategies, including prompt engineering and the cultivation of an authorial voice. Participants found these discussions valuable for improving their interactions with GenAI tools. A subsequent exchange centered on the difficulty of preserving one's own voice when revising AI-generated text. The same issue as in the previous half of the class was reiterated regarding the need for rewriting aimed at making the text sound "less generic," which led to a broader discussion about linguistic accuracy, authorship, and plagiarism. The group reached a consensus that incorporating GenAI-generated text directly into research writing poses ethical risks, emphasizing the necessity of originality and transparency. A lecturer in Tourism Studies proposed that, in cases where GenAI contributes substantively to the drafting process, the author should describe this in a footnote, thereby ensuring ethical accountability. Some participants also recognized the attractiveness of the BDDL tools—particularly collocation finders and concordancers—for refining their writing with enhanced linguistic alternatives.

The online follow-up session, conducted one week later, focused on applying GenAI and BDDL tools to text revision at both micro (sentence-level) and macro (text) levels. Most participants were already familiar with online corpus-based tools for validating language choices, and three people (two in Education studies and one in Computer Science) had previously completed training on COCA (Corpus of Contemporary American English). The group examined a corpus of research proposal texts—a genre they collectively identified as relevant to their professional needs—to practice writing with attention to genre conventions, academic tone, and linguistic nuance.

Participants collaborated in pairs to analyze and refine sample texts. One activ-

ity required them to articulate the objectives of a research proposal in concise, well-structured sentences. Participants employed advanced prompting strategies in ChatGPT (versions 3.5, 4, and Scholar GPT) and Microsoft Copilot (M365), requesting outputs that balanced clarity, lexical precision, contextual appropriateness, and audience awareness (e.g., addressing potential funding agencies). They also integrated concordancers and corpus tools—including Corpus Mate, COCA, Linggle, and NetSpeak—to compare patterns of phraseology and academic vocabulary in different scientific disciplines and domains.

Due to time constraints in the online session, the author of this study could not ask all participants about their analysis and metalinguistic developments with the activities. Only three pairs of students discussed their findings. First, the Tourism pair (doctoral and post-doctoral researchers) referred to the distinction between the expressions "the project aims to" and "this work is aimed at", both frequent in academic writing but subtly different in tone and stance. The doctoral researcher reflected on this ongoing struggle to identify accurate usage according to different contexts. Then, the two other pairs addressed specific stylistic issues in their writing process. For example, the two Nursing researchers preferred an active, direct writing style, avoiding passive statements as much as possible, whereas the two faculty members from Food Science and Technology emphasized the value of semi-formal academic language to explain things clearly. Different examples were examined, such as the use of first-person pronouns and phrasal verbs in their research texts.

### 4.2. Writing Task Developments

Most participants integrated GenAI tools with corpus-based resources when completing their final writing assignment. GenAI was employed to support macro-level aspects of text production—such as content development, structural organization, and overall clarity—as well as micro-level refinements (lexical usage, grammatical aspects, and cohesive devices). In contrast, corpus consultation was mainly used to verify discipline-appropriate phraseology, collocational patterns, and lexical accuracy at the micro-linguistic level. Each participant adopted distinct strategies for combining these tools, reflecting writing preferences and disciplinary needs. Table 2 shows the types of micro- and macro-level concerns reflected by most participants within each scientific domain. In the table, the main writing stages and genres approached by participants are also included.

Most participants focused on re-writing procedures by using their own text material. However, some participants also included pre-writing and drafting for their own research work. ChatGPT 3.5 and 4 were mostly used, followed by some users' preference for Co-Pilot M365 (fully licensed at the University of Extremadura), Scholar GPT, Elicit, and Gemini (2.5 Flash).

The following is a description of the main findings and representative examples of users' interactions and impressions with the tools according to their writing purposes within each domain. The findings below are grouped according to these

domains, which are abbreviated as follows: SoSH stands for Social Sciences and Humanities, ExSE for Experimental Sciences and Engineering, and HeS for Health Sciences.

**Table 2.** Main aspects of the writing process with GenAI across domains.

| | | Writing aspects | | |
|---|---|---|---|---|
| Domain | Genres | Main stages | Macro-level | Micro-level |
| Social Sciences & Humanities | Research articles Abstracts | Re-writing | Clarity Tone | Grammar Vocabulary |
| Experimental Sciences & Engineering | Research articles Abstracts Technical documents | Re-writing | Clarity Organization | Grammar Cohesion |
| Health Sciences | Research articles Abstracts | Re-writing | Clarity Tone | Grammar Vocabulary |

#### 4.2.1. Rewriting with GenAI for Clarity, Conciseness, and Academic Integrity

All these EFL writers used GenAI for rewriting strategies aimed at enhancing clarity, coherence, and grammatical structures. Most participants also stated their concern that texts projected their academic integrity and authorial voice.

Within the SoSH domain, six participants employed ChatGPT and one Gemini to refine their research writing through iterative prompting and revision cycles using critical digital skills. An example is the Education senior lecturer's use of Gemini to rewrite an abstract, already submitted to a high-impact journal, aiming for enhanced grammatical accuracy, cohesion, and lexical sophistication. However, she described the resulting version as "bombastic and robotic." When she queried Gemini about this issue, the system indicated that the overly formal language—exemplified by expressions such as "delving into"—contributed to a lack of naturalness and personal engagement. To address this, the participant manually incorporated contextual information about her specific research focus and its local relevance, thereby refining the text at the macro level. She later reflected that the revised version was more cohesive, authentic, and effectively conveyed her authorial stance.

In the ExSE domain, participants' rewriting practices with ChatGPT and Co-Pilot combined linguistic refinement with content adjustment to improve the clarity, accuracy, organization, and publishability of their texts. For example, the Food Science and Technology professor employed Co-Pilot to revise an abstract that had already been published. Her prompt instructed the tool to "rewrite it for better reader comprehension, with more direct language, simpler sentences, effective cohesion, fewer subordinate clauses, more familiar vocabulary for this academic context, and less redundancy." While she found the resulting version stylistically improved and more accessible, she observed that the word count had been reduced—a limitation set by the journal's publication requirements. Despite additional prompting and refinement, she reported that Co-Pilot could not replicate

the same level of text clarity in longer versions, identifying this as a key constraint of the tool for her writing purposes. However, in her task conclusion, she admitted improvements to the text, critically commenting on the text changes: "Co-Pilot has decided to remove connectors such as 'in general' to make more direct sentences. It has also simplified phrases like 'is a critical environmental issue of growing concern,' replacing it with 'has become a significant environmental concern,' thereby aiming at clearer grammar. However, I see that some words such as changing 'thus' with 'therefore' are not really necessary."

Within HeS-related disciplines, all participants employed GenAI tools—specifically ChatGPT, Scholar GPT, and Co-Pilot—to refine their research writing at both the micro- and macro-levels. Their revisions primarily focused on enhancing lexical precision, grammatical accuracy, and overall readability, guided by carefully crafted prompts with explicit linguistic instructions. One example involved the Sports Medicine professor, who used Scholar GPT to revise sections of a research article submitted to a medical journal. He initiated the interaction with the following prompt: "Assume the role of Editor-in-Chief of a journal in sports medicine. Your decision to forward this paper for peer review depends on your evaluation of the following text. Please improve its lexical choice, grammatical form, and simplicity." After receiving the revised version, he compared it to his original manuscript, highlighting all modifications in red. He then refined the process further by prompting the tool to "improve it for an academic audience, using a direct tone and a clear authorial voice." He reported high satisfaction with the outcome, citing as an example the rewritten sentence: "Both sessions involved the same tasks, to which we allocated sample variations to achieve the pertinent goals," which he described as "more direct and readable" than the original.

Overall, participants thus demonstrated a purposeful and reflective use of GenAI tools, combining editorial precision with disciplinary awareness to achieve clarity, coherence, and stylistic appropriateness in their academic writing.

#### 4.2.2. Refining Lexical and Grammatical Choices with GenAI

Seven participants—five from the SoSH domain and two from HeS—adopted more nuanced approaches to their writing by refining prompts to elicit specific feedback on vocabulary and grammatical use in GenAI-generated texts. These interactions demonstrated a growing metalinguistic awareness and active engagement with linguistic detail. For instance, one senior lecturer in Tourism Studies used Co-Pilot to proofread the introduction of his research article, focusing explicitly on "appropriate phrases and vocabulary usage," and instructed the tool to "explain its changes." The system produced and justified fifteen lexical and phraseological modifications, which the writer marked in red in the revised version. One example was the replacement of the verb "contempt" with "mitigate" to ensure lexical precision and disciplinary appropriateness.

Similarly, the Sports Medicine lecturer sought "greater grammatical and lexical accuracy, improved lexical choices, text clarity, and assertiveness." In response, ChatGPT generated a table outlining each proposed change and its rationale. The

participant expressed high satisfaction with the revision, for example, noting the substitution of the sentence "simulation serves as a teaching and training technique" for "simulation constitutes a key teaching and training technique," which he viewed as stylistically stronger and more natural in academic English.

#### 4.2.3. Using BDDL Tools for Lexical and Phraseological Refinement

Across all three disciplinary domains, most participants employed BDDL tools—primarily Corpus Mate and COCA—to conduct micro-level textual analyses of their writing. These searches focused on the academic sections or thematic areas corresponding to each participant's field of specialization, allowing them to examine discipline-specific patterns of linguistic usage in academic English.

Within SoSH, for instance, the doctoral researcher in Education used Corpus Mate to address awkward phraseology in her draft, searching for patterns with verbs such as "help" and "personalize." She found that the collocation "facilitate personalization" was more common in academic writing and revised her text accordingly to read "technology that facilitates the personalization of teaching." She also used Corpus Mate and Linggle to check collocations such as "broaden knowledge," which she replaced with the more frequent "expand knowledge." Drawing on BDDL and her own linguistic reflection, she further modified "a mix of research methods" to "mixed research methods" and adopted the passive voice in selected verbs to achieve a more formal academic tone.

In ExSE, participants used BDDL primarily to verify terminological and lexical accuracy. For example, the Biology professor selected the expression "minimal impact" instead of "slight effect" after comparing corpus results in her disciplinary domain using Corpus Mate. Similarly, she used both COCA and Corpus Mate to confirm that the collocation "to maximize potential" was more idiomatic than the original choice "enhance potential," based on higher corpus frequency and contextual relevance.

Within HeS, participants demonstrated a similar focus on refining terminology, phraseology, and grammatical accuracy. For example, the senior lecturer in Toxicology (Medicine) used COCA and Corpus Mate to analyze the concordances of key verbs in his manuscript—such as "address," "pose," and "suggest." He thought that academic patterns such as "the research suggests that…" informed more subtle lexical adjustments in his writing, which he said "enhanced the precision and naturalness of my scientific discourse."

#### 4.2.4. Using GenAI for Prewriting and Drafting

Four participants—three from SoSH and one from HeS—used GenAI tools for their research pre-writing and drafting. Their approaches reflect a diverse range of strategies for planning, organizing, and developing initial content through iterative prompting and critical evaluation.

An example is the Tourism senior lecturer's use of Elicit as a research assistant "to better explain my work on the impact of climate change on urban planning and design." The tool generated summaries of eight papers, though the participant

judged only two as academically reliable. He subsequently used Co-Pilot to produce a detailed article outline, which he saved for later refinement, and then employed the same tool to develop an introduction based on three uploaded PDF articles. Co-Pilot summarized each paper by section and drafted a complete introductory text. While the participant appreciated the structure and clarity of this version, he manually corrected factual inaccuracies, particularly the misrepresentation of one study's methodology, to ensure academic precision.

In HeS, the Veterinary Medicine researcher used ChatGPT to compose a concise summary of clinical trials conducted in her laboratory. She provided the tool with bullet points describing the research methods and principal findings. The tool initially produced an outline, which she manually corrected to align with her actual procedures and contextual details. She then requested a rewritten version formatted as a short scientific report, which she later adapted as material for her own research aims.

### 4.3. Survey Findings

A Shapiro-Wilk test was conducted to examine the distribution of Likert-scale responses (ranging from 1 to 5) in the post-course survey. The results indicated that the data were not normally distributed. Consequently, descriptive statistics were employed to analyze participants' responses.

Mean (M) scores were calculated across four thematic categories within the GenAI and BDDL sections of the survey (see **Table 3**). The list of all the survey items, along with their respective scores grouped under these categories, can be found in Curado Fuentes (2025c).

**Table 3.** Survey sections and mean (M) scores.

| | Tool appraisal values | |
|---|---|---|
| Survey section | GenAI | BDDL |
| Academic writing | 4.41 | 3.86 |
| Linguistic profitability | 4.35 | 3.78 |
| Difficulty with tool | 3.64 | 3.50 |
| Future usability | 4.33 | 3.66 |

Overall, participants expressed a stronger preference for GenAI tools over BDDL resources in all the survey sections. M scores for all BDDL-related survey items were below 4, whereas only one GenAI item ("I find paraphrasing tools useful for writing") received a mean score lower than 4. The lowest-rated BDDL item was "I find BDDL tools more useful than other digital tools for academic writing" (M = 3.38).

In contrast, participants' perceptions of tool difficulty revealed a different pattern: In the "Difficulty with BDDL" category, participants assigned lower mean ratings to their difficulty for linguistic analysis (M = 3.28 vs 3.71 for GenAI), suggesting that participants found BDDL more transparent and manageable for lan-

guage-focused tasks. However, the opposite trend emerged regarding technical or navigational complexity, with BDDL rated as more challenging to operate (M = 3.71) than GenAI (M = 3.57).

M scores also varied across disciplinary domains, with participants in SoHS reporting the highest ratings (M = 4.21), followed by those in HeS (M = 4.05) and ExSE (M = 3.83). To determine whether these differences were statistically significant, Kruskal–Wallis H tests were conducted using the three domains as independent variables. Post hoc Dunn's tests with a Bonferroni-adjusted alpha of 0.017 were subsequently applied to identify which specific domain or domains significantly differed.

As shown in the "Overall survey" row of Table 4, the results revealed statistically significant differences across domains. Participants in SoSH demonstrated markedly higher valuations of the tools than those in the other areas, while participants in HeS rated them more positively than their counterparts in ExSE disciplines.

Table 4. Significant differences between domains according to dependent variables.

| Dependent variable | Statistical values | |
|---|---|---|
| | Significance ($p \leq 0.05$) | Mean ranks SoHS/ExSE/HeS |
| Overall survey | $\chi^2(2) = 6.49$ $p < 0.001$ | 368.36/299.48/341.66 |
| Difficulty with GenAI | $\chi^2(2) = 10.23$ $p = 0.006$ | 24.07/13.5/26.93 |
| Academic writing with BDDL | $\chi^2(2) = 9.18$ $p = 0.010$ | 64.13/43.84/51.03 |

Subsequent statistical comparisons were conducted by taking each survey section as a dependent variable. These analyses revealed only two other statistically significant differences according to the Kruskal-Wallis H tests (Table 4). First, participants in ExSE perceived the use of GenAI tools as notably less difficult compared to those in the other two domains. Second, participants in SoSH evaluated the use of BDDL tools significantly more positively for their academic writing than the other groups, while participants in HeS assigned significantly higher values than those in ExSE.

In the open-ended survey questions, participants commented on their preferences and perceptions regarding the tools used, the types of texts frequently composed with GenAI, and the perceived strengths and limitations of the tools and approaches for their academic work. Overall, their responses reinforced the patterns of tool use and reflection observed during the course sessions and tasks. Most participants preferred ChatGPT, followed by Co-Pilot and Scholar GPT, while two participants in the SoSH domain highlighted Elicit. Regarding BDDL resources, participants selected Corpus Mate and COCA more often across domains, followed by Linggle (in SoSH and HeS) and MICUSP (in ExSE). The pre-

dominant text type mentioned was the research article prepared for publication, and two SoSH participants also referred to outlines and drafts for different types of academic writing and course materials.

Finally, comments in the third open-ended question were largely positive, emphasizing GenAI's usefulness in accelerating and enhancing the writing process, as well as its potential to transform writing practices and mark a paradigm shift in higher education. Nonetheless, several participants expressed concerns about issues such as the generation of unnatural language, the risk of over-reliance on AI tools, and the potential weakening of critical thinking skills. SoSH participants provided more extensive and reflective comments than those in other domains. These are three representative examples:

Lecturer (Education): "GenAI is more dynamic and easier to use than corpora tools, which need technical training (…) GenAI, however, must be consistently supervised because it can make many mistakes and compromise academic integrity. It could also hinder or diminish the writer's linguistic competence in the long run if we don't practice writing."

Lecturer (Computer Science): "Great tools, but there is a big difference between the free versions and the premium version tools. With the second type of tools, I can work more directly and obtain better information."

Lecturer (Nursing): "This course was too short. We should practice the use of these tools for EFL writing more."

## 5. Discussion

Based on these results, this heterogeneous group of postgraduate writers holds generally positive views about the application of GenAI and BDDL to their academic writing. However, some variations surface according to contextual and individual usage patterns, disciplinary orientation, and technological profitability. The following is a discussion of the results in the context of current debates about L2 writing with these digital technologies.

### 5.1. GenAI for Research Writing Improvement

The postgraduate writers in this study expressed a generally positive appraisal of GenAI for research writing, viewing it primarily as a resource for revising and enhancing the clarity, accuracy, and organization of their research texts. Participants also reported using GenAI to refine lexico-grammatical choices and phraseology, as well as to address higher-order aspects of writing such as overall structure, tone, and disciplinary conventions. This result aligns with recent findings by Kramar, Bedrych and Shelkovnikova (2024), Milton, Lokesh and Thiruvengadam (2024), and Williams (2024), among others.

A key observation is that most participants engaged in iterative rewriting, testing, and refining prompts until the generated outputs conveyed their intended meaning. This approach reflects an awareness of the need for human oversight in the writing process, a point also emphasized by Markey et al. (2024). Furthermore,

some participants extended their use of GenAI beyond revision tasks to include outlining, documenting, and drafting, thereby integrating the tools across other stages of research writing.

This broader and more strategic use of GenAI was particularly evident among participants in the SoSH and HeS domains, whereas writers in ExSE tended to focus more narrowly on revision. The more diversified engagement observed in the SoSH and HeS groups corresponds with their higher mean scores, indicating a stronger appreciation of GenAI's pedagogical and practical potential as a tool for enhancing their writing. The SoSH participants achieved the highest ratings overall, primarily given by faculty members in Education and Tourism. One main reason may be that these instructors had previously experimented with AI-based writing tools prior to the course, as they openly acknowledged during class discussions, contributing to their more confident and versatile adoption of GenAI for text development. They also delivered more nuanced linguistic reflections on GenAI for writing during and after the course. This finding aligns with the positive outcomes observed in Curado Fuentes (2025d).

### 5.2. Interactions with GenAI while Maintaining an Ethical Approach

Because the course fostered the development of participants' prompt literacy and ethical considerations with GenAI for writing, these practices and awareness were observed during and after the course. In general, participants moved from simpler tool interactions to more deliberate writing process-oriented prompts, documenting the steps accordingly. The course provided them with richer experiences to reformulate context-sensitive prompts aligned with their writing objectives.

Different aspects related to accountability, bias, and the production of mechanically generated or "machine-sounding" language—concerns similarly highlighted in other studies of L2 writers using GenAI (Crosthwaite & Sun, 2025)—were noticed and discussed. Participants reflected on their capacity to direct AI outputs intentionally and critically. This evolving sense of ethical co-agency with GenAI tools aligns with current scholarship on critical AI literacies in academic L2 writing (Godwin-Jones, 2024; Liu, Lee, & Zhao, 2025).

### 5.3. The Importance of the Author's Voice and Linguistic Exploration

Throughout the course, discussions centered not only on the ethical dimensions of GenAI use but also on the preservation of authorial voice in academic writing. Concerns about transparency and authorship disclosure emerged, such as the need to explicitly acknowledge GenAI assistance to uphold academic honesty. This approach includes less experienced researchers (e.g., the doctoral student in Education), who also recognized the challenge of maintaining a personal writing style when revising with AI-generated suggestions, noting that the output sometimes diluted her original voice.

These reflections resonate with recent debates in the literature regarding AI-mediated authorship and the need to sustain an identifiable human presence in academic communication (Berber-Sardinha, 2024; Flowerdew, 2025; Luo, Xia, & Lu, 2025). Collectively, the participants' observations illustrate a developing commitment to using GenAI as a collaborative yet critically monitored partner in academic writing that can help them foster their own academic voice, as found in previous analyses of GenAI-assisted postgraduate EFL writing (e.g., Zou & Huang, 2024).

A central insight from the study is that participants recognized GenAI's value as extending beyond grammatical improvement, since, initially, some participants questioned whether AI could achieve more than producing correct English. Through practice, however, most writers came to appreciate the importance of shaping texts that reflect more human intervention.

Participants also expressed concerns about losing their authorial voices if users became over-reliant. Some participants observed that such overdependence could hinder their ongoing language growth, highlighting the need to cultivate critical digital literacies through metacognitive and metalinguistic strategies (Mizumoto, 2024; Pérez-Paredes, Curry, & Ordañana-Guillamón, 2025). Most participants' positive evaluation of additional digital resources, such as BDDL tools, for expanding metalinguistic knowledge can serve as evidence of their search for linguistic authenticity. This BDDL approach was especially acknowledged and valued as useful for writing by the SoSH members, followed by the HeS group, and to a lesser extent by the ExSE participants.

In the survey, the overall lower perception of BDDL as supportive may be due to its greater technical difficulty, despite its user-friendly design. However, various researchers found corpus resources easier, and others considered them relevant for targeting nuanced linguistic explorations, which provided them with varied examples of human writing in their disciplines. This finding aligns with previous research about postgraduate L2 writers' recognition of the importance of mastering lexico-grammatical issues in writing, such as academic phraseology and collocations, which can benefit from corpus-based linguistic inquiry (Curado Fuentes, 2025a; Fatima & Ahmad, 2025; Laso Martín & Comelles Pujadas, 2025; Yoon, 2016).

### 5.4. Participants' Approaches Based on Their Academic Context

Overall, participants demonstrated a capacity to direct GenAI and BDDL tools in ways that met the stylistic and disciplinary demands in their fields, employing distinctive strategies during the writing task. They requested clear and concise text and subsequently conducted critical evaluations of the AI outputs to identify weaknesses, grounded in their scientific expertise.

Most people addressed the importance of a cautious approach, warning against overreliance on GenAI due to potential risks to academic integrity, critical oversight, and linguistic development. The conflict of EFL writing versus native-speak-

erism for journal publications also emerged in the discussions, where GenAI was generally seen as an important resource that might resolve this tension. This position gradually shifted to observations on the need for balanced and reflective use of prompt engineering and consistent linguistic consultation to foster one's own voice in academic writing.

For instance, lecturers in SoSH focused on ensuring linguistic accuracy in conceptual references and on integrating relevant disciplinary background. In ExSE, faculty members reviewed disciplinary linguistic usage and terminological precision. In HeS, doctoral researchers and faculty combined tools effectively for stylistic and lexical-grammatical improvements in their texts. These practices illustrate how postgraduate L2 English writers strategically combine GenAI resources to address discipline-specific challenges in academic writing (Hua, Lu, & Guo, 2024; Liu, Lee, & Zhao, 2025; Liu & Wang, 2024).

### 5.5. Attitudinal Differences Related to Domain-Specific Practices

Researchers writing within Social Sciences displayed the most positive attitudes toward GenAI- and BDDL-assisted writing, consistent with observations in Curado Fuentes (2025d). Notably, Education participants engaged in more critical reflections on the artificial and limited aspects of GenAI-generated texts in terms of linguistic authenticity, aligning with findings by Jacob, Tate and Warschauer (2025).

In ExSE, postgraduate EFL writers tended to prioritize efficiency over linguistic nuance. These participants thus seem to place comparatively less value on linguistic exploration and exhibit lower enthusiasm for integrating AI with additional analytical resources for linguistic refinement. At the same time, these participants report lower perceived difficulty with the technology, reflecting a preference for automated solutions that maximize writing improvements. These prevalent attitudes and approaches among postgraduate science and engineering students are also noted by Liu and Wang (2024) and Ruff et al. (2024).

Conversely, HeS participants were found somewhat in the middle of this cline, with more positive responses and enhanced tool employment than ExSE writers, but not reaching the high level showcased by the SoSH group. Nonetheless, some internal variations could be identified within groups, such as the Business Management professor's comment on the low utility of BDDL for his writing, or one of the Computer Science lecturers' claim that "these technologies are a revolution for my professionality." These contrasting perspectives illustrate how the combination of individual experiences and disciplinary backgrounds tends to shape attitudes toward the integration of AI in academic writing, in agreement with Khuder (2025).

### 5.6. Writing with Different Tools across Domains

Overall, these findings highlight that GenAI is effective for EFL writing when integrated with complementary resources, such as online corpus consultation. The

ultimate goal in this combination of digital tools was to support rather than replace human creativity, an idea that participants realized and conveyed in one form or another. This type of approach is essential for sustaining heterogeneous discourse, multilingual perspectives, and cultural diversity in academic writing, as Kuteeva and Andersson (2024) state.

A clear illustration of this enriched usage is the development of young researchers' academic stance, evident in their task execution and metacognitive reflections in this case study. Rather than directly accepting AI outputs, these postgraduate writers actively negotiated the tensions between efficiency and authenticity, correctness and authorial voice, and technological reliance and academic integrity. Their practices demonstrate the potential for postgraduate L2 researchers to employ GenAI critically and productively as part of a complex and reflective academic writing process.

## 6. Conclusion

This case study has provided qualitative evidence of how postgraduate EFL learners can meaningfully integrate GenAI and BDDL tools into L2 writing across disciplinary contexts.

Regarding the first research question on participants' strategies and developments with the tools, these participants demonstrated progression from using these technologies for simple tasks to employing advanced prompt engineering, authorial alignment, and discipline-specific adaptation. These findings indicate that, with targeted training such as the course offered, existing linguistic competencies can be transformed into deliberate, critical, and effective writing practices facilitated by GenAI and complementary digital tools.

In response to the second research question on participants' appraisal of these tools for their disciplinary writing process, the generally high survey scores and positive evaluations indicate an intention to expand their use of AI technologies in academic writing. Some participants voiced the need for more training courses of this type. These observations align with ongoing debates on human-AI collaboration development demands in higher education (e.g., Liu, Lee, & Zhao, 2025).

Additionally, participants recognize the tools' potential across various academic tasks while remaining aware of persistent challenges and risks, particularly concerning L2 English competence, consistent with prior studies (e.g., Khuder, 2025). Most writers highlight the importance of working on academic phraseology and collocations, echoing findings from previous research (e.g., Yoon, 2016). Most participants' observations, especially in SoSH and HeS disciplines, underscore the centrality of human agency in combining this linguistic precision with disciplinary expertise.

Finally, in response to the third research question concerning domain-specific differences, analysis of in-class discussions, task developments, and survey responses indicates that ExSE participants differed notably in both their attitudes toward the tools and their linguistic and technological usage for writing. These

postgraduate writers tend to exhibit lower enthusiasm compared to participants from other domains. One direct indication of this tendency is that some ExSE participants did not submit the final writing task, and those who did generally demonstrated less attention to micro-level linguistic refinement in text re-writing than their counterparts in other fields. However, ExSE writers also employed some corpus-based analyses for lexical precision in their fields and expressed interest in enhancing their use of GenAI for future academic work, reflecting an overall positive recognition of the tools' potential to support academic writing processes.

A primary limitation of this study has been its small sample size and the exclusive focus on participants who voluntarily enrolled in the course. This selective sampling constrains the generalizability of the findings because different faculty members and researchers in these and other disciplines may be more reluctant to adopt AI tools for research/academic writing. Future research should thus address these limitations by examining larger and more heterogeneous samples to validate and refine these preliminary insights.

Additionally, longitudinal studies are essential to capture the evolving role of GenAI in academic writing, considering the underlying motivations, strategies, and variations in usage across diverse academic communities. Systematic research is needed to fully understand GenAI's impact on L2 English academic writing at all levels of higher education. As Raitskaya and Tikhonova (2025) observe, GenAI holds substantial potential to enhance the cognitive processes underpinning research, yet its practical benefits remain inconsistently realized. This underscores the need for studies exploring long-term effects, discipline-specific practices, and theoretical frameworks addressing cognitive processing in the context of AI-supported academic writing.

## Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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