



**AI-assisted EAP Testing:
A Case of Academic IELTS Writing by Iranian EFL Learners**

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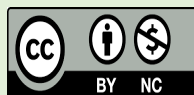
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Abstract

The advent of AI technologies has been influential on the quality of language learning in EFL contexts. A plethora of studies have explored the employment of AI bots in academic writing. Yet, exploring the strategies employed by Iranian EFL learners while using an AI bot to complete academic IELTS writing task 2 has been underestimated. To address the lacuna, this qualitative study computer-recorded eleven participants' interactions with AI bot to identify the strategies they employed to complete academic IELTS writing task 2. The researchers intended to clarify the intricacies of the human-AI interactions and infer the potential contributions of AI bots for academic writing in EFL settings. The findings revealed that despite the employment of several strategies by the participants to compose high-quality writing tasks, none of them fully trusted the AI outputs to use them without post-editing. They considered the AI bot as a writing assistant, used some revised segments of AI responses and added their own words respectively. The pedagogical implications for language teaching in general, and IELTS-oriented practices in particular to take advantage of the emerging AI technologies for better educational outcomes are provided. Moreover, avenues for future research on AI-assisted Language Learning (AILL) are suggested.

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Introduction

The significance of academic writing in the progress of English language learners' linguistic skills is undeniable, as it requires mastery of various aspects, including structuring, cohesion, grammar, and lexical knowledge (Campbell, 2019). Advanced writing abilities enable students to express their thoughts and concepts efficiently, ensuring clarity in communication, and ultimately contributing to their academic success and proficiency in numerous professional settings (Yoon, 2011). The employment of AI in English language teaching and learning provides a means for learners to conveniently practice language skills including academic writing at any time and from anywhere (Yan, 2023; Meniado, 2024), especially when test takers have to complete tasks under the pressure of time constraints (Rahimi & Fathi, 2022).

In other words, ubiquitous emerging AI technologies provide innovative alternatives to tackle the challenges of enhancing writing proficiency through traditional approaches (Kohnke, 2023). AI bots offer immediate and automatic feedback on diverse aspects of writing such as cohesion, coherence, and lexico-grammatical features, thereby facilitating more practical writing performance developments. Moreover, since AI bots help language learners identify and revise grammatical and lexical errors by suggesting alternative structures, they can improve the overall quality of the text and accelerate their writing improvement (Chen, 2023).

Several studies have investigated the efficacy of AI in enhancing English language proficiency (An et al., 2023; Chen & Yuan, 2023; Krüger, 2023; Lee et al., 2024; Liu et al., 2024). For instance, Lo (2024) used Google Neural Machine Translation (GNMT) as a de facto dictionary, and compared three look up conditions, namely GNMT search at word-level, GNMT search at sentence level, and an online dictionary (Cambridge Advanced Learner's English–Chinese Dictionary which was freely accessible via <https://dictionary.cambridge.org/dictionary/english-chinese-traditional/>) to explore degree of vocabulary retention while dealing with reading comprehension activities and the relationship between the findings with language learners' proficiency levels.

The findings revealed that learners who performed GNMT search at sentence level and online dictionary search, demonstrated significantly higher levels of word retention than those who looked up new terms in NMT at single-word level, and the same pattern was observed regardless of their proficiency levels. Besides, diverse studies have specifically focused on AI-assisted writing (Alharbi, 2023; Cardon et al., 2023; Shi & Aryadoust, 2024; Song & Song, 2023; Yang et al., 2023; Zou et al., 2023).

For instance, Godwin-Jones (2022), examined AI-based writing tools, reviewed the findings of the related studies, and discussed their employment in instructional settings. He concluded that these technologies, including MT, are beneficial for both students and teachers when integrated into writing instruction and practice. Teachers as mediators help learners to use technology effectively. Likewise, Yan (2023) reported remarkable improvements in EFL learners' writing performance due to the employment of ChatGPT, as an AILL tool. Despite the fact that human-in-the-loop (HITL) and machine-in-the-loop (MITL) systems serve as the human-AI interaction patterns (Knowles, 2024), an eye-catching research gap exists within the

realm of AILL; the one that is concerned with the essence of the real-time human-AI interactions to capture the likely contributions of ever-evolving AI bots for academic writing in EFL contexts.

To bridge this gap, this study screen-records such interactions, and qualitatively analyzes the strategies adopted by Iranian EFL learners while completing academic IELTS writing task 2 to cast light on the nuances of the essence of human-AI interactions to gain a more comprehensive understanding of how AI bots contribute to enhancing academic writing skills. The researchers hope that the findings of this study hold utmost importance for all English language learners, especially those who intend to take academic IELTS tests, for EFL teachers in general, and IELTS instructors in particular to make informed decisions to achieve the best results. As a result, the following research question leads the study:

What are the strategies employed by Iranian EFL learners while writing academic IELTS task 2 using AI bots?

Literature Review

Theoretical framework

The theoretical underpinning of this study is Vygotsky's Sociocultural Theory (SCT). Vygotsky's (1978) social constructivism, rests upon the idea that the learning process is a contextual and mediational phenomenon and social interaction is the key element in learning. As Vygotsky argues, an individual's cognitive development in the form of changes in actions and thoughts is the child of social interaction (Vygotsky, 1986). He mentions mediation as one of the building blocks of SCT (Lantolf & Poehner, 2014), and introduces a number of mediators including human behavior, and physical tools (Donato & MacCormick, 1994).

Another core concept of his theory is the zone of proximal development (ZPD). Vygotsky defines this concept as “the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers (Vygotsky, 1978, 86). Accordingly, English language learners achieve their ZPD through the use of relevant mediators such as technological tools (Mohammed Qadir & Yousofi, 2021). As Warschauer (2005) states, physical tools including AI technologies transform the core nature of human actions, yet the underlying activities stay unaffected. In this sense, AI bots, as mediating tools equipped with distinct capabilities, contribute to the formation of novel endeavors, thereby fostering learning.

Artificial Intelligence in language teaching and learning

AI technologies in educational contexts has intelligent decision making potential similar to human decision-making (Akerkar, 2014). The potential of AI in language learning and teaching to upgrade instruction and acquisition is recognized (Nazari et al., 2021; Xia et al., 2022). AI platforms are sources of linguistic input and output which are essential for language development. AI tools, including AI bots support diverse language learning activities such as writing and are available on computers and smartphones (Barrot, 2023).

AI bots offer alternative immediate feedback in the form of lexico-grammatical suggestions to revise inaccurate sentences and improve overall quality of the texts (Huang & Tan, 2023). Nonetheless, the limitations of integrating AI bots in writing practices should not be taken for granted. Over-reliance on AI-generated texts may restrict language learners' creativity in writing. Moreover, using the AI outputs without post-editing may lead to issues of plagiarism that should be carefully considered (Huang & Tan, 2023).

A great deal of studies has explored the promising benefits of AI-assisted language learning (AILL) tools on language acquisition (Bishop, 2023; Divekar et al., 2021; Fitria, 2023). For instance, Rahman et al. (2022) explored the potential of an AILL tool in distinguishing grammatical flaws, leading to the enhancement of writing skills among EFL language learners. This study reported EFL learners' positive perceptions as well as the significant improvements in their writing skills. In a case study on three Indonesian EFL learners, Utami and Winarni (2023) explored the participants' use of AILL tools for academic research writing. Adopting a mixed-methods research design, they identified the positive contributions of AILL tools to learners' academic research writing.

Likewise, Seufert et al. (2021) integrated instructor and peer feedback with intelligent tutoring systems feedback and focused on their effects on the academic writing skills of EFL learners. The intelligent tutoring system's feedback, provided within an AILL environment, had been significantly influential on the improvement of participants' academic writing skills. The effects of an AI-based writing feedback tool on undergraduate EFL learners' writing performance were explored in an experimental study with a control group in which the experimental group outperformed the control group in writing tasks.

The remarkable point in this study is to show the key role of the personalization feature of the AI tool in expediting the text edition process (Hwang et al., 2023). In 2023, EFL learners reported their reflections on the use of AILL tools such as ChatGPT in academic writing. They expressed their satisfaction with the employment of ChatGPT; but at the same time, were concerned about the potential long-term side effects of AI use and found AI literacy instruction crucial (Yan, 2023).

A closer look at the almost recent and vast body of literature on AILL indicates that countless studies have documented the invaluable contributions of AI technologies to the realm of English language teaching and learning (e.g., Bishop, 2023; Divekar et al., 2021; Fitria, 2023; Liu, 2021). Although the available literature provides us with insights into the integration of AI tools to different aspects of language acquisition endeavors, including vocabulary learning, grammatical corrections, or improvement of overall language proficiency, apparently significant gaps still exist in the area of AI-assisted academic writing.

While a number of studies, such as those by Rahman et al. (2022) and Fitria (2021), though informative, have investigated the realm of writing skills, their scope has remained limited to grammatical error revision or language proficiency (e.g., Liu et al., 2021). The available literature has rarely addressed the employment of AI bots in composing academic writing tasks of standardized tests such as IELTS, TOEFL, and GRE. In addition, to the researchers' knowledge, the writing section of the academic IELTS test is an area that has been under-researched so far.

The researchers believe that this research gap is of crucial importance due to the gate-keeping role of the standardized tests and their key roles in the future of the younger generations. To this end, this study intends to bridge this significant gap by tracking the strategies employed by Iranian EFL learners while composing IELTS writing task 2 by using AI bots. The findings of this study have the potential to enrich AILL practices, particularly in EFL educational settings where learners face challenges in terms of language proficiency levels, and time constraints (Song & Song, 2023).

Method

The present study employed a qualitative research design to explore the strategies adopted by Iranian EFL learners in completing academic IELTS writing Task 2, incorporating AI bots and to gain a deeper insight into the nature of human-AI interactions.

Participants

This study included eleven undergraduate EFL learners from the English language department of a female-only state university in Iran as participants. Their ages ranged from 19 to 25, and their mother tongue was Persian. In order to determine the participants' English language proficiency, Cambridge English proficiency test (<https://www.cambridgeenglish.org/test-your-english/>) was administered online at the beginning of the study before the completion of academic IELTS writing task 2. Based on the proficiency test results, the participants' ranged from B1 to B2 according to the CEFR (Common European Framework of Reference) scale.

Table 1. Demographic information of the participants.

Pseudo-name	Age	Gender	Language proficiency
S1	23	Female	B1
S2	22	Female	B2
S3	21	Female	B2
S4	25	Female	B1
S5	23	Female	B1
S6	20	Female	B2
S7	24	Female	B2
S8	21	Female	B1
S9	25	Female	B2
S10	19	Female	B1
S11	22	Female	B2

Materials and Instruments

Proficiency test

To determine the participants' English language competence, Cambridge English proficiency test (<https://www.cambridgeenglish.org/test-your-english/>) was administered online. It is a 25-item multiple-choice test of general English.

IELTS writing task 2

The study utilized the International English Language Testing System (IELTS) academic writing task 2 to track the strategies employed by the participants while completing the task by

recording their computer screens. Academic writing task 2 asks the test takers to discuss a view point, argument, or a problem by composing an essay of minimum 250 words in 40 minutes (<https://ielts.org/take-a-test/test-types/ielts-academic-test/ielts-academic-format-writing>).

Academic IELTS writing tasks were selected from credible resources commonly employed in IELTS preparation.

AI bot

Deep AI is an AI bot that writes different types of texts and provides information in almost all subjects. The researchers employed Deep AI platform for this study for a number of reasons as follow:

1. User-friendly screen enables users to make use of AI tools without requiring an enhanced technical literacy.

2. Multiple AI chat modes such as AI text generator, AI comedian, and Math AI are accessible to meet the users' specific needs.

3. Wide range of audiences can use some features of the AI services via this platform free-of-charge. Other facilities, however, are highly cost-effective.

4. Obtaining immediate results allows for making well-informed decisions.

5. Utilizing Deep AI's modes saves time and maximizes productivity.

6. Data security privacy is guaranteed.

7. Deep AI offers various resources to enhance AI literacy.

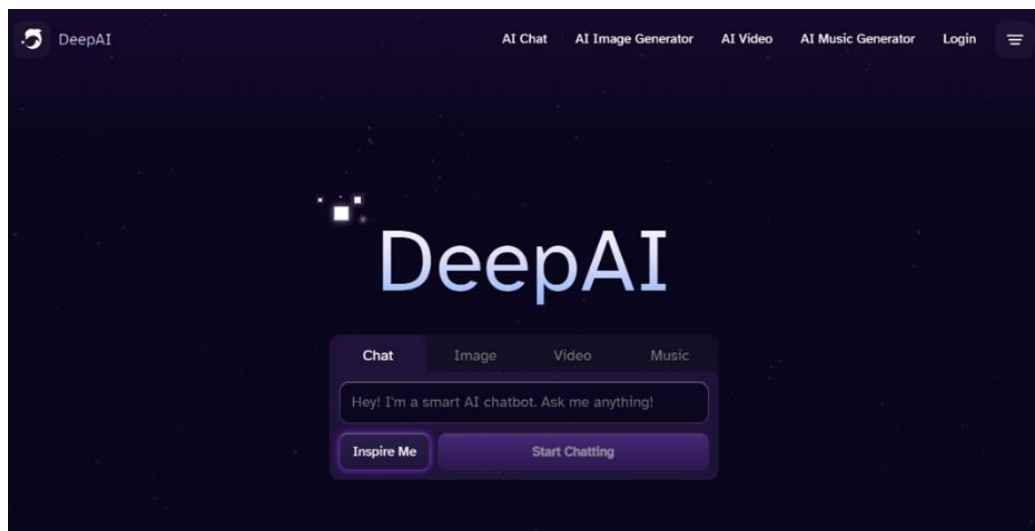


Figure 1. Snapshot of AI bot interface (<https://deepai.org/>)

Screen recording software

In order to identify the strategies adopted by the participants while consulting an AI bot to complete the task, their computer screens were recorded by using Ice cream screen recorder (<https://icecreamapps.com/Screen-Recorder/>).



Figure 2. Screenshot of Ice cream screen recorder icon (<https://icecreamapps.com/Screen-Recorder/>)

Procedure

The participants in this study accessed a web-based interface (<https://deepai.org/>) at Alzahra university language lab. The co-author of the study, who is a PhD student in TEFL, delivered instructions on how to complete the writing task. The respondents were encouraged to engage freely with the AI bot in any intended manner to track the strategies they employ while writing academic IELTS task 2. The writing task was available in the form of Google Form via the following link (https://docs.google.com/forms/d/e/1FAIpQLSdxCF66P1cyjW15nhxCPf7u_zieR9QmeFSGlDYkr45Lke8Xxw/viewform?usp=sf_link) as shown in Figure 3.

Figure 3. Academic IELTS writing task 2

Following the original IELTS writing task instructions, the participants were asked to write at least 250 words in 40 minutes and submit the responses. The only difference was that they were allowed to consult with AI bot for task completion. During the intervention, the participants used the AI bot platform, and interacted with it in a conversational manner to ask questions or request more explanations etc. and computer screens were recorded using Ice cream screen recorder and saved in the form of video files (WEBM). To ensure anonymity and maintain confidentiality of the collected data, the researchers assigned the IDs of S1-S11, etc. to the participants.

Data Analysis

The aim of this qualitative study was to explore the strategies Iranian EFL learners employed while interacting with AI bot to complete an academic IELTS writing task 2. The important

point is that the researchers intended to observe and examine the way the participants work with AI bot without receiving any previous instruction, based only on their own knowledge.

In response to the research question, one of the researchers carried out content analysis on the video data (WEBM) by using Google sheets in Google docs. The screen records of the participants were reviewed several times, and the strategies employed by Iranian EFL learners while writing academic IELTS task 2 by using AI bot were divided into six main categories: 1) general interactions, 2) prompt writing, 3) affective interactions, 4) reading AI bot responses, 5) essay writing, and 6) sign up window, and forty- four sub-strategies as presented in table 2.

Table 2. *The Main Strategies Employed by Iranian EFL Learners while Writing Academic IELTS Task 2 Using AI Bots.*

Main strategies	Sub-strategies
General interactions	Closing periphery ‘ads by Google’
Prompt writing	Copy/paste task stem into AI bot Spelling errors No punctuation
Affective interactions	Polite queries Scary screen
Reading AI bot responses	Scroll up and down Re-reading AI bot responses to get ideas Comparing AI bot responses to get ideas
Essay writing	Looking for the most appropriate responses Re-reading the task stem Writing essay with hesitation on their own Revising essay No direct copy/paste complete AI bot responses Copy/paste sections of AI bot responses Summarizing AI bot responses themselves Paraphrasing AI bot responses themselves Adding their own words Clicking on ‘copy’ button Selecting the AI bot response by click/drag and right-clicking on the selected area to copy/paste Asking the word count from AI bot Copy/paste AI bot responses to notepad Summarizing AI bot responses by clicking on the ‘summarize’ button Finding synonyms for the unknown words Clicking on ‘search web’ button Opening a number of AI bot pages simultaneously Moving between AI bot pages and writing task Copy/pasting essay to AI bot to count the words written
Sign up window	No initial logging in to deepai.org Trying to solve the problem Closing sign up window

Clicking on 'regenerate response' button
 Deleting previous responses
 Clicking on 'online mode' button
 Closing the page
 Re-opening the page
 Deleting all chat history
 Typing a prompt
 Clicking on 'Go' button
 Suggested using another AI bot
 Copy/pasting in 'incognito tab'
 Logging in to deepai.org using their Google account
 Clicking on 'chat history'

Results

The succeeding section delineates the main strategies based on the resulting main themes, namely general interactions, prompt writing, affective interactions, reading AI bot responses, essay writing, and signup window as well as their associated sub-themes. In fact, the findings of our study present instances of the individualized socio-emotional interactions between language learners and artificial intelligence.

General interactions

The AI bot used in this study (<https://deepai.org/>) offers two access modes: 1) full -access mode, 2) free-access mode. In full-access mode (Deep AI PRO), all the AI tools and offered by Deep AI are available for a monthly subscription of \$ 4.99 including the 'Ad-free experience'. However, in the free-access mode which we used in this study due to the overseas payment restrictions, most of the AI bot screen is occupied by 'ads by Google' as shown in figure 4. It seems that most of the participants found the ads distracting and closed them once they commenced chatting with the AI bot.

Table 3. *Instances of the Errors in Prompt Writing*

Errors	Examples
Punctuation (no full stop)	<i>S6</i> : provide details of advantages for a student studying away from home and their family <i>S10</i> : advantages of living away from home <i>S11</i> : the advantages and the disadvantages of university students' living with their families and away from them
Small letters	<i>S3</i> : a (A) coherent essay on the advantages and disadvantages of university students living with their families and the ones living far away including topic sentence, introduction, body and conclusion <i>S6</i> : provide (Provide) me with detailed topic sentence about nostalgia
Incomplete declaratives	<i>S10</i> : disadvantages of living away from home (What are the disadvantages of living away from home?) <i>S11</i> : the advantages and the disadvantages of university students' living with their families and away from them (What are the advantages and the disadvantages of university students' living with their families and away from them?)

Misspellings	<p><i>S1</i>: university students living on campes (campus).</p> <p><i>S2</i>: revise and edit the text below so that it is more coherent, please remove any repetitive (repetitive) ideas and only keep them in one of the paragraphs, edit this text so that its academic yet easy and enjoyable to read for the averagae (average) reader.</p> <p><i>S4</i>: write a good intruduction (introduction) for this topic</p> <p><i>S4</i>: write an IELTS writing (250 worlds (words))</p>
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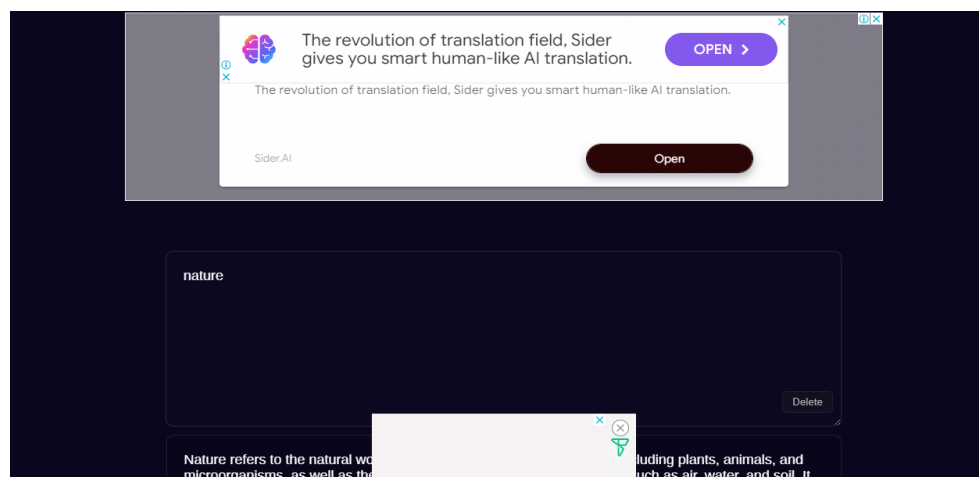


Figure 4. 'Ads by Google' on the AI bot screen.

Prompt writing

Any human-AI interaction is mediated by the prompts. Prompts are rule-governed sentences or questions entered into a Gen AI tool to receive an intended output (<https://huit.harvard.edu/news/ai-prompts>). Accordingly, the very first act of our participants to complete the academic IELTS writing task 2 was entering more than seventy prompts into the AI bot (Appendix B). While some of the participants directly copied and pasted the writing task stem into the AI bot, others tried chatting with AI by typing diverse interrogative or declarative sentences.

Besides, the analysis of transcripts highlighted a number of problems in writing queries based on the ideas provided by AI bot for Chatting (e.g., Could you walk me through how to use loops in Python?) such as punctuation errors, typing small letters at the beginning of the queries instead of capital letters, writing incomplete declarative sentences in place of the interrogatives, and misspellings, mostly resulting from unfamiliarity with the rules of prompt writing. Instances of these errors are depicted in table 3.

The point worth noting regarding Deep AI platform is that this AI bot allows for the correction of the misspellings in the previous interactions. On the basis of the above-mentioned errors, we came to the conclusion that our participants were not fully cognizant of the features of the AI bot, or simply, a lack of AI literacy.

Affective interactions

Occasionally, when chatting with AI bots, we may humanize AI and type (im)polite prompts (e.g., please, thank you, etc.), use greetings, or say farewells. The technical term for the

behaviors of this type is anthropomorphism. Anthropomorphism is defined as ‘the attribution of human-like traits to non-human objects, animals, and entities’ (Epley, Waytz & Cacioppo, 2007).

In this study, none of the participants had such an imagination or feeling of interacting with a human, or better to say, a human-like machine to use affective terms (e.g., hello, thank you, goodbye) except for S2, who used the word ‘please’ at the beginning of her prompts like the example below.

Please provide an explanation about the advantages of living with family during university, elaborate on these points specifically: financial support, emotional support, familiar environment.

The other human-like feature of Deep AI platform is that it recalls the prior chats to offer personalized responses. One of the interactions of this study (S11-AI bot) highlighted this feature and gave a clear impression of a human being to the AI bot as shown in figure 5.

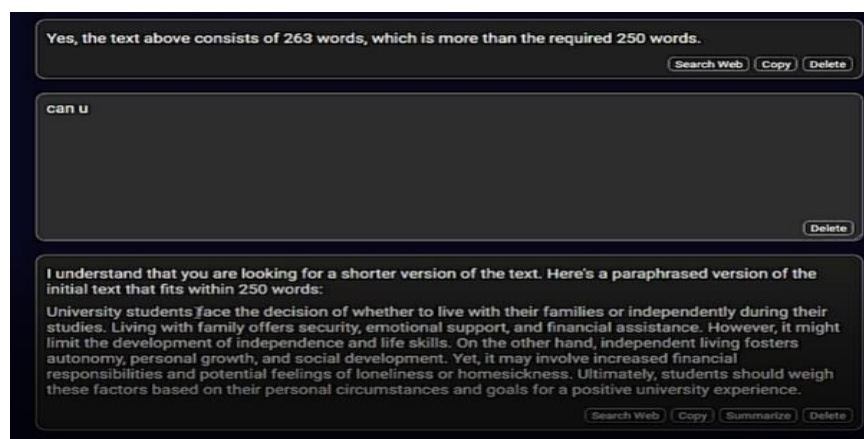


Figure 5. A snapshot of AI bot (<https://deepai.org/>)

Finally, we found that one of our participants (S7) expressed her fear of AI (AI phobia):

The AI bot screen is scary.

Reading AI bot responses

Once our participants entered their queries into the AI bot, it was time to engage in the resulting responses to come up with appropriate contents to complete the academic IELTS writing task 2. The most important finding of this section was that none of the participants directly copied and pasted the full AI output to the essay as is, without further reading and post-editing. In other words, instead of the blind acceptance of the AI drafts, they re-read, and compared them several times to get ideas and insights for self-composing the essays by constantly scrolling up and down the AI bot page (e.g., S8, S9) or moving back and forth between a couple of simultaneously opened AI bot screens and comparing them (S10). This means that they viewed AI bot as a learner assistant.

Essay writing

As mentioned earlier, in order to provide the most plausible responses, the participants preferred to adopt reviewing and comparing strategies. However, a number of the participants

(e.g., S10, S5) transferred some portions of the AI outputs, double-checked them, and added their own words to complete the essays. Moreover, some of them asked more exact questions to get better responses. For instance, S4 typed these queries successively.

Write an IELTS writing (250 words)

Write an academic writing (250 words) about: Many university students live with their families, while others live away from home because their universities are in different places. What are the advantages and disadvantages of both situations?

Another strategy the participants employed was using a ‘notepad’ text editor to revise the AI responses (e.g., S2, S10). While some of the participants made copies of AI responses by clicking on the ‘copy’ button in the AI bot environment, others selected the AI drafts by clicking/dragging, and right-clicking on the selected areas to copy/paste them to the ‘notepad’ text editor. Figure 6 shows the AI output revisions by the participants.

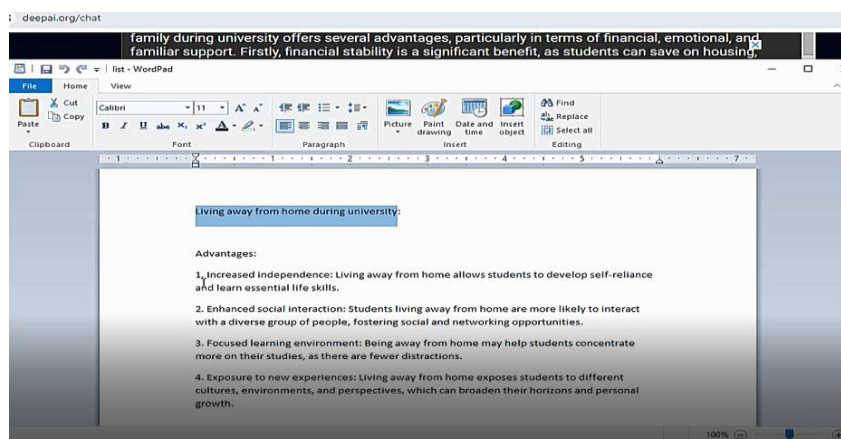


Figure 6. *The revision of AI outputs in ‘notepad’ text editor*

Besides, the participants attempted to edit, paraphrase, or summarize the texts themselves, by using the ‘summarize’ button in the Deep AI environment, or asking the AI bot to do so. S2, for example, wrote this query:

Paraphrase and simplify this text.....

In fact, they consulted AI as a writing assistant for brainstorming, getting ideas, finding answers to questions and overcoming hesitations. Apart from summarizing, paraphrasing, and simplifying texts, they used AI bot as a word counter to meet the writing task instruction requirement (write at least 250 words). For example, S9 asked AI bot:

How many words does this paragraph have?

Related to unknown words, the participants treated the AI bot as a dictionary to find the synonyms of the words. S5 wrote the following query:

Give me some synonyms for the word "advantage" which goes well with the word "downside" as its antonym.

Sign up window

Free-access mode of Deep AI environment allows for a limited access to AI chat. Unlimited access is only possible by purchasing Deep AI PRO. Unfortunately, due to restrictions for the international payments, the researchers employed the free-access version of Deep AI chat bot; but they did not inform the participants of this restriction by intention in order to observe the way they tackle this dilemma when co-writing with AI bot. As was expected, all the participants faced the 'sign up window' as depicted in figure 7.

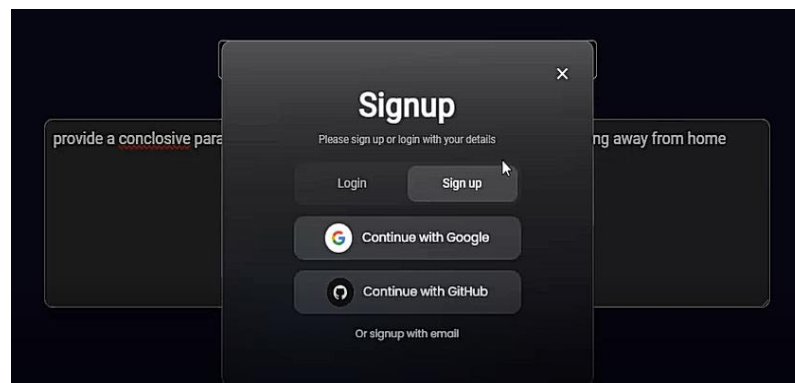


Figure 7. Sign up window

As the video data showed, instead of an initial login to <https://deepai.org/>, or continuing with Google as the sign up window popped up, the very first reaction of all of the participants was the immediate closure of the sign-up window. Other strategies they employed to this emerging situation are summed up in the table 4 below. Our findings suggest the participants' alienation with the features of the AI bot environment.

Table 4. Strategies Adopted to Solve Sign up/Login Problem

Copy/pasting in 'incognito tab'
Clicking on the 'online mode' button
Clicking on the 'Go' button
Clicking on the 'chat history'
Clicking on 'regenerate response' button
Deleting previous responses
Deleting all chat history
Closing the AI bot page
Re-opening the AI bot page
Typing a new prompt
Using another AI bot

Discussion

The aim of this study was to identify the strategies employed by Iranian EFL learners while writing academic IELTS task 2 using AI bots. The succeeding section provides a synopsis of evidence of the findings of this study.

Synopsis of Evidence

The obtained data demonstrated that the ads appearing on the AI bot interface had been distracting for most of our participants. In order to make a more focused contact with the AI bot itself, the learners closed the ads before chatting with the AI bot. Unfortunately, we did not find any study explicitly reporting real-time human-AI interactions. This is because relatively new Natural Language Generation (NLG) applications like AI bots are not widely employed in language education (Somers et al., 2021). Likewise, according to Zhai et al. (2021)'s review of AI in education studies from 2010 to 2020, only 3 out of 100 have considered NLG tools.

Regarding the observed diversity of the participants' written prompts, as we mentioned, they preferred copy and paste or direct sentence-based chats with AI. These findings resonate with the different conceptualizations of the inputs to NLGs, reported by Woo et al. (2022) whose students entered single sentences or copied and pasted a whole paragraph.

Another remarkable finding of this study was concerned with the anthropomorphic behaviors of the learners. Unlike the participants of the study conducted by Huang et al. (2023) most recently who considered AI as a humanized agent, showed greater affection with AI, enjoyed more from language learning, and achieved considerable learning outcomes, only a couple of the participants had a human-like impression of AI bot, used polite terminology (i.e., please) or expressed their fear of AI.

In parallel, Kushmar et al. (2022) reported that most of the language learners have expressed the fear of losing a natural atmosphere and their true emotions when interacting with AI for language learning.

Another noteworthy finding of this study was that the participants treated AI as an assistant, consulting with through the writing process rather than using AI outputs as is. Yang et al. (2022)'s, Meniado (2023), and Woo et al. (2022)'s confirmed our finding by reporting that the participants scrutinized AI-generated output to produce their own intended texts.

Once we were looking for the strategies our participants were employing while writing, we found that they edited, paraphrased, summarized, reviewed, compared, and copied and pasted texts and sometimes used 'notepad' to refine their responses. These findings support those reported by other studies on human-AI interaction in foreign language writing (Meniado, 2023; Woo et al., 2022; Woo et al., 2023; Yang et al., 2022).

In fact, they used AI for brainstorming, ideas generation, responding to hesitations. Similarly, in Guo et al., (2023)'s study, AI bot-generated texts were found to be thought-provoking. Other than the above-mentioned adopted strategies, the participants asked AI bot to count the words written in response task response to avoid exceeding 250 words or asked AI bot the meaning of the new words.

Likewise, Lee et al. (2015)'s integrated Genie Tutor, suggested new vocabulary during communications and Meniado (2023) found that Southeast Asian learners collaborate with Gen AI in L2 writing in form of translating, paraphrasing, summarizing and synthesizing ideas.

Ultimately, as our participants did not initiate chatting with AI bot by logging to the website or continuing with Google, the sign-up window repeatedly popped up and they reacted to it in different ways such as closing the window. In contrast with Pham et al., (2018)'s report, in which the students used most of the features of AI bot, our findings suggest the participants' alienation with the features of the AI bot environment.

Conclusion

Based on the findings, we came to highly valuable conclusions with regard to the strategies the participants employed while completing academic IELTS writing task 2. The critical use of the AI bot was the most important interaction behavior of the participants of this study. By critical use, we mean, they refrained from accepting the AI outputs as is and transferring them directly to their essays. In other words, they did not fully trust the AI bot; but consulted it to gain brighter ideas and insights to enhance the quality of their essays and pre-/post-edited the communicated texts.

For instance, they asked the AI bot to compose introduction, or conclusion sections for their essays with at least 250 words or sought more detailed responses. These courses of actions reflect the participants' responsible, or better to say the ethical use of AI bots in their linguistic practices. Besides, it seems that they believed in the usefulness of AI bots in the improvement of the quality and quantity of academic writings.

Nonetheless, the pieces of texts written as prompts with the inaccuracies embedded in them along with the strategies they employed for copying/pasting, comparing the AI outputs to yield the highest essay quality, editing, summarizing, paraphrasing, looking up the unknown words, counting the words written, etc. reveal a moderate level of AI literacy.

Of note, this is merely an intuitive inference of the participants' AI literacy competence not a research-oriented and scale-based justification. Another noteworthy finding of this study was the affective aspects of the participants' interactions. As mentioned before, almost dehumanizing the AI bot, and traces of AI phobia may signify lack of AI literacy of the participants (Cugurullo & Acheampong, 2023).

What motivated us to carry out this study was manifold: first, the significant role of high-stakes tests including the academic module of IELTS test in international admissions of university students in higher education institutions. Second, the fast spread of the application of AI technologies in all domains of English language teaching and learning. Third, to create an opportunity to propose alternatives for future research to disclose the real place and value of the AI novelties in language education.

The practicality of AI bots for academic writing is anticipated to be momentous over time. Nevertheless, addressing the underresearched areas in the literature is of great value. This study identified a number of gaps and suggested possibilities for future research in relation to the employment of AI bots in EAP testing.

First, unlike the present qualitative study, conducting mixed-methods investigations with larger samples of EFL learners enable future scholars to present triangulated research evidence on the topic. Second, we used free-access mode of the DeepAI platform inevitably due to the restrictions in Iran. Employment of the full-access mode of this AI bot or other types of AI tools such as Chat GPT may yield different results. Third, this study was conducted in an EFL context. We suggest undertaking identical studies in EFL and ESL contexts and juxtaposing the outcomes to scrutinize the differences resulted from contextual diversities.

The fourth gap is concerned with the relationship between the language proficiency of the participants and the style of human-AI interaction. We believe that carrying out similar studies with the university students from fields of study other than TEFL, or with TEFL graduate students with diverse language proficiencies would be more informative in this regard. Moreover, it is promising to replicate this study with general IELTS writing tasks 1 & 2, or other sections (i.e., Speaking, reading, and listening skills) of both general and academic IELTS modules.

Ultimately, investigating the effects of developing AI literacy frameworks, assessment benchmarks, in-site or on-line independent workshops, in-class, out-of-class (for independent language learning), AI literacy instruction courses as a part of higher education programs, or on-line instructional curricula on the enhancement of the AI end users' AI literacy is of great importance.

This small-scale qualitative study was an attempt to provide a brighter perspective of the way AI tools may be used in academic writing by tracking the strategies Iranian EFL learners employ while completing an academic IELTS writing task by using an AI bot. The concluding remark of this study is that AI literacy is fundamental to all areas of AILL including AI-assisted EAP testing.

We hope that the findings of this study add to the rapidly expanding body of AILL literature to enhance AI end users' awareness of the contributions of AI technologies to the field of English language education to make more research-based and well-informed pedagogical decisions to integrate AI tools into linguistic practices for greater educational achievements.

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Appendix A

IELTS writing task 2

You should spend about 40 minutes on this task. Write about the following topic. Give reasons for your answer and include any relevant examples from your knowledge or experience. Write at least 250 words.

Many university students live with their families, while others live away from home because their universities are in different places.

What are the advantages and disadvantages of both situations?

Appendix B

The prompts written by the participants while interacting with AI bot to complete academic IELTS writing task 2

Prompts

Task stem: Many university students live with their families, while others live away from home because their universities are in different places.

What are the advantages and disadvantages of both situations?

University students living with/away from family

University students living on campus

Is it better to live on campus or go to a university near your house?

Word counter

Pros and cons of living on a campus

Word count

Write a conclusion for the text

Paraphrase it and make it shorter

How to write a coherent academic essay?

Write a paragraph about the advantages and disadvantages of many university students living with their families, while others live away from home because their universities are in different places. This paragraph should contain a general explanation of both circumstances.

write an introductory paragraph about many university students living with their families, while others live away from home because their universities are in different places.

Paraphrase and simplify this text.

Please provide an explanation about the advantages of living with family during university, elaborate on these points specifically: financial support, emotional support, familiar environment. (these issues are derived from the AI response). It shouldn't be longer than a paragraph

Please provide an explanation about the disadvantages of living with family during university

Write a paragraph about the advantages of living away from home during university, please elaborate on these points: increased independence, focused learning environment, exposure to new experiences.

Please provide an explanation about the disadvantages of living away from home during university, elaborate on these points specifically: higher costs, homesickness, limited family support, adaptation challenges

View and write a conclusion for this introductory paragraph

Revise and edit the text below so that it is more coherent, please remove any repetitive ideas and only keep them in one of the paragraphs, edit this text so that its academic yet easy and enjoyable to read for the average reader.

Summarize this text to 250 words

Revise this text and make it more coherent by connecting the paragraphs together.

How many words long is the text below

Paraphrase and shorten paragraph below

Summarize this text to 300 words.

A coherent essay on the advantages and disadvantages of university students living their families and the ones living far away including topic sentence, introduction, body and conclusion

A coherent essay on the advantages and disadvantages of university students living their families and the ones living far away including topic sentence, introduction, body and conclusion with at least 250 words

Write an IELTS writing (250 words)

Write an IELTS writing (250 words) about: Many university students live with their families, while others live away from home because their universities are in different places.
What are the advantages and disadvantages of both situations?

Write an academic writing (250) about: Many university students live with their families, while others live away from home because their universities are in different places.
What are the advantages and disadvantages of both situations?

Write a good introduction for this topic: Many university students live with their families, while others live away from home because their universities are in different places.

What are the advantages and disadvantages of both situations?

Write an academic introduction for this topic: Many university students live with their families, while others live away from home because their universities are in different places.

What are the advantages and disadvantages of both situations?

Write an academic IELTS introduction for this topic: Many university students live with their families, while others live away from home because their universities are in different places.

What are the advantages and disadvantages of both situations?

Write around 250 words about this topic.

Write 250 words about this topic: Many university students live with their families, while others live away from home because their universities are in different places.

What are the advantages and disadvantages of both situations?

Include examples for supporting sentences.

Count this text's words.

Give me some synonyms for the word "advantage" which goes well with the word "downside" as its antonym.

Provide me with details and examples of homesickness for students aged 18 to 30

What's another word for the feeling one has when you're away from home for a long time other than homesickness

Provide me with detailed topic sentence about nostalgia

provide details of advantages for a student studying away from home and their family

Provide a conclusive paragraph for the topic " advantages and disadvantages of living away from home"

Write a comparative essay about advantages and disadvantages of university students living at home and living in other cities

Write a comparative essay about advantages and disadvantages of university students living at home and living in other cities. No more than 250 words.

Write a comparative essay about advantages and disadvantages of university students living at home and living in other cities. 250 words.

Write a topic sentence.

Many university students live with their families, while others live away from home because their universities are in different places.

What are the advantages and disadvantages of both situations?

In 250 words?

How many words does this paragraph have?

Advantages of living away from home

Disadvantages of living away from home

Count the words of the given text.

Expand this text to 250 words.

Count the words of this text.

Make this text more sophisticated while maintaining 250 word count.

Write a 250-word essay on the advantages and the disadvantages of university students' living with their families and away from them

Paraphrase the text above to fit at least 250 words.

Is these 250 words?

Combine these two writings together.

Write an essay with at least 250 words on the advantages and the disadvantages of university students' living with their families and away from them

How to count words in an essay

Appendix C

Participant-AI interaction time, number of prompts written, and essays' word count

ID	Interaction time	Number of prompts	Essay word count
S1	33.15	15	264
S2	36.64	17	208
S3	14.92	2	504
S4	27.94	6	474
S5	34.50	4	420
S6	35.01	5	223
S7	27.49	6	293
S8	31.04	1	107
S9	30.09	3	520

S10	42.54	10	278
S11	28.01	10	263
M*	31.03	7.2	323

*M = mean