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Utilizing an adaptable artificial intelligence writing tool (ChatGPT) to enhance academic writing skills among Yemeni university EFL students

Mohammed Abdulkareem A. Alkamel^{a,*}, Nasim Amin Saleh Alwagieh^b^a Department of English, Al-Qalam University for Humanities and Applied Sciences, Ibb, Yemen^b Department of English, Faculty of Arts, Ibb University, Ibb, Yemen

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ABSTRACT

This study aims to determine Yemeni EFL learners' potential opinions, benefits, and challenges regarding using ChatGPT as an AI-based writing tool in academic writing. A quantitative approach was employed in this study. Data were collected through surveys distributed to Yemeni EFL learners at the university level. The survey included questions about the participants' perceptions and experiences with ChatGPT. Descriptive statistics and thematic analysis were used to analyze the data and identify key themes. The findings revealed that Yemeni EFL learners had positive perceptions towards using ChatGPT. Participants reported that ChatGPT improved their writing fluency, accuracy, and overall quality of their academic work. The tool was helpful in language correction, grammar checking, and proofreading. However, some challenges were also identified, including concerns about academic integrity and the potential for plagiarism. The study highlights the potential benefits of ChatGPT for Yemeni EFL learners, including improved writing fluency, accuracy, and overall quality of academic writing, as well as the challenges associated with using AI-based writing tools, such as concerns about academic integrity. The study recommends that EFL students use ChatGPT as a supplementary tool to enhance their academic writing skills while maintaining academic integrity, developing their own critical thinking, and avoiding over-reliance on the AI-based writing tool.

1. Introduction

Learning methods are changing rapidly due to the widespread use of technology as a means of support. Academic writing is one of the English language skills that learners use technology to improve (Moore et al., 2016). One technological means learners use is Artificial intelligence (AI). The development of artificial intelligence (AI) has facilitated the creation of highly advanced language and writing tools that possess enhanced capabilities and effectiveness. (Geitgey, 2018; Brown et al., 2020). Many AI writing tools are now available online and free of cost. Students of different specializations use such tools in academic writing, such as final research projects, theses, dissertations, or multiple journal articles (Prentice & Kinden, 2018). However, there is a possible solution to make scientific writing more accessible, faster, and more enjoyable. One way to achieve this is by utilizing ChatGPT, an AI chatbot, to improve the quality of manuscripts and other documents (Zohery, 2023).

ChatGPT is an app released on April 30, 2022, to enable human communication. It has become famous worldwide since its launch

(Heaven, 2023; George & George, 2023). When prompted by humans, it can react to various questions spanning multiple knowledge domains and produce essays in a few minutes. It is regarded as a novel tool that helps students finish their assignments and coursework (Rudolph et al., 2023). Therefore, there is an ongoing controversy surrounding whether students should be allowed to utilize ChatGPT for their assignments and research, as it raises concerns about academic integrity and the potential for cheating.

ChatGPT, as Lecler et al. (2023) noted, can answer academic questions and proofreading academic essays. Users can take advantage of ChatGPT's assistance from the early stages of research and planning to the final stage of preparing their work for submission. As a result, ChatGPT's rapid popularization has garnered international attention. Some have raised concerns about academic and research integrity because the revolutionized application disrupts students' academic focus (Shiri, 2023).

Proficiency in academic writing is essential for English as a Foreign Language (EFL) learners in their writing. Nevertheless, EFL learners frequently need help achieving language accuracy, coherence, and

* Corresponding author.

E-mail addresses: alkamel2030@gmail.com (M.A.A. Alkamel), nasim7amin@gmail.com (N.A.S. Alwagieh).

following academic conventions in their writing. Artificial Intelligence (AI) writing tools, including ChatGPT, have shown promise in tackling these obstacles and enhancing the academic writing abilities of EFL learners. Thus, this quantitative study seeks to explore perceptions and experiences about the potential opinions, benefits, and challenges of Yemeni EFL learners regarding the use of (ChatGPT) as an AI-based writing tool in academic writing.

1.1. Statement of the problem

Despite the increasing adoption of AI writing tools like ChatGPT globally and their potential to enhance academic writing through language correction, grammar checking, and proofreading (Alharbi, 2023), there is a lack of comprehensive understanding regarding their benefits and challenges, particularly among Yemeni university EFL students. Limited research exists on the specific perceptions and experiences of Yemeni students regarding AI-based writing tools, leaving the impact and effectiveness of ChatGPT on their academic writing proficiency needing to be explored. Therefore, further investigation is necessary to explore the potential benefits and challenges of using ChatGPT as an AI-based writing tool among Yemeni EFL learners, providing insights for effective integration and support in their academic writing.

1.2. Significance of the research

The current study fills an important gap in the literature by examining the potential benefits and limitations of using the AI-based writing tool ChatGPT to support English as a Foreign Language (EFL) learners in their academic writing. As the use of AI-powered technologies continues to grow in educational contexts, there is a pressing need to understand how these tools can be leveraged effectively to enhance student writing outcomes. This research is particularly significant for Yemeni EFL students, who face unique challenges in developing their academic writing skills. By investigating student perceptions and experiences with ChatGPT, the study sheds light on the role such AI tools can play in improving writing fluency, accuracy, and overall quality. The findings will provide valuable insights that can guide instructors and institutions in the effective integration of ChatGPT and similar AI assistants into the EFL writing curriculum. Furthermore, the study situates itself within the broader context of the ongoing debate around the use of AI in education. It addresses concerns regarding the limitations and potential drawbacks of integrating AI-based tools, offering recommendations for best practices that balance the advantages of these technologies with the need to maintain academic integrity and ensure students develop robust writing skills.

1.3. Research objectives

The present study aims to achieve the following objectives:

- To collect data on the perceptions, benefits, and challenges of using ChatGPT as an AI-based writing tool among Yemeni EFL learners.
- Explore the perceptions of Yemeni EFL learners towards using ChatGPT as an AI-based writing tool for their academic writing.
- Identify the perceived benefits that Yemeni EFL learners associate with the use of ChatGPT in their academic writing.
- Investigate the potential challenges and limitations that Yemeni EFL learners anticipate when using ChatGPT as an AI-based writing tool for their academic writing.

1.4. Research questions

1. What are the perceptions and experiences of Yemeni EFL learners regarding the use and benefits of ChatGPT as an AI-based writing tool in academic writing?

2. What are Yemeni EFL learners' perceptions towards the potential challenges of using ChatGPT as an AI-based writing tool in academic writing?

2. Literature review

Academic writing involves generating a text using experiences and academic knowledge. Learners use technology to improve this skill, focusing on vocabulary, sentence structures, paragraph order, and general knowledge. Tools and techniques have evolved in the modern age, including the impact of Artificial Intelligence (AI) on language learning and academic writing (Moore et al., 2016, pp. 1-13). Zohery (2023) argues that advanced AI models like ChatGPT simplify academic writing and publishing (Zohery, 2023, p. 10). This study focuses on ChatGPT as an AI writing tool used by Yemeni University EFL Students, exploring its benefits and use in academic writing. The research aims to understand the use of AI, specifically ChatGPT, in EFL University Students' academic writing. Another study by Songsiengchai, et al., (2023) compares the effectiveness of AI, specifically ChatGPT, in English language learning among Thai students. They found that ChatGPT's real-time feedback and interactive exercises improved students' understanding and application of language concepts, increasing motivation, self-confidence, and a positive attitude shift (Songsiengchai, et al., 2023).

In a recent study, Lund et al. (2023) explored the potential of ChatGPT as a model for automated essay preparation and scholarly manuscript writing. The authors discussed the use of ChatGPT in academic fields, its ability to generate natural language conversations, and the ethical considerations associated with its development. They mentioned that GPT-3 and ChatGPT have gained attention and can revolutionize various language-related tasks (Lund et al., 2023, p. 5). Additionally, the paper addressed concerns about plagiarism, stating that ChatGPT-generated texts are based on published literature, and citation practice is encouraged (Lund et al., 2023, p. 10). The aim of the study was to provide an overview of current discussions and encourage exploring ethical considerations in using GPT and similar technologies in academia.

Building on previous work, Dergaa Ismail et al. (2023) examined the prospects and potential threats of ChatGPT in academic writing. Their research explored the benefits and limitations of ChatGPT and other NLP technologies in academic writing and research publications, discussed ethical considerations, and considered their impact on authenticity and credibility. They acknowledged that while ChatGPT has various capabilities, its potential to integrate false or biased information may make it unsuitable for certain research types (Dergaa, March 2023, p. 619).

In contrast, Zohery Medhat's research, "ChatGPT in Academic Writing and Publishing: A Comprehensive Guide," advocated for the use of ChatGPT in academic writing. Medhat highlighted ChatGPT's advantages, such as speed, stimulating creativity, providing feedback and suggestions, and generating engaging scientific writing through a natural dialogue between writers and AI assistants.

Fitria N. T. (2023) discussed the widespread use of ChatGPT on Twitter, emphasizing its rapid development and the perceived benefits it brings to students in writing assignments (Fitria, 2023, p. 45, p. 52). The research methodology was qualitative, and Fitria concluded by describing ChatGPT as a convenient conversational tool that aids productivity and generates various texts (Fitria, 2023).

Niloy et al. (2024) examined the potential negative impact of using the AI language model ChatGPT on university students' creative writing abilities. The study evaluated originality, content presentation, accuracy, and elaboration, involving 600 students from 10 universities across control and experimental groups using ChatGPT. The findings revealed a detrimental association between ChatGPT use and students' creative writing skills, substantiated by both machine-based and human-based assessments. This study highlights the need for a cautious approach to AI integration, particularly in creative writing, considering both the

merits and potential drawbacks. The insights inform future research and educational practices on the effective incorporation of AI while nurturing students' writing skills.

Baskara (2023) aimed to provide a comprehensive overview of both the potential benefits and challenges of integrating ChatGPT into EFL writing instruction. The study highlighted the potential of ChatGPT for EFL writing students. However, the study also discussed the potential challenges of using ChatGPT in language education. These challenges include issues related to the design, implementation, and potential ethical concerns of integrating ChatGPT into the EFL classroom. The author noted that ChatGPT's ability to generate human-like text based on the input it receives makes it a potentially helpful tool for supporting students in their writing practice and ChatGPT's natural language capabilities can engage and motivate learners.

Zebua and Katemba (2024) investigated students' perceptions of using OpenAI ChatGPT to enhance writing skills. A quantitative survey of 82 students at Universitas Advent Indonesia who had used ChatGPT for at least 4 months revealed mostly positive perceptions, with respondents finding it improved learning motivation, provided comprehensive features, and helped correct grammar. However, some were neutral about ChatGPT's ability to offer explanations that directly improve writing. The study suggests ChatGPT can be a valuable tool for enhancing English writing skills, though further development may be needed to strengthen its pedagogical support. These findings contribute to research on AI applications, particularly language models, in improving writing instruction and learning.

Additionally, Liu, Li, and Guo (2012) focused on Twitter sentiment analysis (TSA) as a significant research topic, highlighting its importance in understanding others' thoughts. Both Fitria and Kun-Lin's studies underscored the importance of Twitter as a platform for the dissemination of knowledge and technological developments.

Lastly, Grace et al. (2018) from Yale and Oxford studied the timeline for AI surpassing human performance. They predicted changes in high school academic writing by 2026, with AI assistance in assignments, and envisioned a future where authors and writers may no longer be necessary by 2049. The study surveyed 352 researchers and found variations in expectations between Asian and North American respondents regarding the achievement of High-level machine intelligence (HLMI) (Grace et al., 2018, p. 5).

Theoretically, the utilization of ChatGPT for leveraging formative feedback can be placed within a framework comprising two theories. The first one is the theory of feedback as a dialogic process advocated by Winstone and Carless (2020). According to them, when feedback involves interactions, it leads to students clarifying their expectations, obtaining desired information and guidance, and making progress in learning. ChatGPT facilitates dialogue by responding to the user's queries regarding various aspects of writing. It offers suggestions when sought and functions as a support-on-demand tool. Additionally, it admits mistakes and rectifies itself, thereby making the dialogue meaningful. The second theory is Barrot's (2023) theory of ChatGPT as a reliable writing tool that can provide immediate, need-based, and tailored feedback to students as they move through different stages of writing. The current study was built on these two theories, as its aim was to utilize ChatGPT as a formative feedback tool involving self-assessment (SA) and peer assessment (PA), and assess its impact on students' academic writing skills (Mahapatra, 2024).

3. Research methodology

3.1. Research design

The research design used in this study is quantitative. It provides a roadmap to choose suitable instruments and achieve the study's objectives based on research questions (Creswell, 2014). It guides researchers to focus on instruments, data collection, and analysis to address the study topic and investigate the phenomenon. According to Creswell &

Garrett, (2008), quantitative research is a form of educational research where researchers select the subject of study, pose a limited inquiry, gather measurable data from participants, apply statistical analysis, and conduct the investigation objectively. So, in the present study, descriptive statistics and thematic analysis were used to analyze the data.

3.2. Participants

The study surveyed a total of 144 students from the Department of English Language at universities in Ibb city, Yemen. The participants were distributed across different academic levels, as shown in.

Table 1. Showed that majority of the students, 55 in total, were in their second year, accounting for 38.2% of the sample. The fourth-year students made up the next largest group, with 51 participants comprising 35.4% of the total. The remaining 38 students, or 26.4%, were in their third year of study. This is explained in details in Fig. 1.

The respondents of the questionnaires were both male and female. Out of 144 students, 33 were males (22.9%), and 111 were females (77.1%). Thus, the percentage of female students was higher than of males. The explanation of the frequency of gender distribution of respondents is in Table 2 and Fig. 2.

3.3. Instrument

The instrument of the study was developed by the researchers after careful review of past studies. The items were designed according to the situation of Yemen and based on the needs of the study to achieve its objectives. The validity of the survey was ensured as five experts reviewed the survey and their comments were taken into consideration.

3.4. Reliability

144 students studying English as a Foreign Language (EFL) at Universities of Ibb city in Yemen have filled out a questionnaire using Google Forms. The questionnaire consists of 24 statements that cover various aspects, such as the students' perceptions and experiences regarding the benefits and challenges of using an AI-based writing tool (ChatGPT) for their academic writing. The questionnaire is reliable, with a Cronbach's alpha value of more than .805, as indicated in Table 3.

3.5. Procedures

The data for this study was collected from universities in various places in Ibb city. First, the researchers made a survey to determine the universities that have a Department of English. Using closed-ended questionnaires, the students were asked if they have an idea about an Artificial Intelligence-based tool called ChatGPT to assist them in their academic writing and gathering information on how EFL students perceive the use of this tool in their writing. The questionnaire included two axes according to the two research questions above. The first axis was to collect views on potential benefits such as accuracy and providing feedback, and the second axis would collect views on potential challenges such as the reliability and modernity of the generated information and whether the tool is as creative and innovative as humans. The questionnaires have been created using Google Forms and distributed to the student body. Also, it was designed to accommodate potential time constraints, making it easier for students to participate. Using online

Table 1
Students' level of the study.

Level	Frequency	Percent
Second Year	55	38.2
Third Year	38	26.4
Fourth Year	51	35.4
Total	144	100.0

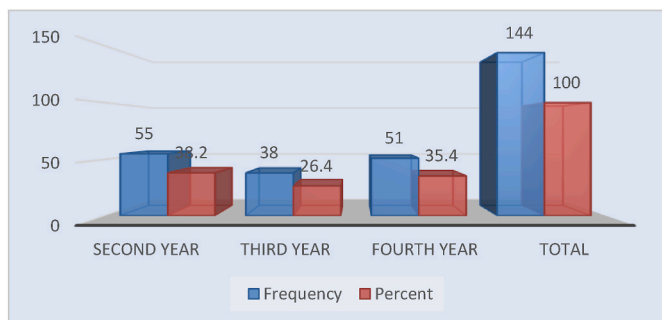


Fig. 1. Students' level of the study.

Table 2
Gender distribution in public and private Universities.

Gender	Frequency	Percent
Male	33	22.9
Female	111	77.1
Total	144	100.0

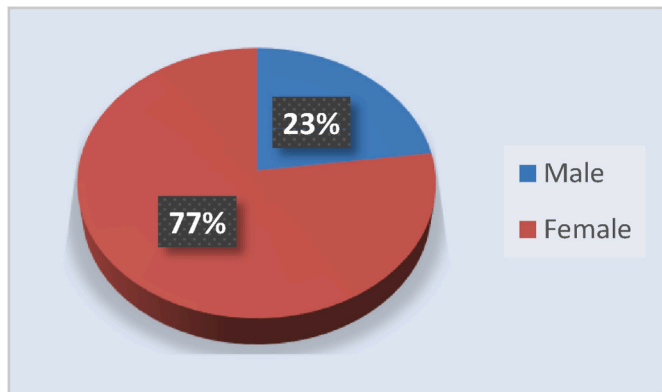


Fig. 2. Gender distribution in public and private Universities.

Table 3
Reliability of questionnaire items.

Reliability Statistics	
Cronbach's Alpha	N of Items
.805	24

closed-ended questionnaires makes data collection easier and enhances participation in research.

Additionally, it is important to note that ethical approval from the authors' affiliation was not required for this study. The authors of the present study also work at the respective universities and were able to directly engage with participants to fill out the questionnaire. Therefore, the study was carried out within the ethical guidelines and regulations of the universities, ensuring the privacy and confidentiality of the participants' responses. On the other hand, the authors informed assent for legal minority and provide the following statement with the questionnaire:

"Dear Participants, this questionnaire aims to explore the use of ChatGPT as an AI-based writing tool in the academic writing proficiency of Yemeni University EFL learners in their academic writing. Kindly note that the participation in this questionnaire is VOLUNTARY. Only the Researchers will have access to your data. I assure

you that your identity will still be anonymous, and all data will be CONFIDENTIAL and will be used for research purposes only."

3.6. Data analysis

The collected data will be analyzed using SPSS version 21.0 and appropriate statistical techniques for quantitative data. The close-ended questionnaire will be administered to Yemeni EFL learners who are currently studying bachelor of English. Participants' responses will be measured using a 5-point Likert scale, where a score of 5 indicates highly proficient responses. Descriptive statistics will be employed to assess the overall impact of ChatGPT on the academic writing proficiency of Yemeni EFL learners. These results will provide quantitative evidence regarding the perception of Yemeni EFL learners who are studying English as a foreign language.

4. Results

4.1. Knowledge about ChatGPT

The researchers, first, ask the participant whether they have an idea about AI-based writing tool (ChatGPT). If the participant has no idea about ChatGPT, will select the option (No). by stating (No), the participant can't move to the next section and will submit the questionnaire. The question was: **Do you have an idea about ChatGPT?**

The data provided in Table 4 represents responses to a question about participants' familiarity with ChatGPT as a language model. The question asked whether participants had any idea about ChatGPT. Of the total 144 respondents, 55 individuals, comprising 38.2% of the sample, selected the "Yes, and I use it" option, indicating their active utilization of ChatGPT. Another 24 participants, representing 16.7% of the total, chose the "Yes, but I don't use it" response, demonstrating awareness of the tool without actively incorporating it into their writing practices. The remaining 65 participants, accounting for 45.1% of the sample, selected the "No" option, signifying a lack of familiarity with the AI-powered writing assistance technology.

The researcher utilized a Likert scale developed by Podsden (1997) on the questionnaire form to assess the attitude of students. The scale consisted of several choices, including strongly agree (SA), agree (A), natural (N), disagree (D), or strongly disagree (SD), assigned with corresponding point values: SA = 5, A = 4, N = 3, D = 2, and SD = 1. The questionnaire included statements about the benefits and challenges of using an AI-based writing tool (ChatGPT) for the student's academic writing. Items 1 to 10 focused on the students' perceptions and experiences regarding the opinion, while items 11 to 16 focused on their perceptions and experiences regarding the benefits. The items 17 to 20 focused on the challenges that students face while using ChatGPT as an AI-based tool in their academic writing. The data collected from the questionnaire was converted into percentages, as shown in Table 5.

4.2. Descriptive statistics for questionnaire items

The data in Table 6 indicated that participants hold a positive view regarding the use of ChatGPT as an AI-based writing tool for academic writing. The ratings provided by participants range from 3.1 to 4.1 indicating a generally favorable opinion. The standard deviations (SD) range from .81011 to 1.12624, reflecting some variability in responses.

In terms of the benefits of employing ChatGPT, the results demonstrate the positive impact of utilizing ChatGPT in academic writing with a mean score of 3.0. Participants have experienced various benefits from employing ChatGPT in their academic writing, including improved paraphrasing skills, generating ideas and information, expressing complex ideas, enhancing writing style and language usage, gaining new perspectives and insights, and improving the clarity and coherence of their work. These findings underscore the valuable role that ChatGPT

Table 4
Knowledge about ChatGPT.

Frequency	Percent	Valid Percent					Cumulative Percent	
Yes, and I use it	55	38.2	38.2	38.2	Yes, and I use it	55	38.2	
Yes, but I don't use it	24	16.7	16.7	54.9	Yes, but I don't use it	24	16.7	
No	65	45.1	45.1	100.0	No	65	45.1	
Total	144	100.0100.0						

Table 5
Students' responses' to AI.

No	Statements	SD		D		N		SA		A		Total	
		F	%	F	%	F	%	F	%	F	%	F	%
1.	ChatGPT accurately understood and responded to my writing prompts and requirements	3	3.8	4	5.1	10	12.7	14	17.	48	60.8	79	100
2.	The features contained in ChatGPT are very easy for students to understand	2	2.5	5	6.3	8	10.	19	24.	45	57.	79	100
3.	ChatGPT is very easy to access and use anywhere and anytime.	-	-	5	6.3	11	13.	23	29.	40	50.	79	100
4.	The use of ChatGPT makes me more comfortable in academic writing	5	6.3	7	8.9	11	13.	20	25.	36	45.	79	100
5.	ChatGPT saved my time and effort in the academic writing process	1	1.3	4	5.1	4	5.1	23	29.	47	59.	79	100
6.	ChatGPT helps in generating creative ideas for academic writing	3	3.8	3	3.8	10	12.	22	27.	41	51.	79	100
7.	ChatGPT improves the Efficiency and productivity of the academic writing	1	1.3	10	12.	15	19.	7	8.9	46	58.	79	100
8.	Using ChatGPT as an AI-based tool in my academic writing improves the quality the writing	2	2.5	10	12.	17	21.	12	15.	38	48.	79	100
9.	ChatGPT provided valuable insights and suggestions for enhancing the content of my academic writing	4	5.1	6	7.6	20	25.3	14	17.7	35	44.3	79	100
10	ChatGPT is a good tool to improve my language usage and grammar in writing	4	5.1	4	5.1	12	15.2	21	26.6	38	48.1	79	100
11	ChatGPT has Helped me enhance my paraphrasing skills in my academic writing.	3	3.8	6	7.6	12	15.2	20	25.3	38	48.1	79	100
12	ChatGPTeffectively assisted me in getting ideas and information for my writing.	2	2.5	4	5.1	7	8.9	28	35.4	38	48.1	79	100
13	using ChatGPT enhances my ability to express complex ideas in my academic writing	4	5.1	4	5.1	18	22.8	21	26.6	32	40.5	79	100
14	Using ChatGPT has improved my overall writing style and language usage.	2	2.5	10	12.7	15	19.0	17	21.5	35	44.3	79	100
15	ChatGPT has provided me with new perspectives and insights that I hadn't considered in my academic writing.	4	5.1	13	16.5	18	22.8	10	12.7	34	43.0	79	100
16	Using ChatGPT improves the clarity and coherence of my academic writing	2	2.5	8	10.1	17	21.5	10	12.7	42	53.2	79	100
17	One challenge I faced while using ChatGPT for academic writing was the generation of irrelevant or off-topic responses.	8	10.1	12	15.2	22	27.8	6	7.6	31	39.2	79	100
18	I find it challenging to adapt my writing style to suit the suggestions provided by ChatGPT	1	1.3	13	16.5	31	39.2	5	6.3	29	36.7	79	s100
19	I faced challenges in distinguishing between accurate and inaccurate suggestions provided by ChatGPT for my academic writing	6	7.6	9	11.4	18	22.8	8	10.1	38	48.1	79	100
20	I found it challenging to maintain my own writing style and originality while using ChatGPT for research writing	1	1.3	20	25.3	16	20.3	6	7.6	36	45.6	79	100

plays in supporting researchers and enhancing the quality of their academic writing projects.

While participants recognized the benefits of using ChatGPT for their academic writing, they also encountered several challenges and drawbacks with mean score of approximately 3.3 indicating that, on average, participants found the challenges moderately difficult. The provided statements highlighted the challenges participants faced while using ChatGPT for academic writing. On average, participants found it challenging to adapt their writing style to suit the suggestions provided by ChatGPT (mean: 3.3038), maintain their own writing style and originality (mean: 3.3291), and distinguish between accurate and inaccurate suggestions (mean: 3.4177). Additionally, they reported difficulties with the generation of irrelevant or off-topic responses (mean: 3.1899). These challenges emphasize the need for users to critically evaluate and refine ChatGPT's output.

RQ1: What are the perceptions and experiences of Yemeni EFL learners regarding the use and benefits of ChatGPT as an AI-based writing tool in academic writing?

This question is divided into two parts: the first one of about the students' opinion, while the second is about the benefits.

4.3. First: opinion of students toward the use of ChatGPT as an AI-based tool in academic writing

The results in Table 7 indicated a generally positive opinion of

students towards the use of ChatGPT in academic writing. The majority of participants (60.8%) agreed or strongly agreed that ChatGPT accurately understood and responded to their writing prompts and requirements.

Regarding ease of use, approximately 57.0% of participants found the features contained in ChatGPT very easy to understand. In terms of accessibility and availability, a significant proportion of participants (50.6%) agreed or strongly agreed that ChatGPT was easy to access and use anywhere and anytime. Students also expressed positive sentiments towards the impact of ChatGPT on their writing experience. A notable percentage of participants (45.6%) agreed or strongly agreed that the use of ChatGPT made them more comfortable in academic writing. Furthermore, most respondents (59.5%) agreed or strongly agreed that ChatGPT saved their time and effort in the academic writing process. Regarding the generation of creative ideas, approximately 51.9% of participants agreed or strongly agreed that ChatGPT helped in generating creative ideas for academic writing. Moreover, a significant majority (58.2%) agreed or strongly agreed that ChatGPT improved the efficiency and productivity of their academic writing. In terms of writing quality, a substantial proportion of participants (48.1%) agreed or strongly agreed that using ChatGPT as an AI-based tool improved the quality of their writing. Lastly, participants recognized the value of ChatGPT in providing insights and suggestions for enhancing the content of their academic writing. Approximately 44.3% of respondents agreed or strongly agreed that ChatGPT provided valuable insights and suggestions, indicating its potential as a helpful writing companion.

Table 6
Descriptive statistics for questionnaire items.

No	Statements	N	Mean	Std. Deviation
1.	ChatGPT accurately understood and responded to my writing prompts and requirements.	79	3.8354	.91189
2.	The features contained in ChatGPT are very easy for students to understand	79	3.9367	.91065
3.	ChatGPT is very easy to access and use anywhere and anytime.	79	4.0253	.83166
4.	The use of ChatGPT makes me more comfortable in academic writing	79	3.7468	1.12624
5.	ChatGPT saved my time and effort in the academic writing process	79	4.1013	.81011
6.	ChatGPT helps in generating creative ideas for academic writing	79	3.9620	.95331
7.	ChatGPT improves the efficiency and productivity of the academic writing	79	3.6076	.86850
8.	Using ChatGPT as an AI-based tool in my academic writing improves the quality the writing	79	3.6076	.97950
9.	ChatGPT provided valuable insights and suggestions for enhancing the content of my academic writing	79	3.6203	1.02911
10.	ChatGPT is a good tool to improve my language usage and grammar in writing	79	3.8608	1.03446
11.	ChatGPT has helped me enhance my paraphrasing skills in my academic writing.	79	3.8354	1.01817
12.	ChatGPT effectively assisted me in getting ideas and information for my writing.	79	4.0886	.93630
13.	using ChatGPT enhances my ability to express complex ideas in my academic writing	79	3.7848	1.05819
14.	Using ChatGPT has improved my overall writing style and language usage.	79	3.6962	1.02974
15.	ChatGPT has provided me with new perspectives and insights that I hadn't considered in my academic writing.	79	3.4177	1.06948
16.	using ChatGPT improves the clarity and coherence of my academic writing	79	3.6329	.92233
17.	One challenge I faced while using ChatGPT for academic writing was the generation of irrelevant or off-topic responses.	79	3.1899	1.11028
18.	I find it challenging to adapt my writing style to suit the suggestions provided by ChatGPT	79	3.3038	.86757
19.	I faced challenges in distinguishing between accurate and inaccurate suggestions provided by ChatGPT for my academic writing	79	3.4177	1.06948
20.	I found it challenging to maintain my own writing style and originality while using ChatGPT for academic writing	79	3.3291	.98347
	Valid N (list-wise)	79		

Table 7
Opinion of students towards the use of AI.

No	Statements	SD		D		N		SA		A		Total	
		F	%	F	%	F	%	F	%	F	%	F	%
1.	ChatGPT accurately understood and responded to my writing prompts and requirements	3	3.8	4	5.1	10	12.7	14	17.7	48	60.8	79	100
2.	The features contained in ChatGPT are very easy for students to understand	2	2.5	5	6.3	8	10.1	19	24.1	45	57	79	100
3.	ChatGPT is very easy to access and use anywhere and anytime.	-	-	5	6.3	11	13.9	23	29.1	40	50.6	79	100
4.	The use of ChatGPT makes me more comfortable in academic writing	5	6.3	7	8.9	11	13.9	20	25.3	36	45.6	79	100
5.	ChatGPT saved my time and effort in the academic writing process	1	1.3	4	5.1	4	5.1	23	29.1	47	59.5	79	100
6.	ChatGPT helps in generating creative ideas for academic writing	3	3.8	3	3.8	10	12.7	22	27.8	41	51.9	79	100
7.	ChatGPT improves the efficiency and productivity of the academic writing	1	1.3	10	12.7	15	19	7	8.9	46	58.2	79	100
8.	Using ChatGPT as an AI-based tool in my academic writing improves the quality the writing	2	2.5	10	12.7	17	21.5	12	15.2	38	48.1	79	100
9.	ChatGPT provided valuable insights and suggestions for enhancing the content of my academic writing	4	5.1	6	7.6	20	25.3	14	17.7	35	44.3	79	100
10.	ChatGPT is a good tool to improve my language usage and grammar in writing	4	5.1	4	5.1	12	15.2	21	26.6	38	48.1	79	100

4.4. Second: benefits of using ChatGPT as an AI-based tool in academic writing

The results of the survey in Table 8 indicated several perceived benefits of using ChatGPT as an AI-based tool in academic writing. The majority of participants (48.1%) agreed or strongly agreed that ChatGPT helped them enhance their paraphrasing skills. A significant proportion of respondents (48.1%) agreed or strongly agreed that ChatGPT effectively assisted them in generating ideas and gathering information for their writing. Participants also recognized the impact of ChatGPT on their ability to express complex ideas in their academic writing. A substantial number of respondents (40.5%) agreed or strongly agreed that using ChatGPT enhanced their ability to articulate intricate concepts. Another benefit identified was the improvement in overall writing style and language usage. A significant percentage of participants (44.3%) agreed or strongly agreed that using ChatGPT had a positive impact on their writing style and language skills. Furthermore, respondents highlighted the value of ChatGPT in providing new perspectives and insights. A considerable number of participants (43.0%) agreed or strongly agreed that ChatGPT offered them fresh perspectives and insights they had not considered before. Lastly, participants recognized that using ChatGPT

improved the clarity and coherence of their academic writing. A majority of respondents (53.2%) agreed or strongly agreed that ChatGPT enhanced the clarity and coherence of their written work.

RQ2: What are Yemeni EFL learners' perceptions towards the potential challenges of using ChatGPT as an AI-based writing tool in academic writing?

Based on the available data in Table 9, there were many challenges facing students when they used ChatGPT as an AI-based tool in their academic writing. One challenge reported by the participants was the generation of irrelevant or off-topic responses when using ChatGPT for academic writing. A considerable number of respondents (39.2%) expressed this concern, indicating that ChatGPT occasionally provided suggestions that were not pertinent to the writing task at hand. Another challenge was the difficulty in adapting their writing style to align with the suggestions provided by ChatGPT. A significant proportion of respondents (36.7%) reported finding it challenging to modify their writing style to accommodate the recommendations offered by ChatGPT. Participants also highlighted challenges related to distinguishing between accurate and inaccurate suggestions provided by ChatGPT for their academic writing. A substantial number of respondents (48.1%) reported facing difficulties in discerning the reliability and validity of the suggestions provided by ChatGPT. Furthermore, some participants found it challenging to maintain their own writing style and originality while using ChatGPT for research

Table 8
Benefits of using AI in academic writing.

No	Statements	SD		D		N		SA		A		Total	
		F	%	F	%	F	%	F	%	F	%	F	%
1.	ChatGPT has helped me enhance my paraphrasing skills in my academic writing.	3	3.8	6	7.6	12	15.2	20	25.3	38	48.1	79	100
2.	ChatGPT effectively assisted me in getting ideas and information for my writing.	2	2.5	4	5.1	7	8.9	28	35.4	38	48.1	79	100
3.	using ChatGPT enhances my ability to express complex ideas in my academic writing	4	5.1	4	5.1	18	22.8	21	26.6	32	40.5	79	100
4.	Using ChatGPT has improved my overall writing style and language usage.	2	2.5	10	12.7	15	19.0	17	21.5	35	44.3	79	100
5.	ChatGPT has provided me with new perspectives and insights that I hadn't considered in my academic writing.	4	5.1	13	16.5	18	22.8	10	12.7	34	43.0	79	100
6.	using ChatGPT improves the clarity and coherence of my academic writing	2	2.5	8	10.1	17	21.5	10	12.7	42	53.2	79	100

Table 9
Students' perception towards the challenges of Using AI.

No	Statements	SD		D		N		SA		A		Total	
		F	%	F	%	F	%	F	%	F	%	F	%
1.	One challenge I Faced while using ChatGPT for academic writing was the generation of irrelevant or off-topic responses.	8	10.1	12	15.2	22	27.8	6	7.6	31	39.	79	100.
2.	I find it Challenging to adapt my writing style to suit the suggestions provided by ChatGPT	1	1.3	13	16.5	31	39.2	5	6.3	29	36.7	79	100
3.	I faced Challenges in distinguishing between accurate and inaccurate suggestions provided by ChatGPT for my academic writing	6	7.6	9	11.4	18	22.8	8	10.1	38	48.1	79	100
4.	I found it Challenging to maintain my own writing style and originality while using ChatGPT for research writing	1	1.3	20	25.3	16	20.3	6	7.6	36	45.6	79	100

writing. A significant percentage of respondents (45.6%) expressed concerns about preserving their individual writing style and originality when utilizing ChatGPT.

5. Discussion

The initial setting examined in this study pertains to the effectiveness of university students employing artificial intelligence as a writing tool in their academic writing. The results show that students have good opinions toward using ChatGPT as an AI-based tool in academic writing. Based on the study's results, it was determined that the students provided significant responses regarding the various advantages of using Artificial Intelligence in their academic writings. Using ChatGPT as an AI-based writing assessment tool significantly helps students develop their writing skills. This observation is corroborated by prior studies indicating that "ChatGPT and other NLP technologies have the potential to enhance academic writing and research efficiency" (Dergaa Ismail et al., 2023, p. 615).

Regarding the potential benefits of using ChatGPT, the study found that Yemeni EFL learners perceived several benefits. They reported that ChatGPT helped improve their writing fluency, accuracy, and overall quality of their academic writing. The AI-based tool assisted them in language correction, grammar checking, and proofreading, which enhanced the clarity and coherence of their writing. These findings are consistent with the study conducted by Fitria (2023), which also highlighted the capabilities of ChatGPT in generating English essays and its understanding of essay structure and organization. Moreover, Ginting et al. (2023) found that EFL students had a favorable

viewpoint regarding using AI-powered writing tools. Therefore, the present study agrees with these previous studies in recognizing the potential benefits of ChatGPT for academic writing tasks.

However, the present study also identified specific challenges associated with using ChatGPT as an AI-based writing tool. Yemeni EFL learners expressed concerns about academic integrity and the potential for cheating. They questioned the reliability of the information provided by ChatGPT and the need for critical evaluation and fact-checking. These findings align with the study conducted by Lund et al. (2023), which highlighted the ethical concerns surrounding AI-generated research papers and emphasized the importance of guidelines and standards to ensure credibility and transparency. Similarly, the study by

Rahman et al. (2023) recommended caution in using ChatGPT for writing tasks. Therefore, the present study agrees with these previous studies in acknowledging the challenges associated with using ChatGPT in academic writing.

Besides, the findings of the current study align with Alneyadi et al.'s (2023) research on the impact of smart learning apps on students' achievement. Alneyadi et al. found that 8th grade science students using Alef, Boclips, and Connect platforms demonstrated higher achievement than the control group. Similarly, the present study reported positive perceptions towards ChatGPT. However, both studies identified challenges regarding academic integrity and the appropriate use of AI writing tools in education.

The present study's findings also align with Fitria's (2023) research, highlighting the potential benefits of using AI-based writing tools like ChatGPT to assist language learners in enhancing writing fluency, accuracy, and quality. Both studies found that ChatGPT can generate coherent and structured essays, demonstrating its capabilities in content organization and language use. The current study's findings on Yemeni EFL learners' positive perceptions towards ChatGPT corroborate the attached paper's emphasis on the potential of AI-powered text generation tools in supporting English language tasks.

Similar to the study by Mondal, Mondal, and Podder (2023), this study found that learners perceived ChatGPT as helpful in improving writing fluency, accuracy, and quality, but also expressed concerns about academic integrity and plagiarism. Mondal, Mondal, and Podder's (2023) study found that while the readability of ChatGPT-generated text was suitable, the text similarity index exceeded recommended limits, posing a risk of plagiarism. This echoes the challenges identified in the present study, underscoring the need for clear guidelines and oversight to ensure ethical and appropriate use of AI-based writing tools in academia. Moreover, the findings of this study reveal that Yemeni EFL learners at the university level have generally positive perceptions towards the use of ChatGPT as an AI-based writing tool. These findings are consistent with the recent systematic review by Imran and Almusharraf (2023), which also highlighted the potential of ChatGPT to facilitate and support the academic writing process for students in higher education. However, the current study also identified some challenges associated with the use of ChatGPT, including concerns about academic integrity and the potential for plagiarism. These concerns align with the findings of the review by Imran and Almusharraf (2023), which emphasized the

ongoing debate around the use of AI-powered chatbots like ChatGPT in academia and the need for the education system to revisit its policies, training, and assessment practices to adapt to this emerging technology.

In contrast to the study by Hung and Chen (2023) that focused on Chinese students in academic settings, the present study centered on Yemeni EFL learners and their perceptions during their academic writing. Although both studies explore concerns about academic integrity and the benefits of AI-based writing tools, they differ in terms of cultural and educational contexts.

Thus, the present study aligns with previous research in recognizing the potential benefits of using ChatGPT as an AI-based writing tool for academic writing tasks. It also acknowledges the concerns and challenges associated with its use, particularly regarding academic integrity. By comparing the present study's findings with previous studies, a comprehensive understanding of the perceptions and experiences of Yemeni EFL learners in utilizing ChatGPT for their academic writing can be gained.

6. Recommendations

6.1. Recommendations for EFL students

In light of the findings of the current study, the following recommendations are proposed.

1. EFL Students should take the time to understand how ChatGPT works and explore its features. Experiment with different prompts and utilize its capabilities to improve their academic writing skills.
2. While ChatGPT can provide valuable support in academic writing, it is important for students to view it as a tool to enhance their skills rather than a replacement for their own efforts.
3. Students should use ChatGPT to gain insights, learn from its suggestions, and improve their writing, but they also should strive to develop their own critical thinking and writing abilities.
4. EFL students should maintain academic integrity when using ChatGPT, ensure that they use it responsibly and ethically.
5. They should avoid relying solely on ChatGPT to generate their work and make sure to properly cite and reference any information provided by the tool.

6.2. Recommendations for university teachers

1. Teachers should Educate students about the potential benefits and limitations of ChatGPT in academic writing. Encourage them to utilize it as a supplementary tool to enhance their writing skills and provide guidance on how to effectively integrate ChatGPT into their writing process.
2. Establish clear guidelines for students on how to responsibly use ChatGPT. Emphasize the importance of maintaining academic integrity, proper citation practices, and critical thinking skills.
3. Provide training sessions or workshops for students to familiarize themselves with ChatGPT and learn how to maximize its benefits. Offer ongoing support and guidance to address any challenges or concerns that students may have when using the tool. Ensure that students understand the appropriate ways to leverage ChatGPT in their academic writing.

7. Limitations of the study

The present study had several limitations. Firstly, the study focused only on level 2, 3, and 4 students in the Department of English at universities in Ibb city. This limits the generalizability of the findings to the broader population. Secondly, the study relied on self-report measures, which may be subject to social desirability bias. Finally, the study did not explore the long-term effects of using ChatGPT on learners' writing abilities and academic performance.

8. Conclusion

This research investigates perspectives of university students who are at levels two, three, and four. The emphasis is on using Artificial Intelligence particularly ChatGPT in their academic writings. The results indicate that the students exhibit a favorable and optimistic disposition towards using ChatGPT as a writing tool which assists them for their academic writing. ChatGPT in the writing process get positive feelings among students, manifesting as increased motivation, enhanced effectiveness, identification of advantages and disadvantages, and a heightened interest in employing artificial intelligence.

While participants recognized the benefits of using ChatGPT, they also expressed concerns about overreliance on the tool and its potential impact on creativity and critical thinking skills. These findings emphasize the importance of using ChatGPT as a supportive tool rather than a substitute for learners' writing abilities.

The study contributes to the existing literature by focusing on the specific context of Yemeni EFL learners and their experiences with ChatGPT. It sheds light on the potential benefits and challenges of integrating AI-based writing tools in the academic writing process. The findings highlight the need for a balanced approach that combines the use of AI tools with the development of learners' writing skills.

8. Suggestions for future research

Future research should aim to include a more diverse sample and explore the perceptions of other stakeholders, such as educators and academic institutions, regarding the use of ChatGPT in learning of English as a foreign language. Longitudinal studies could provide insights into the sustained impact of AI-based writing tools on learners' four skills and academic outcomes. Additionally, further research can focus on developing guidelines and strategies for incorporating AI tools effectively in the academic writing process, ensuring that learners strike a balance between utilizing technology and nurturing their writing abilities. Additionally, Future research should include a more diverse range of participants from different regions to enhance generalizability.

Data availability

The research data is available upon request.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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