

人工智慧主導下的郵件寫作？ 應用文寫作課程中二語寫作者與聊天機 器人的合作案例研究

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摘要**

應用文寫作 (Professional Writing) 課程以電子郵件、個人履歷、信函等體裁為講授內容，是高校英語教學體系中經常設置的課程。然而，人工智慧 (AI) 生成工具的迅速發展，為寫作課的課堂教學設計與習作評價帶來了複雜的挑戰，並已引起了教師及研究者的關注 (Cardon et al., 2023 ; Ibrahim & Kirkpatrick , 2024)。為了解英語二語寫作者如何處理 AI 生成的文本，研究者聚焦於電子郵件寫作任務，要求學生向教授撰寫一封英文電子郵件，並諮詢研究生入學錄取事宜。在閱讀 ChatGPT 生成的郵件文本後，學生需要根據自身理解，結合具體語境對郵件進行修改。同時，研究者邀請了三位高校教師，對學生郵件的完成質量進行評估。基於對郵件文本的分析，研究者發現，AI 工具生成的郵件篇幅往往較長，但學生作者卻容易忽視表達中的冗餘問題。此外，讀者表示，儘管詞彙誤用和語法錯誤得到了有效控制，格式問題依然大量存在。在郵件修改的過程中，寫作者在合理採用語用策略、適當增補個人信息方面也遇到了一定困難。本研

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究為寫作教師提供了與人機互動相關的教學啟示，有助於教師更新寫作課堂中的教學設計，並制定適用於 AI 輔助寫作的評估標準。

關鍵詞：人工智能輔助寫作、應用文寫作教學方法、二語學生寫作者

Composing Emails in an AI-dominated mode? A Case Study of L2 English Writers' Collaboration with Chatbots in a Professional Writing Course

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Abstract**

The rapid introduction of text-generating software programs, which has brought complicated challenges into writing classrooms, has been discussed with concerns by teachers and researchers in writing studies (Cardon et al., 2023; Ibrahim, 2023). As a course offered in most of the higher education institutions, Professional Writing (PW) usually features explanations of writing genres such as emails, resumes, and letters. To observe how L2 English writers process texts generated by AI, this classroom-based study focuses on the design of a professional email writing assignment in a PW course. L2 English writers were asked to draft an email to a professor and consult graduate school admission possibilities. After being provided with email texts produced by ChatGPT, students needed to revise the email based on their own understanding of the situation. Professors with both L1 and L2 English speaking backgrounds

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were invited to evaluate the email. Content analysis of students' submissions and reader interviews show that AI chatbot tends to generate email texts that are lengthy, while student writers would often dismiss the redundancy issue. Email drafts submitted by students also demonstrated difficulties with personalizing the text. In addition, formatting glitches become much prominent to professors as readers. Although vocabulary misuse and grammatical inaccuracies have mostly been kept at a minimum, formatting problems have been reported by readers as strong indicators of low writing proficiency.

This study offers writing instructors insights of human-AI interaction, and will benefit the design of writing pedagogy in future classrooms. Interviews with both readers would also clarify the evaluation criteria of AI-assisted writing, which are expected to provide more guidance for both teachers and students.

Keywords: AI-Assisted Writing; Professional Writing pedagogy design; L2 Student Writers

1. Introduction

Using Generative Artificial Intelligence (GAI) to write for technical or professional communication purposes, which is “inevitable,” “allowable,” and even “desirable” at workplaces (Lentz, 2024), has become a research hotspot to prepare students for their future career development. Writing researchers and instructors have been using GAI tools to help writers improve surface linguistic features and brainstorm creative ideas (Faiz et al., 2023; Harunasari, 2023). A wide range of pedagogical practices are integrated into writing courses and workshops, such as conducting rhetorical analysis on AI-generated and human-authored texts (Cardon et al., 2023), or refining prompt techniques to tailor AI-generated output (Cain, 2023; Ponce, 2024; Wang, 2024). Reeves and Sylvia (2024) published a review article to report the state-of-art research progress relevant to technical and professional writing pedagogy, and calls for more evidence-based research that contributes to more productive and ethical use of GAI.

When technical and professional writing courses are delivered in an EFL context, however, writers are faced with challenges spreading across multiple dimensions. In addition to using English as a foreign language, EFL learners are expected to communicate with high sensitivity of cultural differences and proactively join conversations in professional settings. While EFL writing instructors are endeavoring to rearrange their teaching activities to accommodate changes brought by GAI, their concerns could be phrased as: How to deliver instructions that align with students' process of writing in an authentic context? How to systematically inform L2 writers of possible risks related to AI-assisted writing? How to efficiently evaluate written work that are produced by human in collaboration with AI?

To assist instructors in developing feasible lesson plans and assignment evaluation criteria, this paper features a qualitative study conducted in an undergraduate-level Professional Writing course, which is offered at a 4-year university located in mainland China. Students enrolled in this course are intermediate level EFL learners, and have limited experience in communicating at professional workplaces. The author, who fulfills the role of both course instructor and researcher, summarizes students' interaction pattern with AI chatbot based on their final written products and conversation log. Research results show that instructors need to address burgeoning new issues in the era of AI-assisted writing. The author also proposes suggestions for revising rubrics in consideration of feedback from human readers.

2. Literature review

The benefits of introducing GAI tools into classrooms have been discussed and researched in both L1 and L2 writing contexts. The flip side of technological advancement, however, is excluding L2 writers from the policy making process due to their limited access to AI tools (Dang & Wang, 2024; Wang, 2023), and potential loss of patience, trust, or transparency in classrooms (McIntyre, 2025). Bearing the purpose of teaching L2 students to write an English email, the author observed how student writers interact with AI at their most natural state. The author attempts to rebuild the professional email pedagogical unit to fit the human-AI collaboration process, and strives to maintain a healthy learning environment with strong instructor-student rapport.

2.1 The benefits of incorporating AI chatbots in writing classrooms

The implementation of GAI in language classrooms, which often comes in the form of chatbots powered by Large Language Models (LLM), has been investigated through the user perspective of both students and instructors. In the process of language learning, Huang, Hew, and Fryer (2022) summarized the roles of chatbots as interlocutor in language knowledge activities, simulator of authentic language environment, provider of instruction and intervention, as well as recommender of level-appropriate learning materials.

Empirical research shows that student writers have been using AI chatbots for a variety of purposes, which are channeling benefits into their text construction process. As for L2 writing, in particular, AI is granting writers with greater access to both language resources and metalinguistic knowledge (Yan, 2023). Writers are able to tap into the proofreading functions for lower-level writing issues (Carlson et al., 2024). Scaffolding practices for higher-level writing skills, such as generating ideas, outlining argument, and providing feedback, has also been documented in classroom-based studies (Guo, Wang, & Chu, 2022; Su, Lin, & Lai, 2023; Zhang, Zou, & Cheng, 2023). Using AI for multimodal composition, during which writers adopted practices such as generating image descriptions from AI and using prompts to further edit visual output, has also been investigated by writing researchers (Liu, Zhang & Biebricher, 2024). In addition, writers are enjoying greater flexibility of learning at their own pace during the AI-assisted writing process (Lin & Chang, 2023; Tram,

Nguyen, & Tran, 2024). Student writers have been exposed to opportunities of experiencing Self-directed Learning, where they need to manage time and digital learning resources efficiently (Wang, Li, & Bonk, 2024).

Similar with L2 student writers, course instructors are also applying AI chatbots as interlocutors that produce input and suggestions for pedagogical material development (Pack & Maloney, 2023). AI tools are also playing the additional role of assessors that render ratings and evaluative feedback (Mizumoto & Eguichi, 2023; Pfau, Polio, & Xu, 2023). This AI-enhanced pedagogical approach for writing, as was explained by Guo et al. (2024) and Rad et al. (2023), has also been adopted to help students learn to provide peer feedback.

Research cited above is mostly conducted in writing classrooms or experimental workshops with careful orchestration, where well-organized tutorial sessions are designed to help instructors or writers apply AI technologies. Affordances from diverse perspectives (Barrot, 2023; Sasaki, 2023) and evolving sets of literacy skills (Praphan & Praphan, 2023) are indispensable to successful collaboration between human writers and AI tools, the lack of which, however, will induce problematic outcome and debilitating cognitive abilities. The next section of literature will cover relevant studies that discuss the negative influence of omnipresent technology and ethical concerns in writing classrooms.

2.2 Cognitive challenges and difficulties encountered in writing classrooms

Over-reliance on GAI has triggered worries and concerns regarding inappropriate practices. Van Niekerk, Delpot, and Sutherland (2025) described the rise of GAI as a “disruptive force” in academia, as students’ engagement with tasks and active learning are impeded. The forging of important skills, such as critical thinking, may also at peril when learning is overly dominated by chatbots (Li, 2024). In addition, the collaboration between human and AI may blur the concept of “human agency”. Researchers have also dedicated efforts to differentiating student-authored assignments from AI-generated texts (Casal & Kessler, 2023; Goulart et al., 2024), as students’ original work might be replaced by AI. Lin and Crosthwaite (2024) also analyzed feedback offered by human teachers and GPT, the latter of which has demonstrated a lack of consistency.

The efficient use of GAI chatbots comes along with an expanding repertoire of innovative literacy skills. Simply put, both instructors and

students are expected to acquire novel techniques and become adaptive to the fast-evolving technological landscape. In addition to critical GAI literacies, which consists of active interaction with AI, ethical thinking, awareness of GAI limitations, self-observation, self-motivation, and self-instruction (Ou et al., 2024), studies focusing on AI-assisted writing have necessitated a command of more nuanced literacies, which include but are not limited to (a) feedback literacy (Guo et al., 2024; Rad et al., 2023), where AI applications are used to monitor and enhance students' capabilities in making evaluative judgement; (b) chatbot literacy, "the essential competencies needed to proficiently and ethically use ChatGPT as a language learning and teaching tool" (Ma et al., 2024), (c) multimodal literacy, students' "ability to analyze, interpret, generate multimodal outputs that integrate various modes (e.g., text, images, videos)", as well as (d) fine-tune prompt literacy of "trained ability or knowledge to appropriately and effectively formulate or adjust prompts" (Kang & Yi, 2023). Grasping these newly-emerged literacy skills has been articulated as both goals of teaching and learning outcome in writing classrooms.

Another strand of research involves ethical discussions of text ownership and intellectual responsibilities for both instructors and students alike. The academic integration of ChatGPT is bringing in risks of algorithm bias, inaccurate information, as well as data privacy and security concerns (García-López et al., 2025). In discussion of "post-plagiarism", researchers claim that "historical definition of plagiarism no longer applies" (Eaton & Hughs, 2022; Eaton, 2023), as hybrid human-AI collaboration is becoming commonplace. More detailed interpretation of authorship and information personalization looms as pedagogical challenges for writing instructors. The situation is even trickier for teaching written communication for business and professional purposes, as productivity software packages are featuring "AI companion" and "Copilot" that automatically generate emails, conference minutes, and presentation slides to reduce human labor. Cardon et al. (2023) voiced the concerns of communication instructors, who, as technology pragmatists, reported author accountability and text authenticity controversies. Taking responsibility for information appropriateness and genuine communication, which are integral components of critical GAI literacies, are highly valued to better facilitate ethical AI-assisted writing practices at workplaces (Devesto & Palmer, 2024; Lentz, 2024). To summarize, instructors need an updated inventory of pedagogies, which should be built upon new understanding of writing as a human-AI collaborated process.

2.3 Pedagogical accommodations for the human-AI collaboration era

As a core concern for curriculum designers, the question of how students write has been re-examined and re-interpreted in composition classrooms. Zhao (2023) introduced Wordtune as an AI empowered tool that helps L2 writers "maintain a continuous flow and learn useful ways to express their ideas in written English". Writing is reshaped as paraphrasing practices with a wide option of rewriting suggestions, where translating is also playing a heavier role. Wang (2024) investigated students' engagement with AI tools in a first-year writing course. After critiquing AI-generated arguments, students still reported that chatbot-generated argumentative essays could be the "supplement" and "replacement" of texts written by human. In the process of AI-assisted writing, balancing the proportion of AI-generated content and human writers' creation, together with evaluating the impact of AI, has become the new focal point for teaching writing with critical thinking (Bedington et al., 2024; Jiang et al., 2024).

Compared with argumentative writing, source evaluating and argument making skills might be involved to a lesser extent for technical or professional writing tasks. Nevertheless, human readers are still receiving, evaluating, and reacting to the text information. Concerns such as superficial learning, AI surrogate writers, declining audience awareness, and under deployment of rhetorical strategies are prominent as ever (Duin & Pedersen, 2023; Sylvia & Reeves, 2024).

In addition, within the context of L2 writing, error analysis frameworks have been developed at length for research and teaching purposes (Almusharraf & Alotaibi, 2023). Admittedly, surface issues such as "subject-verb agreement," "run-on sentences," and "verb tense" could be easily resolved, as AI tools are producing seemingly "grammatically perfect" texts. However, errors may take place in subtler forms, such as insufficient presence of pragmatic techniques and weak competence in intercultural communication. While students are reorganizing and customizing information, however, these problems might resurface in unexpected occasions. Writing instructors will benefit from rethinking the function of rubrics, meanwhile taking a more preemptive approach to avoid predictable pitfalls.

The reshaped writing and pedagogical scaffolding process is also transforming the relationship between instructors and students. Pflugfelder and Reeves (2024) proposed the heuristic CARE Framework

for teaching technical writing, which stands for *Critical, Authorial, Rhetorical, and Educational*. Undeniably, incorporating plagiarism detection tools and surveillance mechanisms helps raise writers' awareness of text authorship and academic honesty. However, teachers and syllabus designers have been encouraged to consider the constructive role of ChatGPT (Barrot, 2024; Ghafori, 2024), which would contribute to nurturing an emotionally supportive learning environment.

To investigate L2 English writers' use of AI in an authentic context without heavy restrictions, this study focuses on an email assignment in a Professional Writing course. Writers need to send an email to a professor and introduce themselves as prospective graduate students. As the course instructor, the author demonstrated how ChatGPT could automatically produce an email with briefly-edited prompts. While examining the final email draft submitted by student writers, the author formulated the following research questions:

Research Question 1: How do EFL writers at intermediate proficiency level integrate AI assistance into their email writing assignment?

Research Question 2: Will human readers consider EFL writers' final email draft as successful communication attempts? If not, why?

Research Question 3: How to adjust lesson plans and evaluation rubrics based on feedback provided by human readers?

3. The study

3.1 Course and assignment information

The study is grounded in a Professional English Writing course offered at a 4-year university based in mainland China. Compared with argumentative writing and academic writing, which have been built into the university's English writing curriculum as two other course series, this Professional English Writing course aims at improving students' written communication capabilities at workplace. Over the 16-week' semester, student writers will work on genres such as announcements, memos, emails, resumes, and cover letters. The last three are featured as major assignments carefully graded by course instructors. Students would therefore take advantage of this course to revise their application materials for graduate school or intern position.

Writing instructors first depict detailed scenarios for the

assignments, and arrange them with a sequenced approach. To be more specific, students are guided to write an email to their prospective advisor, consulting for graduate school admission opportunities. They need to draft other types of application materials afterwards, including resume, cover letter, and personal statement.

As the first piece of document to be prepared, professional email is often dissected by course instructors to familiarize writers with working place courtesy and pragmatic strategies. Knowledge as such is supposed to assist students in adapting to professional discourses, and help them draft their application materials in an efficient manner.

More background information about the email assignment is detailed as:

Assignment 1 Professional Email

Suppose you are planning to apply for graduate programs offered by an English-speaking higher education institution. You are interested in a professor's research profile, and would like to reach out to him/her for admission possibilities.

Please write an email based on the scenario above.

3.2 Student as the email writer

Students who enroll in this undergraduate-level course come from a variety of disciplinary backgrounds, including Liberal Arts, Social Sciences, and STEM-related undergraduate programs. Their year of study ranges from college freshman to senior, and are at different stages of their undergraduate research. Compared with courses designed for more advanced learners of English, this *Professional English Writing* course is intended for EFL learners at intermediate language proficiency level. As undergraduate students, they do not possess much prior knowledge of professional communication. Their understanding of English composition is deeply shaped by College Entrance Exam essay writing practices. These student writers are, however, exploring to work in collaboration with AI, and may have taken a few introductory courses on applying AI in their own field of study.

3.3 Pedagogical adaptations in the human-AI

collaboration era

In comparison with “AI-enhanced” or “AI-empowered” writing pedagogies, the instructor for this course used to adopt a more “traditional” approach to help students navigate through the composing process. The pedagogical unit of professional email is delivered through four main steps:

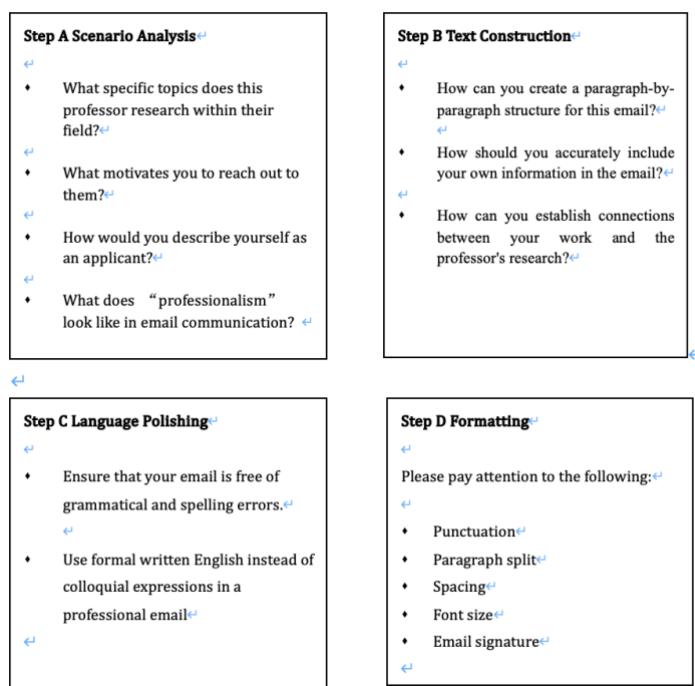


Figure 1 Pedagogical Unit of the Professional Email Assignment

While working on the professional email assignment, the course instructor would also distribute a rubric to help students understand the evaluation procedure.

Table 1 Rubric for Email Assignment Evaluation

Dimension	Descriptors	Points
Structure & Content	<ul style="list-style-type: none"> ♦ Add a subject line ♦ Clearly state the purpose of your email ♦ Include a brief background overview ♦ Request information regarding graduate school admissions 	10
Language & Communication	<ul style="list-style-type: none"> ♦ Grammar and Spelling Examples: run-on sentences, third-person singular verb forms, verb tense, etc. 	10
Effectiveness	<ul style="list-style-type: none"> ♦ Politeness Examples: appropriate use of salutations and complementary closings. ♦ Differentiate between spoken and written Language Examples: “Can you tell me...?” vs. “Would you please let me know...?” 	
Formatting	<ul style="list-style-type: none"> ♦ Punctuation ♦ Paragraph split ♦ Font use ♦ Spacing 	5

The extensive application of AI chatbots in students' learning activities, however, has motivated the course instructor to recalibrate their writing process and adjust the curriculum design accordingly. It is essential to understand the degree to which students depend on GAI tools for writing in real-life situations.

During the semester of Spring 2024 and Fall 2024, the course

instructor first followed the “traditional” approach to introduce professional email as a genre, and then demonstrated a preliminary round of interaction with ChatGPT.

The prompt used for human-ChatGPT interaction is worded as:

Write an email to a professor. I want to know more about graduate school admission opportunities.

The instructor then retrieved the texts generated by AI, and asked for students’ active participation in post-writing attempts. Students are welcome to regenerate, rewrite, or revise the email until they feel it comfortable to send the email in a professional context. They are not mandated to use ChatGPT, and the instructor also reminded the students of possible plagiarism and text appropriation risks. The instructor later collected students’ final revised draft as .docx files, and closely examined any post-writing practices in demonstration of students’ efforts in human-AI collaboration. In total, 127 students enrolled in the writing course during Spring 2024 and Fall 2024, all of whom submitted their professional email assignment. For writers who further communicated with AI, they also delivered the prompts they used to complete the writing task.

3.4 Professor as the email reader

After students submitted their revised email drafts, three college professors were invited to read the human-AI collaborated work, and then provide their feedback based on the interview questions below. Two interviewees (Allison and Betty) are writing instructors, who hold a PhD degree in Applied Linguistics from higher education institutions in English-speaking countries. One interviewee (Carl) is an engineering professor, who is working at a university located in the United States. The interview questions include:

- a) According to the rubric previously used to evaluate this email assignment (as Table 1 presents), has the writer successfully completed the task?
- b) Has any part of the text made you feel uncomfortable as a reader? Why?
- c) How to revise the rubric to evaluate an email collaboratively written by human and AI tools in the future?
- d) Please add any additional thoughts you would like to share.

3.5 Data analysis

When examining student writers' interaction with AI, the author applies content analysis methods to categorize their writing products into a number of groups. The email generated by ChatGPT includes 7 paragraphs, and presents content such as [Your Name] and [Your Institution] in brackets. Writers are expected to type in their own personal information and perform additional editing when needed. It is not difficult to visualize writers' efforts by quantifying the revision work they finished. The author mainly focused on: a) Replacement of information in the brackets; b) adjustment of text length; and c) insertion of new content that is customized.

As the three interviewees are working at different institutions, the author completed the interview via Zoom meetings online. The interviewing process is recorded and transcribed, where thematic analysis was conducted to investigate human readers' perception of the emails.

4. Research findings

4.1 Student writer profiles in the human-AI collaboration process

After typing in the prompt, ChatGPT is able to produce an email with the subject line of *"Inquiry Regarding Graduate School Admission Possibility"*, as Table 2 presents. Upon scrutinizing the final version of email submitted, the author notices that varied types of user profiles have emerged. Among the 127 L2 students attending the course, the author is able to identify five different user profiles of writers.

Profile 1: Writers who edit with minimum effort

When trying to "post-write" the email, some writers seem to hold the principle of minimum effort at core. They replaced content such as [Your Institution] and [Your Name] with their own information, and spent limited amount of time editing the text information generated by AI. The final version of email they submitted did not involve any further revision attempts. They may have, however, deleted a few sentences or paragraphs they do not feel necessary to include.

Profile 2: Writers who resort to multiple LLMs

Compared with writers categorized in the first group, some students

did not include the text generated by ChatGPT. They put a similar prompt into another LLM-powered chatbot or chatbots, and then retrieved a different version of the text. However, the email is of approximately the same length with the one produced by ChatGPT, and demonstrates a highly similar structure. Writers of this profile made the decision due to possible accessibility issues, or chose to use chatbots that are free of charge. They probably have patched up different versions of texts generated by AI, which resulted in the production of an “AI assemblage”.

Profile 3: Writers who personalize and customize

The third writer profile is characterized by their stronger capability of revising the email according to their own need. Although they might have adopted the demo email’s overall structure, this group of writers transformed a large chunk of the text by adding customized details. They have dedicated efforts to clarifying their own personal information, research experience, motivation, and intention before the “post-writing” practice.

Profile 4: Writers who are proficient prompt editors

Different from their peers who personalize and customize email content, writers of the fourth profile take more advantage of their skills in editing prompts. According to their conversation log, they would not start revising the email until finishing multiple rounds of conversation with the chatbot. In other words, they asked AI Chatbot to revise the demo email first, and then placed their own personal information into the text. The prompts they applied include: “Make it sound real”, “Make it shorter”, or “I want a more concise email”. It seems that the students are aware of possible problems caused by AI, and would like the chatbot to produce more authentic texts before leveraging human efforts.

Profile 5: Writers who write on their own

Among the 127 students enrolled in the course, 2 of them did not use Chatbot at all, and insisted using their own language to draft this email. Compared with texts generated by AI, they wrote emails that are simpler, shorter, and read more like the work of an L2 English writer at intermediate proficiency level. In their writing, readers would occasionally spot spelling errors, grammatical issues, or inaccurate terminologies caused by mistranslation.

The author also needs to point out that 72 out of 127 students are writers of Profile 1, who perceived the email assignment as a “fill-in-the-blank” exercise and directly plugged their personal information into the text. They did not conduct any further communication with the chatbot before finalizing their draft of email.

Thirty-three L2 student writers, according to the conversation log they submitted, used LLM-powered chatbots other than ChatGPT. Writers of this group then extracted and assembled bits of text information they feel convenient to use. Eight students reported that they had more than one round of interaction with the chatbot, during which AI helped them edit the email it produced. Simply put, their writing process could be described as “AI creates first, human writers ask for revision, and then AI edits.” Twelve writers showcased their own revision attempts after the first round of interaction with AI, and they followed a route of “AI creates first, and then human writers revise”.

4.2 L2 student writers' post writing practices

In addition to gaining an increasing number of writer profiles from the human-AI collaborated writing process, the author also recorded students’ “post-writing practices” that surface from the emails they submitted. The author defines “post-writing practice” as any attempt to alter AI-generated texts, including replacing generic information in the bracket, tweaking surface linguistic features through paraphrasing, adding content and rewriting sentences, adjusting structure of the email, and regenerating content with edited prompts. Intuitively, AI chatbot users are anticipating to retrieve a “perfect” email at their disposal. The author, however, notices that the human-AI collaboration was not as automatically or smoothly fulfilled in an EFL writing classroom. Student writers are still in need of continuous scaffolding assistance and explicit instruction.

Before exploring for more nuanced word-level and sentence-level revisions, the author would like to elaborate on issues that stand out as instantly alerting “errors”. While demonstrating the email generated by ChatGPT, the author directly copy-and-pasted the text from the chatbot without editing. Thirty-two out of 127 student writers failed to perceive text background color or font size inconsistencies, and did not streamline these formatting details in their own work.

In 55 out of 127 emails submitted by student writers, sentences are consecutively displayed in the document without indent or adding

paragraph split, which has to some extent caused reading difficulties. Fifteen writers accidentally skipped over the bracketed texts such as [Your Institution] or {Your Major}, and did not replace them with their own information. Email readers would make the hypothesis that AI chatbot has been heavily used, as writers have occasionally inserted Chinese punctuation marks in texts written in English. They may have forgotten to switch the Microsoft input system from the default setting in mandarin Chinese.

To build a comprehensive view of writers' interaction with AI-generated texts, the author categorizes all attempts that are marked as "post-writing practices", which are shown in the Appendix. To establish a clearer link between these practices and the texts generated by AI, the author lays out the demo email in a paragraph-by-paragraph order, and attaches sample students' texts to illustrate their efforts.

An important discovery is that surface-level linguistic issues do not appear as frequently as before, which have been categorized in the assignment rubric (Table 1). Writers are using a more formal tone expressing their intention and purpose. A myriad of subordinate sentences and more complex grammatical structure were deployed when writers are introducing themselves as potential candidates. However, in the fifth paragraph of the email text generated by AI, where students were consulting for admission opportunities, they are adding new requests such as seeking revision suggestions for their application material, settling for one-on-one appointments with the professor, or inquiring portal links to submit their applications. From the receivers' perspective, these requests might seem abrupt and intrusive.

In conclusion, the form of "errors" is shifting in the AI-assisted writing process. Students are not grappling with difficulties in linguistic features as they did before, but are faced with more challenges regarding pragmatics, communication courtesy, and formatting issues. The next section of research findings will demonstrate human readers' perceptions towards the emails submitted by student writers, which will also offer insights into transforming the rubric designed for this writing assignment.

4.3 Feedback from human readers

The author selected two emails from each of the five writer groups, totaling eight emails that showcase human-AI collaboration. For the first four writer profiles, the chosen emails have average length and quality consistent with their respective groups, representing the typical output of

student writers. The author then invited the three interviewees to review these emails and share their thoughts and feedback.

Working as college writing instructor or engineering professor, all the three interviewees possess extensive experience reading EFL writers' work. They all recognized the fact that AI chatbot is efficient in helping students control the number of surface-level language errors. However, they also reported concerns that arise with the intervention of AI in writing classrooms. Based on the interviewees' evaluation of students' texts, the author is able to organize their responses to the interview questions as follows.

Half-successful in accomplishing the writing task

All the three interviewees consider students' work as only half-successful after referring to the rubric used for this assignment (Table 1). The keyword that stands out from their response is homogeneity. As a writing instructor, Allison reports: "I can see that AI helps build up the overall structure, and tells students which part they need to work on. So, they just filled the blank in." She also mentions that undergraduate students tend to get lost in the AI-assisted writing process, as "most of them spent much of their time attending classes or learning the basics." They do not have a lot of knowledge about discussing research ideas or "eye-catching" projects. It is understandable that writers of Profile 1 have achieved a notable number, as the students might perceive AI-generated texts as a perfect template beyond their own imagination. "They do not know, however, that everyone else is using this perfect model!" Allison adds.

Carl, who works as an engineering professor, concretizes "homogeneity" as repetitive use of certain words and phrases: "I saw '*delve deeper into...*', '*equip me with...*', '*provide a solid foundation*', and '*spark my passion in...*' in almost everyone's email. These could be signs that they are written by AI instead by a student." He also points out the unsuccessful pragmatic strategies exploited by AI chatbot: "You do not know the professor yet. How would you ask for a face-to-face meeting? Also, we do not usually receive a 7-paragraph-long mail. This is a little bit intimidating and impolite."

In addition to the "homogeneity" problem and ineffective communication skills, the interviewees also attribute the "half-success" to the difficulty in crafting personalized message. Betty, who is a writing instructor, mentions that students used a lot of glorified language to commend the professor on his or her success, but did not pinpoint any of his or her published work. "Also, I went through 'the reasons why you think

our program is a good fit'. The language reads so scripted that I feel the writer dumped in some texts from the program's information website."

Unexpected glitches from a proficient writer

As for the second interview question, the author intends to explore how to differentiate between AI-generated texts and human writers' output. Inconsistency is summarized as a red flag that exposes student writers' over-reliance on AI. As an experienced writing instructor, Betty creates a checklist of potential issues that may arise during the collaborative writing process. These include: a) changes in punctuation and line spacing due to switching between Chinese and English input systems; b) inconsistencies in text background color or font size caused by copying and pasting; and c) improper use of contractions, such as "I'm" and "You're." These are all common challenges that writers must address.

Carl unpacks "inconsistency" through examining tone and collocations, which can be implicit and subtle for EFL learners to grasp. For example, one of the students wrote:

"So far, I have studied several specialized courses on lighting and have done some basic researches on lighting ergonomics, which sparked my passion for studying the effects of different lighting environments on the human beings."

This excerpt particularly draws Carl's attention: "In English, we do not use the collocation of 'study courses' Students 'enrolled' in courses or 'registered' courses. Readers would not expect to see this expression from a proficient writer's work." Misused noun plural form and quantifier such as *"some basic researches"* has also been spotted and analyzed by the interviewees, who labelled this phrase as a frequently-encountered issue in intermediate EFL learners' work. All the three interviewees have identified "a sudden shift from lofty language to colloquial English": "In one paragraph, the writer expressed his or her wish to "pursue graduate study under your esteemed tutelage and supervision", and the next sentence reads "Now let me introduce myself. I am now a Grade 2 student in university..."

Rubrics that need to be redesigned

In response to the third interview question, all interviewees emphasized the need to adjust the evaluation rubric to better reflect the writing process

involving human-AI collaboration. Regarding the dimension of “Content and Structure,” writing instructors may need to emphasize the importance of “audience analysis.” While AI can generate well-structured emails by processing prompts, writing can sometimes resemble a “spot dictation” exercise. Allison observed, “Students often feel ecstatic in these moments, as technology alleviates their struggle with an unfamiliar language. However, they must recognize that there are still challenges to overcome.” Professional writing is inherently social, with its success largely determined by readers’ reactions. Allison suggested adding an extra column of “don’ts” to the new rubric, highlighting examples of “AI-generated texts that evoke negative responses from professors.” These “don’ts” will encourage students to rethink the nature of writing and its role in their professional development.

Carl proposed revamping the rubric by incorporating “qualities” that readers seek in a text. He noted, “Content, structure, and formatting are all important factors a writer must consider. However, much of this is now automatically generated. Perhaps we should include ‘Consistency,’ ‘Politeness and Thoughtfulness,’ and ‘Authenticity’ as core qualities, along with descriptors such as: ‘Consistent use of punctuation and typeface,’ ‘Personalize your experience,’ and ‘Be concise and considerate.’”

As an experienced writing instructor, Betty is redefining the concept of “proficiency.” She states, “I include ‘improving your English writing proficiency’ in the course syllabus as our learning goal. I’ve noticed a reduction in spelling and grammatical errors in my students’ writing, and they are now able to construct more complex sentences. While some readers may prefer shorter, simpler emails, there may still be minor issues. However, at least a real person wrote this with sincerity. I truly see the effort they put in!”

4.4 Revision of pedagogical unit design

The final draft of the email submitted by student writers highlights the need for further guidance on audience awareness and content customization. Compared to the pedagogical unit design used prior to the AI era, the author proposes reshaping the lesson plan, as illustrated in Figure 2, to better accommodate writing activities that involve human-AI collaboration.

Based on the writer profile information, most L2 writers tend to replace generated content with personal details or shift their agency to GAI

tools. In addition to introducing email as a genre for professional communication, writing instructors must equip students with more context about the email recipient. In Step A, as shown in Figure 2, students will first be asked to review the professor's research webpage and align the professor's interests with their own academic plans. This audience analysis aims to guide writers in navigating content customization and personalization, labeled as Step B in Figure 2.

Feedback from human readers, which emphasizes issues like "homogeneity," "inconsistency," and "impoliteness," is integrated into Steps C and D of the pedagogical unit design. Instructors may want to provide clearer explanations of the "Don'ts" and inform students about excerpts that can evoke negative responses from readers. Additionally, while focusing on mechanics such as font size and text background color, instructors should help students identify their own writer profiles. It is essential to recognize the new challenges that arise from human-AI collaboration. Surface-level errors still need attention from human writers, as readers expect sincerity, authenticity, and politeness in emails, regardless of grammatical accuracy or sophistication.

Step A**Scenario Analysis before AI Prompting**

What does this professor research in his or her area of study? 

Why are you interested in reaching out to him or her? 

Who are you as an applicant? 

Invoke your analysis results in your prompt. For example: 

I am a college senior majoring in Physics. I would like to be Professor O'Loughlin's graduate student. Write an email of inquiry for me. 

Step B**Information Personalization and Customization**

What does personalizing and customizing mean? 

What can AI do more for you with more accurate prompts? 

Step C**Rubric Analysis**

How can you avoid the pitfalls of "homogeneity," "inconsistency," and "impoliteness"? 

What other aspects would your reader prefer to avoid? 

Which writer profile do you most closely identify with? 

Step D**Final Check**

Review the mechanics once more; they are still important: 

Punctuation 

Spacing 

Spelling 

Spacing 

Font size 

Capitalization 

Figure 2 Reshaped Pedagogical Unit of the Professional Email Assignment

5. Discussion

In this exploratory qualitative study, the author designed a writing assignment that involves professor-student communication in a professional context. As the course instructor, the author did not exert heavy restrictions on L2 students' use of AI, and hopes to observe the writing practices they adopt in real-life settings. Writing instructors might be expecting a human-AI collaboration mode that is driven by human writers. Students could have drafted an email independently first, and then seek for revision suggestions from AI chatbots. However, most of the EFL learners prefer prompting AI to generate texts as the initial step, and then apply "post-writing practices" to supplement their own information. This new process of writing, which is predominantly favored by students enrolled in the Professional Writing course, corroborates with discussion regarding controversies surrounding text ownership and the transgression of plagiarism boundaries (Barrot, 2023; Casal & Kessler, 2023; Cardon et al., 2023; Li, 2024).

Rather than installing surveillance systems and implementing punitive measures, the author aims to adopt a more supportive approach to AI intervention. An examination of the email writing process indicates that chatbots will continue to be a frequently utilized resource for EFL learners. However, explicit instructions and clear guidance from teachers remain essential in writing classrooms. This is especially true for undergraduate students, who often grapple with linguistic insecurity and unfamiliarity with pragmatics. The focus of explicit instruction should shift from surface-level linguistic features to a comprehensive analysis of rhetorical effectiveness and self-awareness as human writers, which has been advocated by Pflugfelder and Reeves (2024) in the heuristic CARE Framework (Critical, Authorial, Rhetorical, and Educational) they proposed. To address challenges posed by AI-dominant collaboration, instructors must take proactive steps in Steps B and C (see Figure 2). Prompts can be designed to encourage more linguistically diverse outputs. However, personalizing and customizing content requires independent thinking and careful consideration of human perception. Feedback from interviewees underscored the importance of customizing email content, as

homogeneity signifies "AI ghostwriting" and a lack of human compassion. Writers who personalize their information exemplify the most commendable profile, demonstrating their own efforts while simultaneously avoiding superficial language issues.

While encouraging student writers to amplify their own voices during the human-AI collaboration process, writing instructors must also recognize that content customization varies according to individual stages of professional development. In this study, students require guidance to effectively navigate program webpages or professors' research profiles in order to write emails that incorporate "research-related" information. Consequently, instructors are expected to bridge the gap between writing in a foreign language and the content knowledge necessary for professional settings.

The phenomenon of "homogeneity," as indicated by the interview results, is gradually reshaping readers' interpretations of errors. AI chatbots have undeniably demonstrated their ability to eliminate surface-level language issues and refine writers' phrasing. However, "sounding like a bot," characterized by producing text with overly complex sentences, may not be well-received by human readers. Regarding rubric revision, instructors should consider placing "consistency" in a more prominent position. Attention to formatting details and the appropriate tone—key dimensions for evaluating communication effectiveness—remain essential in the context of teaching human-AI collaboration.

6. Conclusion

This study examines the "post-writing practices" that EFL students engage in during the human-AI collaboration process. When composing emails to inquire about graduate school admission possibilities, most L2 writers at the intermediate English proficiency level utilize prompts to create a template. Although some writers make an effort to integrate personal details into the text, readers often notice a lack of effective communication strategies and insufficient content knowledge. In addition to developing new lesson plans and rubrics that align with writers' evolving composing processes, instructors might consider providing relevant worksheets and stylistic checklists as proactive measures to reduce students' over-reliance on AI.

Despite the capabilities of AI chatbots, students still require instructional support and explicit guidance in the realm of professional writing. A closer analysis of students' work and interview results highlights

the need for instructors to adjust their pedagogical focus. Specifically, instructors should emphasize the importance of formatting consistency and appropriate tone in post-writing practices. Additionally, foundational writing skills—such as punctuation, capitalization, paragraph spacing, and layout—remain crucial in the design of writing pedagogy. As shown in Figure 2, a successful final formatting check reflects writers' efforts to maintain consistency throughout the human-AI collaboration process.

Based on the interview feedback collected in this study, scripted language and phrases generated by AI should be revised to avoid "homogeneity." To assist students in crafting personalized messages, L2 writing instructors in the EFL context might consider providing a list of "frequently used phrases by AI" to help writers strike a balance between their own language and AI-generated content. Responsibly utilizing AI-generated texts, as a key indicator of independent thinking, has become an important goal for both teachers and students to achieve.

7. Limitations

While teaching the Professional Writing course, the author had only 90 minutes to introduce professional email writing and explain the assignment requirements. This time frame is insufficient to adequately prepare students for the challenges and risks associated with using AI chatbots. To address this, the author has been developing online tutorials that include more mini lectures, which aimed at helping student writers evaluate the benefits and drawbacks of AI-assisted writing.

Additionally, the data collected for analysis consists of texts and chatbot conversation logs submitted by students. Writing researchers and instructors would gain a deeper understanding of writer profiles if students were interviewed about their decision-making processes.

Appendix Post-writing Attempts of the L2 Student Writers

Para No.	Generated Text	Post-writing Practices	Sample Texts from Student Writers' Submissions
Subject	Subject: Inquiry Regarding Graduate School Admission Possibility	Writer deletes the subject line.	
		Writer rephrases the subject line with more words	Subject: Request for Attending Graduate School under Your Esteemed Supervision
		Writer rephrases the subject line for brevity.	Subject: Request for Graduate School Admission
Opening	Dear Professor [Professor's Last Name],	Writer adds the professor's last name Writer changes "Professor" to "Mr.", "Dr.", "Ms.", or "Mrs."	Dear Professor Lentis, Dear Mr. Zhang,
Para. 1	I hope this email finds you well. My name is [Your Full Name], and I am writing to express my strong interest in pursuing graduate studies under your esteemed guidance. I have been following your work closely and greatly admire your expertise in [mention the specific field or	Writer rephrases the opening greetings. Writer adds detailed information about his/her major, and indicates his/her intention in pursuing graduate study.	I hope this email finds you in good health and high spirits. I recently completed my undergraduate degree in maths from F. University. During my undergraduate studies, I had the opportunity to delve deeper into calculus of variations, which sparked my passion for functional analysis. I hold an undergraduate degree in German from F. University, where I

Para. 2	<p>area of research].</p> <p>I recently completed my undergraduate degree in [mention your field of study or major] from [mention your university or institution].</p> <p>During my undergraduate studies, I had the opportunity to delve deeper into [mention relevant coursework or research projects], which sparked my passion for [mention the specific area of interest within the field]. Your significant contributions in this field, as evident from your research publications and accomplishments, have inspired me to aspire for higher academic achievements.</p>		<p>acquired a solid foundation in German literature. During my studies, I actively participated in German poetry, which further fueled my passion for poetry and motivated me to seek advanced education.</p> <p>My name is K. Li, currently a senior major in applied mathematics in our school and I am writing to express my strong interest in pursuing graduate studies under your esteemed guidance.</p> <p>I am Yu Q., a senior student at the School of Journalism, F. University. Through our school's recommendation process, I have received a direct admission offer and I am writing to express my strong interest in joining your research group.</p> <p>Now allow me to introduce myself and highlight why I believe I would be a valuable addition to your research group:</p>
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			<p>I have conducted a study analyzing the media dependency of ChatGPT users among university students, as well as completed a data journalism report on the challenges of digitizing obscure characters.</p>
		<p>Writer clarifies that he/she is interested in the professor's area of research.</p>	<p>I hope this email finds you well. My name is X. Zhang, I'm a F. University senior in advertising. I have recently come across your work in Advertising and have been greatly impressed by the research you have conducted in the field.</p> <p>I have been an avid follower of your work, and I am truly impressed by the significant contributions you have made to the field of International Development in the Americas. Your extensive research publications, innovative methodologies, and commitment to academic excellence have greatly inspired me. It is my earnest desire to contribute to this field and make a</p>

		<p>meaningful impact, and I believe that pursuing my graduate studies under your esteemed supervision would provide me with the ideal platform to achieve these goals.</p> <p>Your pioneering research in coronary artery intervention ultrasound has deeply fascinated me. The innovative methodologies and advancements you have spearheaded in this area have ignited my passion to delve further into this field and contribute meaningfully to its advancement. Your expertise and leadership make you an ideal mentor to guide me through this academic journey.</p> <p>Your unwavering commitment to nurturing knowledge, growth, and innovation aligns perfectly with my academic aspirations, making your research group an ideal platform for me to advance my studies. I deeply appreciate the potential</p>	
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			<p>opportunity to work under your esteemed guidance and contribute to MOSS project.</p>
		<p>Writer elaborates on the working environment and learning atmosphere as the reasons why they would like to pursue their study.</p>	<p>I am impressed by the collaborative and innovative environment at [University Name], and I am confident that I can contribute positively to the academic community. I am particularly interested in [specific program or department], and I believe that your mentorship would be instrumental in shaping my research trajectory.</p> <p>The graduate program at F. University offers a comprehensive curriculum, state-of-the-art facilities, and a vibrant research community. I believe it provides the ideal platform to develop my research skills and contribute to the field of artificial intelligence.</p>

Para. 3	<p>I have thoroughly researched the graduate programs offered at [Professor's University/Institution], and I believe that the [mention specific program or department] aligns perfectly with my academic goals and research interests. The opportunity to work under your mentorship and contribute to ongoing research in your lab would be an invaluable experience for my intellectual growth and professional development.</p>	<p>Writer explains why the graduate program or institution aligns with his/her research interests.</p>	<p>I am writing to inquire about the possibility of joining your research group as a graduate student. I am attracted to MIT not only for its excellent academic reputation but also for the vibrant research community that fosters intellectual growth and collaboration. I am confident that the resources and opportunities available at MIT would provide an ideal environment for me to pursue my research interests.</p>
Para. 4	<p>I would be grateful if you could spare some time to discuss the possibility of joining your research group and the graduate program at [Professor's University/Institution]. I am</p>	<p>Writer proposes a meeting to discuss possible research opportunities. This attempt may come in the forms of: Proposing a specific meeting time based on the reader's schedule</p>	<p>Could we possibly arrange a brief meeting or phone call at your earliest convenience to discuss the graduate programs available at F. University and explore potential opportunities for collaboration? Could we possibly arrange a meeting at</p>

Para. 5	<p>eager to learn more about your ongoing research projects, potential funding opportunities, and the application process for graduate admissions.</p> <p>I understand that your time is valuable, and I am more than willing to accommodate your schedule. If it is convenient for you, I would greatly appreciate the opportunity to meet in person or have a virtual meeting. Please let me know a time that works best for you, and I will be more than happy to adjust my schedule accordingly.</p>	<p>Asking for information related to graduate school admission</p> <p>Eliciting suggestions for increasing admission possibilities</p> <p>Searching for opportunities to demonstrate writer's qualifications</p>	<p>your convenience to discuss the potential for my joining your group? Please let me know a time that works best for you, and I will be more than happy to adjust my schedule accordingly. I have attached my resume/CV for your reference, and I am also prepared to provide any additional information or documents that you may require.</p> <p>Could you kindly provide me with information regarding the admission requirements and process for your graduate program? Additionally, I would greatly appreciate any advice or insights you could offer on how I can improve my chances of being accepted into your program.</p> <p>I am available from 3:00 p.m. to 5:00 p.m. every Monday and Friday. If it is convenient for you, I would greatly appreciate the opportunity to meet in person or have a virtual meeting, and I can also work around</p>
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		<p>your schedule. I have attached my resume for your reference, and I would like to provide any additional information or documents that you may require.</p> <p>I would greatly appreciate it if you could provide information regarding the admission process, specific requirements, and deadlines for the upcoming academic year. Additionally, I would be thrilled to discuss any research projects or opportunities for graduate students.</p> <p>I would be honored to have the opportunity to discuss my qualifications and research interests with you further. Could we possibly arrange a meeting or a brief conversation to explore the potential for admission to the graduate program and discuss potential research opportunities? Thank you very much for considering my</p>	
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			application. I am eager to potentially work under your mentorship
Para. 6	<p>Thank you for considering my request. I am genuinely enthusiastic about the prospect of being a part of your research team and contributing to the academic community at [Professor's University/Institution]. I have attached my resume/CV for your reference, and I am also prepared to provide any additional information or documents that you may require.</p>	<p>Writer collapses the two paragraphs and combines them into one to show their gratitude.</p>	<p>Thank you for considering my inquiry. I look forward to the possibility of working with you and contributing to your research endeavors.</p> <p>Thank you for considering my application. I look forward to the possibility of studying under your guidance.</p> <p>I have enclosed my CV and a brief statement of purpose outlining my academic background, research experience, and my aspirations for graduate studies. am particularly interested in Advertising and believe that your research group would be an ideal environment for me to contribute meaningfully to the field.</p>
Para. 7	<p>I look forward to the possibility of discussing my aspirations with you and exploring the potential for</p>		

	graduate studies under your guidance. Thank you for your time and consideration.		
Close	Best regards, [Your Full Name] [Your Contact Information] [Your University/Institution] [Attach your Resume/CV]	Writer designs an email signature that includes their academic affiliation information and personal contact Writer provides a hand-written signature.	Emily Zhang Undergraduate Student, Class of 2025 School of Journalism F. University, Shanghai

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