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Pakistani Undergraduates' Use of ChatGPT for Writing Assistance: A Pilot Study

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Abstract

This pilot study is the preliminary phase of the actual study, which examined the frequency of using artificial intelligence (AI) tools by Pakistani English as a Second Language (ESL) undergraduates for writing assistance, as well as their perceptions of whether AI tools support writing skills. To achieve these objectives, a cross-sectional questionnaire was developed. The purpose of this phase of the study was to test the validity and reliability of the questionnaire. The questionnaire had 22 closed-ended items, with four constructs and 5 open-ended items. The questionnaire was validated by two experts, whose comments further improved its content and construct. For reliability testing, first, the questionnaire was piloted with 25 ESL undergraduates, and second, its Cronbach's alpha was checked, which ranged from .718 to .809 for individual constructs and .929 for the four constructs together. The mean scores for the closed-ended items ranged from 2.93 to 3.14, indicating that most participants were at a moderate level of ChatGPT use for writing across all constructs. Whereas the open-ended responses showed that participants perceived AI as supportive for specific writing tasks, such as replacing basic words with academic ones, correcting grammar, organising paragraphs, and making essay outlines. Some also reported greater confidence in academic writing. These findings are preliminary due to the small sample size, and a full analysis will be conducted in the main phase of the study with a larger sample. Hence, the successful conduct of the pilot study indicated that the questionnaire is valid and reliable for the actual phase of the study.

1. Introduction

Being the worldwide lingua franca, English is among the top-most frequently used languages. International Centre for Language Studies (ICLS, 2024) reported that English has approximately 1.5 billion native and

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nonnative users around the world (Tuong et al., 2026). English is seen as an important means of accessing higher education, better jobs, and global knowledge. It is also considered a major route to career opportunities in Western countries (Griffiths, 2023). English is also the common language of science and academia, making it a key requirement for participating in international research. Non-native English speakers expend more effort than native speakers to read and write papers and prepare presentations in English. These language barriers are the real challenges of L2 learners (Amano et al., 2023). For students in countries like Pakistan, strong English listening, speaking, reading and writing skills are closely associated with academic success and access to global knowledge and professional opportunities.

Writing is often the most challenging of these, since it requires accurate grammar, suitable vocabulary, and organised sentence structures supported by strong ideas. Besides, coherence and cohesion in academic texts are further writing challenges. In higher education, these concerns are even more pressing because students are assessed mainly through their written work. Learners must also develop increasingly complex language over time as the demands of academic writing grow (Atak & Saricaoglu, 2021).

In Pakistan, English is closely linked to education and social mobility and is the primary medium of instruction in higher education. However, students enter higher educational institutions with very different experiences of English-medium instruction, which can either build or weaken their English (Pervez, 2023). English instruction in Pakistani universities also poses challenges for both teachers and students in multilingual classrooms (Manan et al., 2022). These conditions make academic writing particularly difficult for many learners.

The use of technologies, including AI tools (e.g., ChatGPT), in Pakistan's education sector could help in addressing these challenges. But researchers commonly caution that AI tools in the education sector may pose risks. For instance, over-reliance on ChatGPT can weaken students' critical thinking and creativity. Further concerns centre on academic integrity and the accuracy of AI-generated content (Alghazo et al., 2025; Farhi et al., 2023). However, for language learners, this means AI could reduce the effort and energy required to acquire English. Besides, several researchers see clear potential for AI tools to provide immediate responses, personalised feedback, and corrections in grammar, vocabulary, and text organisation, which traditional teachers in large classes rarely have time to provide (Song & Song, 2023). These AI tools can assist learners in noticing and correcting their errors, making them more independent writers (Yasmin et al., 2025). The consensus is therefore that AI has both pitfalls and potential benefits in learning and assisting second-language writing (Barrot, 2023). Besides, its value depends upon guided and responsible use rather than on the tool itself (Yasmin et al., 2025).

Despite this growing discussion, there is still limited evidence of how Pakistani undergraduates use AI tools in practice to assist with their writing. Existing Pakistani studies mostly examine the effects of AI on writing performance (Yasmin et al., 2025), students' views on ethics and academic integrity (Alghazo et al., 2025), or teachers' perceptions (Shakil & Siddiq, 2024). Few examine what students use AI for, how often, and how far they depend on it for practical writing tasks such as drafting, editing, and corrections. The present study addresses this gap by investigating how students currently use AI tools for writing assistance and to what extent they rely on them. In this connection, a pilot study was conducted using both closed- and open-ended questions. The purpose of this pilot study was to develop a valid and reliable questionnaire to examine Pakistani undergraduates' frequency and perceptions of using ChatGPT to support their writing skills. It was to test the instrument on a smaller scale. The findings will show how far students already depend on AI for writing and will help refine the instrument for use in a larger study.

1.1 Research Questions

I. What is the frequency of ESL Pakistani undergraduates using ChatGPT to assist their writing skills?
II. What are Pakistani undergraduates' perceptions of using AI tools such as ChatGPT to assist with their writing?
III. To what extent is the adapted questionnaire valid and reliable for measuring ChatGPT-assisted writing practices?

2. Literature Review

The Chat Generative Pre-Trained Transformer (ChatGPT) model was programmed to equip artificial intelligence (AI) into an advanced chatbot for successful interaction between humans and AI (Kocoń et al., 2023). It is widely used today because it can generate text that closely resembles human writing (Gill & Kaur, 2023). The advanced AI tools today can recognise, generate, and summarise text. They can also identify and answer questions about their use. Azap (2025) stated that ChatGPT is a highly developed chatbot that handles large text-based requests and responds to user prompts in a conversational way. ChatGPT and other AI tools effectively address students'

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queries (Shuhaiber et al., 2025). These tools have the potential to be used as constantly available tutors. Ward et al. (2024) asserted that ChatGPT has a positive impact on students' writing proficiencies. As an AI-based writing tool, ChatGPT is playing an increasingly important role in language education, particularly in the development of writing skills(Mahapatra, 2024; Özçelik & Ekşi, 2024). It can generate detailed feedback and potentially summarise it, which would take a human instructor much time and energy (Dai et al., 2023). Chen (2025) reported that ChatGPT supports L2 writers through reformulating their essays while largely retaining their original meanings. Thus, it improves syntactic complexity, lexical sophistication, and lexical diversity, although cohesion may require further attention.

Wang et al. (2026) applied a mixed-methods approach with 32 Chinese undergraduates and found that students engaged less with GPT-4o feedback than with teacher feedback, particularly emotionally and behaviourally, despite GPT-4o's focus on content and organisation. On the contrary, Xuemei & Qi (2026) used a qualitative idiodynamic approach with four Chinese undergraduate EFL learners and found that ChatGPT-assisted writing generally increased learners' enjoyment, although the benefits varied among learners. Similarly, several researchers reflect on the potential of ChatGPT to support L2 writing learners. For instance, Mahapatra (2024) found that ChatGPT significantly improved undergraduate ESL students' academic writing skills and was well-received by students. Polakova and Ivenz (2024), in a quasi-experimental study which involved 110 university EFL students, found improvements in conciseness, grammar, the inclusion of key information, and the use of the passive voice following ChatGPT feedback. Alwasidi and Al-Khalifah (2025) used a pre-test–post-test design with 52 Saudi female university undergraduates and reported improvements in writing proficiency, particularly in topic-sentence formation and the use of supporting details. Furthermore, Alkamel and Alwagieh (2024), in a quantitative survey of Yemeni university EFL learners, assessed that students perceived ChatGPT as helpful for improving writing fluency, accuracy, and overall academic writing quality, although concerns about plagiarism and academic integrity persisted. Collectively, these studies suggest that ChatGPT can support writing development through feedback, language correction, and assistance with organising and developing ideas.

3. Research Methodology

This study employed a pilot testing design to assess the suitability of an adapted questionnaire for investigating ESL undergraduates' frequency and perceptions of using artificial intelligence (AI) tools to support their writing skills. Most of the items were adapted from previous studies, such as Meniado et al. (2024), Abdi et al. (2024), Aldowsari & Aljebreen (2024), Abduljawad (2024), and Mariappan et al. (2025), whereas some items were generated by the researchers based on the nature of the study. The questionnaire consisted of 22 closed-ended items (4 constructs) on a five-point scale (1=never, 2=rarely, 3=sometimes, 4=usually, and 5=always) for the quantitative part, and 5 open-ended items for the qualitative part. All closed and open-ended items were aligned with the research questions and informed by the Technology-to-Performance Chain (TPC) framework (Goodhue & Thompson, 1995). The closed-ended items examined the frequency of participants' use of AI tools to support their writing, whereas the open-ended questions explored students' perceptions and practical experiences with using ChatGPT for writing assistance.

The questionnaire was reviewed by two experts who evaluated its contents, relevance, and the clarity of the items. Besides, they also examined the face and construct validity of all closed and open-ended items. Their comments and suggestions were incorporated into the instrument before pilot testing. Whereas the internal consistency and reliability of the closed-ended items were assessed after the pilot study using Cronbach's alpha.

The quantitative data were analysed using descriptive statistics, including percentages, means, modes, and interquartile ranges, as appropriate to the measurement scales, while the open-ended responses were examined to identify relevant patterns in participants' perceptions and experiences of using ChatGPT to assist their writing. Overall, the pilot study aimed to evaluate the questionnaire's suitability and reliability, and to identify any necessary revisions before its administration in the main study. Whereas TPC was employed to align the study with theoretical grounds

3.1 Technology-to-fit Performance (TPC)

The study was theoretically informed by the Technology-to-Performance Chain (TPC) theory proposed by Goodhue and Thompson (1995). This theory holds that individual performance depends on how well a technology fits users' tasks and on how much the technology is used. According to the theory, a technology has a positive impact on performance when it is used and when it fits the tasks it supports. This fit depends on the characteristics of the task, the technology, and the individual user, such as training and experience. The theory also includes a feedback link, in which the performance benefits that users experience can influence their later use of the technology. Later research has supported the value of considering fit and utilisation together when

explaining technology use (Dishaw & Strong, 1999). In the present study, this framework provided a theoretical basis for examining participants' use of ChatGPT as a resource to support writing-related tasks. In this context, the questionnaire measured how much participants use AI for writing assistance, which reflects the utilisation part of the chain. Its application helped guide the development and alignment of questionnaire items with the study's research questions concerning AI-assisted writing.

3.2 Participants and Data Collection

The study employed purposive sampling and selected 25 ESL undergraduates (14 males, 56.0% and 11 females, 44.0%) enrolled in the fourth semester of the Department of Economics at Shaheed Benazir Bhutto University, Shaheed Benazirabad (SBBU, SBA). Participants were selected for their relevance to the research objectives and their suitability for evaluating the questionnaire. All of them were enrolled in the "Academic Reading and Writing" course for the 2025-2026 session. Before the pilot study, participants' consent and departmental permission, in the form of a no-objection certificate (NOC), were obtained. The pilot study was conducted on 19th August, 2025, and the participants completed the questionnaire by hand on paper.

4. Data Analysis

The data were analysed using quantitative and qualitative approaches. The quantitative data obtained from the closed-ended items were analysed through descriptive statistics, which include frequencies, percentages, means, modes, and interquartile ranges, as appropriate to the measurement scales, to summarise students' frequency of AI use for writing assistance. Whereas the qualitative data obtained from the open-ended questions were analysed by identifying the perceptions and recurring patterns in participants' textual responses based on their experiences and views regarding the practical use of ChatGPT to support their writing skills

4.1 Quantitative Findings

The closed-ended items were analysed quantitatively using SPSS. The questionnaire consisted of 22 items grouped into four constructs related to vocabulary, sentences, paragraphs, and essay-writing skills, and was rated on a 5-point scale. Each construct score was calculated as the average of its items, so a higher score shows greater use of AI for writing assistance. To check the reliability of the questionnaire, Cronbach's alpha was computed for each construct and for the full scale. Participants' responses were then summarised using the mean, standard deviation (SD), median, and interquartile range (IQR). Because Likert-scale data is ordinal, the median and IQR are reported alongside the mean and SD to give a fuller picture of how students responded. The consolidated results are presented in Table 1.

Table 1: Consolidated Reliability and Descriptive Statistics (N = 25)

Construct	Mean	SD	Median	IQR	Alpha
Construct 1	2.97	0.65	3.20	1.20	.782
Construct 2	3.14	0.68	3.00	1.00	.718
Construct 3	2.93	0.72	2.67	1.08	.809
Construct 4	2.99	0.67	2.83	1.17	.765
Overall	3	0.61	2.77	1.20	.929

Table 1 shows that the questionnaire has good internal consistency. The Cronbach's alpha values ranged from .718 (Construct 2) to .809 (Construct 3), and the overall alpha for the 22 items was .929. All four constructs exceeded the commonly accepted threshold of .70 (Nunnally & Bernstein, 1994), and the overall value indicates excellent reliability. This means that the items within each construct consistently measure the same idea and that the questionnaire works as intended.

The descriptive results indicate that participants' use of AI for writing assistance was moderate across all four constructs. The mean scores ranged from 2.93 to 3.14, which falls in the moderate range (2.34 to 3.67). Construct 2 had the highest mean (M = 3.14, SD = 0.68, Mdn = 3.00), followed by Construct 4 (M = 2.99, SD = 0.67, Mdn = 2.83) and Construct 1 (M = 2.97, SD = 0.65, Mdn = 3.20). Construct 3 had the lowest mean (M = 2.93, SD = 0.72, Mdn = 2.67). The standard deviations ranged from 0.65 to 0.72, and the IQRs from 1.00 to 1.20, which shows that participants' responses were fairly close to each other and not widely scattered.

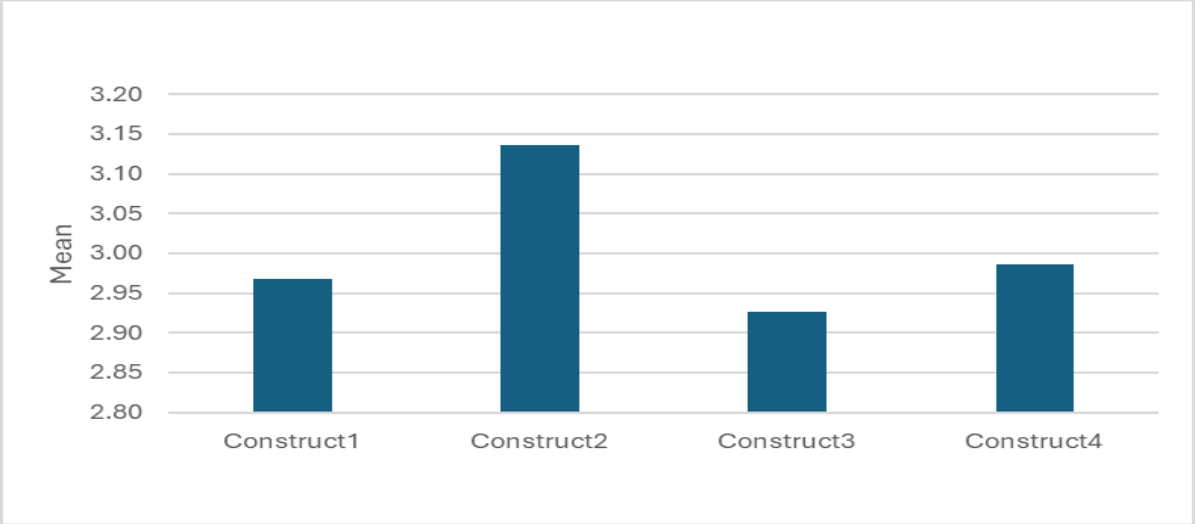
The relationship between the mean and the median adds further detail. For Construct 1, the median (3.20) was higher than the mean (2.97), which suggests that more than half of the participants rated this

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construct above the average. For Construct 3, the median (2.67) was lower than the mean (2.93), which suggests that many participants gave lower ratings on this construct, while a few gave higher ratings.

Figure 1 presents a graphic representation of the mean scores, which were close to each other and fell in the moderate range

Figure 1: Graphical Representation of Construct Means (N = 25)



Overall, these results indicate that participants use AI tools for writing assistance at a moderate level, with no construct falling in the high range. Although they do use AI, they do not yet use it extensively. This can be understood through the TPC theory (Goodhue & Thompson, 1995), which holds that the performance benefits of a technology depend on both its utilization and its fit with the task, and that this fit is shaped by individual characteristics such as training and experience. The moderate level of AI use suggests that participants may not yet be using AI tools to their full potential for writing, and that additional training could help them use these tools more effectively and gain more from them. Together with the acceptable reliability values, these results indicate that the questionnaire successfully captured the frequency of AI tool use among Pakistani ESL undergraduates.

These findings should be interpreted with caution because the study was conducted on a small sample of 25 students. The purpose of this small-scale study was to check whether the questionnaire works well, that is, whether its items are reliable and clearly understood, before it is used in the main phase. The reliability results support this purpose, but the small sample limits how far the findings can be generalized to the wider student population. To complement the mean scores, all 25 participants were also grouped into three levels of AI use (low, moderate, and high) for each construct, using the same score ranges as in the interpretation of the means. This shows how many of them fell into each level. The frequencies and percentages are presented in Table 2.

Table 2 Frequency and Percentage of AI Use Levels (N = 25)

Construct	Low n (%)	Moderate n (%)	High n (%)
Construct 1	4 (16.0)	16 (64.0)	5 (20.0)
Construct 2	3 (12.0)	18 (72.0)	4 (16.0)
Construct 3	5 (20.0)	15 (60.0)	5 (20.0)
Construct 4	4 (16.0)	17 (68.0)	4 (16.0)

The percentages confirm the pattern seen in the means. Most participants were at the moderate level of AI use in every construct, ranging from 60.0% (Construct 3) to 72.0% (Construct 2), while only a minority reached the high level (16.0% to 20.0%) and a similar minority were at the low level (12.0% to 20.0%). This suggests that although participants use AI for writing assistance, only about one in five reached a high level of use on any construct, supporting the view that they would benefit from further training. As the sample is small (N = 25), these percentages are indicative only and will be checked with a larger sample in the main study.

4.2 Qualitative Findings

The open-ended responses from the 25 participants were carefully read to gain an initial picture of how they use AI for writing. As this was a small-scale study, the responses were not fully coded. The aim was only to find the main patterns. In line with the Technology-to-Performance Chain (TPC) theory, the responses were read to see how participants perceive and use AI for different writing tasks and whether this use assists their writing. The responses suggest that participants feel comfortable using AI to assist their writing in four areas: vocabulary, sentences, paragraphs, and essays. Table 3 presents some selected responses.

Table 3: Selected Responses

Writing area	Participant ID	Selected response
Vocabulary	P1	"Chatgpt helps me to replace basic words with more academic ones."
Vocabulary	P2	"I use a chatgpt for assignments and I have clear my english language."
Vocabulary	P3	"I use chatgpt for assignment and i have been chating it for improve english."
Vocabulary	P1	"Chat gpt very help for the Academic writing & And very help for the writing Skills."
Sentences	P5	"My sentence used to be short and simple. So, chatgpt make its more attractive."
Sentences	P6	"It is helpful in the grammer and easy."
Sentences	P7	"It is helpful for correct my english grammer errors."
Paragraphs	P8	"I was struggled with paragraph writing. ChatGPT gave the proper structure."
	P9	ChatGPT assist me to improve my paragraph and there are many multiple bots for assist
Paragraphs	P10	"It is very helpful in the easy writing."
Paragraphs	P11	"It is very helpful forme."
Essays	P1	"The hardest part to make a outline, so chatgpt may it easy."
Essays	P2	"I can use chatgpt for help in the sentence."
Essays	P3	"I always ask chatgpt for making question for me and i answered then it correct it."
Overall	P12	"Overall, chatgpt improved my confidence in academic writing."
Overall	P13	"No i am alway use for reading."

Note: *Selected responses were transcribed from participants' handwritten answers and are quoted exactly as written, including language errors*

These selected responses, along with all other responses, show that participants use ChatGPT in writing. For vocabulary, they used it to replace basic words and to improve their English. For sentences, they mainly rely on it to correct grammar and improve their writing. For paragraphs, participants perceived ChatGPT as a very helpful tool; one participant said it helped with paragraph structure (P9). For essays, one participant reported using it to make an outline, and another used it to check their answers to questions. One interesting response was that participant (P3) described asking ChatGPT to create questions, answering them, and then receiving corrections. This shows that ChatGPT can serve as a practice-and-feedback tool. Another participant (P12) reported that ChatGPT improved their confidence in academic writing. It suggests that its value extends beyond writing accuracy and may also support participants' feelings about their own writing. However, not all participants used it for writing. One reported using it only for reading, indicating that the pattern of use differs among students. Overall, these responses suggest that participants use ChatGPT at different stages of writing, from planning to feedback, and that they perceive it positively, although the extent of use varies.

These responses can be understood through the TPC theory (Goodhue & Thompson, 1995). The theory holds that a technology has a positive impact on individual performance when it is used and when it fits the task it supports. Here, participants use ChatGPT for specific writing tasks, such as word choice, grammar, structure, and outlines, and they report that it helps them. This shows a good fit between AI tools and writing tasks. The theory also includes a feedback link from performance to later use. The participants' growing confidence shows that their use of AI for writing support is likely to continue.

The responses align with the moderate level of use observed in the quantitative results. Some students said they used AI mainly for reading rather than writing, which shows that use varies from person to person. A full analysis of these responses will be conducted in the main phase of the study using a larger sample.

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5. Conclusion

This pilot study had three aims: to test the validity and reliability of the questionnaire, to determine the frequency of use of AI tools by Pakistani ESL undergraduates for writing assistance, and to examine their perceptions of using AI tools to assist their writing skills. The questionnaire was reliable, with alpha values from .718 to .809 for individual constructs and .929 for the four constructs together. Participants' frequency of AI tool use was moderate across all constructs, with mean scores ranging from 2.93 to 3.14. The open-ended responses presented that participants perceived AI as helpful for specific writing tasks, such as replacing basic words, correcting grammar, organising paragraphs, and making essay outlines. In line with the Technology-to-Performance Chain (TPC) theory, this shows a good fit between AI tool, ChatGPT, and writing tasks, while the moderate level of use indicates that this fit has not yet led to full utilisation. As ChatGPT use was moderate rather than high, participants may benefit from training in using AI tools more effectively for writing. The next step is the main phase of the study, which will use a larger sample, conduct a full analysis of the open-ended responses, and further check the questionnaire.

5.1 Limitation

This study has some limitations. First, it is a pilot study with a small sample of 25 Pakistani ESL undergraduates, so the findings are preliminary and cannot be generalised to the broader population. Second, the pilot study was conducted to check whether the questionnaire works on a small scale, and the actual phase of the study will use a larger sample for further in-depth analysis. Third, the open-ended responses were read to identify perceptions and patterns and were not fully coded, so a full qualitative analysis will be conducted in the actual phase. Fourth, the data were self-reported, so participants may have under- or overestimated their AI use. Fifth, the questionnaire was administered at a single point in time, so it cannot present how the frequency of AI use changes over time. Finally, this pilot study used only validity and reliability analyses and descriptive statistics, as its purpose was to test the questionnaire. Relationships between constructs were therefore not examined; they will be examined further in the actual study phase.

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This section is compulsory. Acknowledgements and Reference heading should be left justified, bold, with the first letter capitalised, but have no numbers. Text below continues as normal. Example, Communication of this research is made possible through monetary assistance by Universiti Tun Hussein Onn Malaysia and the UTHM Publisher's Office via Publication Fund E15216.

Conflict of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

Author Contribution

The authors confirm contribution to the paper as follows: study conception and design: Author 1, Author 2; data collection: Author 1; analysis and interpretation of results: Author 1, Author 2; draft manuscript preparation: Author 1, Author 2. All authors reviewed the results and approved the final version of the manuscript. The authors confirm their responsibility for this manuscript, including its concepts, design, data collection, analysis, and interpretation of the results.

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