

COMPARING GRAMMARLY AND CHATGPT FOR AUTOMATED WRITING EVALUATION OF ESL LEARNERS

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ABSTRACT

Despite the growing prevalence of AI-driven tools in language education, there is limited research on their implementation within the Pakistani context. This study is grounded in Technology-Enhanced Language Learning (TELL) and Second Language Acquisition (SLA) theory to examine the efficacy of Automated Writing Evaluation (AWE) tools, specifically Grammarly and ChatGPT, in enhancing the writing skills of English as a Second Language (ESL) learners. The primary objectives are to assess the impact of these tools on writing proficiency and to explore learners' perceptions of feedback quality. Employing a mixed-method approach, the study integrates quantitative analysis of writing improvement with qualitative insights into learner preferences, offering a comprehensive understanding of these tools' roles in the ESL classroom. The scope encompasses ESL learners in Pakistan, focusing on how such AI tools can be effectively integrated to improve writing skills. Results indicated that while the ChatGPT group had slightly higher mean ranks than the Grammarly group, the differences in writing performance were not statistically significant, with p -values for the pre-test ($p=0.276$) and post-test ($p=0.398$), both greater than 0.05 ($p>.05$). Nonetheless, learners reported varied preferences, with some favoring Grammarly's accuracy and others valuing ChatGPT's comprehensive feedback. The study underscores the complementary nature of these tools and advocates for their informed incorporation into ESL writing instruction.

Keywords: Automated Writing Evaluation, ChatGPT, Grammarly, ESL learner.

1. INTRODUCTION

The exponential progress of technology and artificial intelligence (AI) has profoundly revolutionized the process of language acquisition, providing novel opportunities for improving language proficiency. Automated writing evaluation (AWE) software such as Grammarly and ChatGPT enable English teachers & [ESL learners] to receive prompt feedback on grammar, vocabulary, and writing competence (Park, 2019; Link et al., 2022). These technologies have become popular due to their ability to assist language learners, particularly when conventional instructor input is restricted.

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Grammarly is commonly used as a writing aid that offers prompt feedback on grammar, spelling, punctuation, word selection, and writing style. Its primary focus is on micro-level aspects of writing such as sentence structure, word choice, and syntactical accuracy, offering corrective feedback to enhance accuracy and clarity (O'Neill & Russell, 2019; Ebadi et al., 2023). In contrast, ChatGPT offers coherent and contextually suitable replies in conversation, it addresses both micro and macro-level aspects of writing. It provides feedback on the organization, logical flow, substance, and the broader context of the text, simulating a tutor-like role by offering personalized explanations and elaborations on writing (Bibi & Atta, 2024; Lund & Wang, 2023). Together, they represent a comprehensive approach to AWE, addressing the multifaceted needs of academic writers at various stages of the writing process.

Despite the extensive usage of AWE technologies, traditional approaches to feedback in the Pakistani ESL teaching context have not successfully enhanced students' writing abilities (Ali Bughio, 2012; Rahman, 2020). The necessity to investigate alternate options such as Grammarly and ChatGPT arises from the limited instructor feedback in large ESL classrooms (Moghal et al., 2019; Asad et al., 2021). Furthermore, the use of AWE techniques in Pakistan is still somewhat restricted, and there is a dearth of studies on their efficacy in improving writing skills in the local context (Bhatti et al., 2024a; Subhani et al., 2023; Alnasser, 2022). In addition, Pakistani ESL students' perceptions of AWE are also required [for its formal implementation] (Alnasser, 2022). Understanding students' perceptions of Automated Writing Evaluation (AWE) tools is critical as these perceptions influence adoption, engagement, and learning outcomes (Venkatesh et al., 2016). Positive attitudes encourage usage and enhance effectiveness, while negative perceptions can hinder their impact.

Exploring perceptions provides insights into learner preferences, helping tailor tools like Grammarly and ChatGPT to better meet student needs. It also informs educators on effectively integrating these tools into teaching practices, ensuring alignment with students' expectations and learning styles. Additionally, perceptions help address barriers, such as mistrust in feedback or difficulties in interpretation, optimizing the human-technology interface. By examining students' attitudes, this research ensures AWE tools are better utilized to support academic writing success

Therefore, this study seeks to address this research deficiency by examining the impact of Grammarly and ChatGPT in delivering AWE and exploring the perspectives of learners utilizing these tools. This research will offer valuable insights for ESL instructors, and learners, in Pakistan, enabling them to make well-informed choices on the incorporation of these

technologies into ESL writing courses. Similarly, this study aims to increase the practical knowledge and implementation of AWE in English language learning, which might result in the development of more effective digital methods for teaching English writing in Second Language context.

The results will assist in the advancement of more efficient digital approaches for teaching academic English writing in second language context, consequently improving the standard of English language education and facilitating the development of writing skills among Pakistani ESL pupils.

1.1 Research Questions

1. How does AWE provide by ChatGPT and Grammarly affect the overall writing proficiency of ESL learners?
2. How do ESL learners perceive the effectiveness of AWE provided by ChatGPT and Grammarly?

1.2 Hypothesis

Null hypothesis (H₀): There is no significant difference in the overall writing proficiency of ESL learners who received automated feedback through Grammarly compared to those who received feedback through ChatGPT.

Alternative Hypothesis (H₁): There is a significant difference in the overall writing proficiency of ESL learners who received automated feedback through Grammarly compared to those who received feedback through ChatGPT.

2. LITERATURE REVIEW

2.1 ChatGPT as an AI Language Model

ChatGPT is a sophisticated artificial intelligence language model created by OpenAI. It is specifically engineered to produce replies that closely resemble those of humans and participate in live conversations by employing deep learning methods and extensive training data (ChatGPT, 2023; Cohen, 2023). This tool is highly beneficial for language acquisition because of its capacity to support grammar, vocabulary, sentence structure, and general language competence (Shidiq, 2023; Shahriar & Hayawi, 2023). ChatGPT has the capability to offer immediate feedback, propose alternative or better version of the learner's text, and foster an immersive learning environment through interactive dialogues (Buzdar, 2024; Ifthikhar et al., 2024).

Research done by Belda-Medina and Calvo-Ferrer (2022) revealed that learners who were engaged with ChatGPT showed enhancements in their writing abilities, and motivation. Likewise, Klímová and Ibna Seraj (2023) found that the use of chatbots in university ESL environments enhanced the

vocabulary acquisition process by offering contextualization and prompt feedback, therefore reducing the burden on instructors.

Using a mixed-method approach, Songsiangchai et al. (2023) investigated the capacity of ChatGPT to improve English language acquisition in Thai students. The study revealed profound enhancements in language proficiency among individuals who used ChatGPT in comparison to those who did not. Qualitative feedback indicated a rise in motivation, self-assurance, and favorable attitudes towards the learning process. Agustini (2023) had similar findings in Indonesian context.

2.2 Grammarly: Features and Functionality

Grammarly is an automatic writing aid system specifically developed to enhance writing proficiency using Natural Language Processing algorithms (Eira, 2023). It offers corrective recommendations and explanations to help users understand grammatical rules, enhance vocabulary, improve tone and writing style of the content, detects plagiarism (Maulidina & Wibowo, 2022; Tambunan et al., 2022) making it an effective tool for improving writing.

Empirical studies have demonstrated that Grammarly significantly enhances writing proficiency. For instance, Ghufon (2019) and Dizon & Gayed (2021) found that students who used Grammarly showed notable enhancements in both the precision and frequency of their writing, especially in terms of grammar and punctuation. The success of Grammarly may be ascribed to its capacity to offer prompt and precise feedback, so facilitating users in learning from their errors (Ebadi et al., 2023).

Furthermore, Basiana, Dayrit, and Santos (2024) investigated the efficacy of Grammarly among senior high school students in Pampanga, Philippines. Employing a qualitative methodology, the research revealed that students experienced enhancements in their writing skills, notably in English grammar. The present study highlights the significance of Grammarly in augmenting academic writing accomplishments and provides valuable perspectives of ESL learners.

However, studies also noted significant difficulties related to device compatibility and the possibility of excessive dependence on Grammarly's recommendations, especially in terms of vocabulary, grammar, and syntax Wahyu & Zur, 2024; Khan et al., 2024). Therefore, it is suggested that teachers should not entirely rely on it; instead, they should use it alongside traditional methods to help students improve their proofreading and writing skills.

2.3 Comparative Analysis of Grammarly and ChatGPT

Although Grammarly and ChatGPT are distinct in their methodologies and capabilities, they are both widely used programs for delivering automatic feedback on writing (Link et al., 2022). Empirical research has investigated the efficacy of Grammarly and ChatGPT in delivering writing feedback. A study conducted by Wu et al. (2023) demonstrated that Grammarly is quite efficient in detecting and rectifying grammatical mistakes, thereby enhancing the precision and lucidity of writing. Nevertheless, ChatGPT was shown to surpass Grammarly in improving general language proficiency and logical consistency. Ellerton (2023) identified that Grammarly mostly emphasizes the repair of syntax errors, whereas ChatGPT provides more innovative and contextually relevant material and fixes.

Integrating both tools can provide a well-rounded approach to language acquisition, targeting many facets of writing proficiency. Research indicates that integrating the accuracy of Grammarly with the interactive, conversational feedback of ChatGPT has the potential to create a powerful feedback system that enhances both fundamental writing abilities and advanced language skills (Young & Shishido, 2024; W. M. Khan, 2023). Therefore, it was necessary to investigate the impact of both tools on writing skills in the local context.

2.4 Theoretical Paradigm

The following important concepts serve as the foundation of the study's theoretical framework:

2.4.1 Theories of Error Correction and Feedback

The framework integrates error correction and feedback theories, which explain how feedback facilitates language learning. The Cognitive theory emphasizes how ESL pupils process AWE to improve writing skills, while the Behaviorist theory focuses on the reinforcement and correction of errors.

2.4.2 Technology-Enhanced Language Learning (TELL)

The principles of technology-enhanced language learning (TELL) are also included in the theoretical framework; it emphasizes how these AI tools enhance language learners' experiences, promote self-regulated learning, and assist learners in cultivating autonomy in their writing enhancement.

2.4.3 Theory of Second Language Acquisition (SLA)

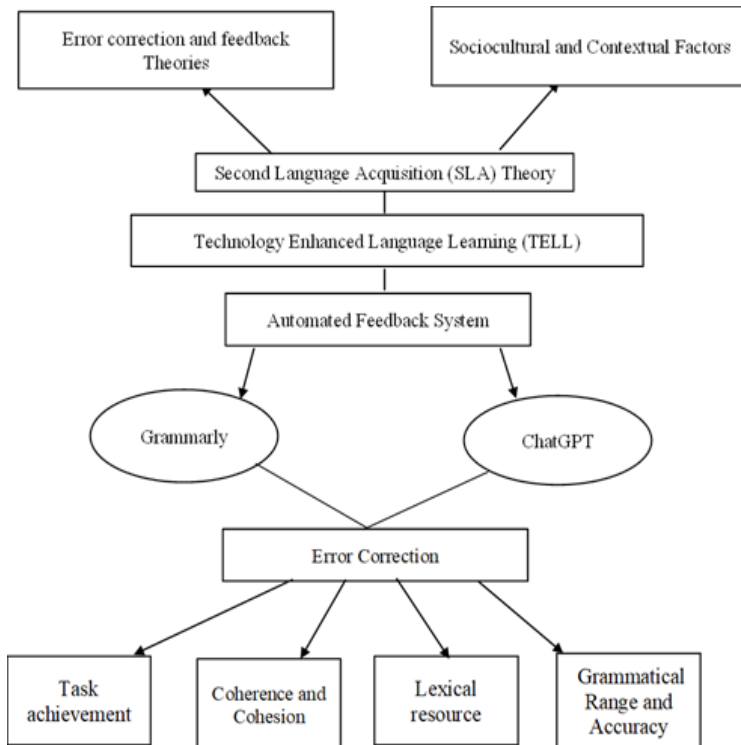
This theory assists in comprehending how ESL learners develop writing proficiency. It emphasizes the significance of feedback in language

development, drawing upon behaviorism, constructivism, and cognitivism. Grammarly and ChatGPT correspond with these viewpoints by offering feedback that facilitates learners' active engagement in improving writing skills. The theory acknowledges the role of sociocultural and contextual factors, such as regional educational standards, cultural perspectives on technology, and individual learner requirements. A comprehensive grasp of these aspects is essential for customizing the utilization of Grammarly and ChatGPT to suit the Pakistani educational environment.

2.4.4 Practical Application

The framework analyzes the convergence of these theories in the operational implementation of Grammarly and ChatGPT, emphasizing their functions in delivering tailored and prompt feedback, augmenting learner independence, and facilitating self-directed learning. Conducting a comparative examination of these tools enables the identification of their advantages and areas that need enhancement in various learning environments.

Figure 1 **Theoretical Framework**



3. RESEARCH METHODOLOGY

The study utilized a quasi-experimental two-group pretest-posttest design and mixed method to evaluate the efficacy of Grammarly and ChatGPT in improving writing skills of ESL learners. ESL learners were divided into two groups, one using Grammarly and the other using ChatGPT. Both groups received the same writing treatments and evaluations to compare the influence of these two AI tools on English language writing proficiency. The quantitative component assessed their writing proficiency which aimed to investigate any differences in writing performance before and after the intervention, whereas qualitative data was collected through semi-structured interviews to understand the experiences of ESL learners on receiving AWE using ChatGPT and Grammarly.

3.1 Participants

The study involved 50 undergraduate ESL students divided into two groups of 25. The sample consisted of 45% male and 55% female students aged 18-25 from various academic fields. The English competence levels varied from B1 (intermediate) to B2 (upper-intermediate) on the CEFR criteria. Only 20% of the participants had previous exposure to automatic feedback programs like Grammarly, while the remaining 80% were unfamiliar with these technologies. This heterogeneity allowed for an evaluation of the efficacy of the tools across different levels of expertise and previous experiences.

3.2 Instruments

The study employed two research tools to gather quantitative and qualitative research data:

3.2.1 Essay Writing

The study involved participants completing IELTS essays before and after intervention using Grammarly and ChatGPT. The pre-test assessed writing competence, while the post-test evaluated the enhancements due to the tools. The essays were scored using IELTS standardized rubrics, evaluating task completion, logical flow, vocabulary diversity, and grammar precision. The Mann-Whitney Test was used to analyze the pre-test and post-test scores, identifying significant differences in writing abilities. Additionally, participants' writing samples were examined to identify areas for improvement in linguistic aspects like grammar, vocabulary, and sentence structure, using input from both AI tools.

3.2.2 Semi-Structured Interview

The study used self-constructed semi-structured interviews to gather information about the experiences and opinions about Grammarly and ChatGPT as feedback tools. The interviews were recorded in audio format, transcribed, and analyzed using reflexive thematic analysis following Braun and Clarke’s approach. This method enabled an inductive, data-driven exploration of themes, with the flexibility to interpret underlying patterns. Through systematic coding and classification, the study identified recurring themes and key insights.

3.3 Data Collection Procedure

The study aims to enhance the writing skills of 50 Pakistani ESL students by using Grammarly and ChatGPT as automated feedback tools. The students were randomly assigned into two groups: one using Grammarly and the other using ChatGPT. During the intervention phase, participants were introduced to the tools through an orientation session and assigned four writing tasks over four weeks. Both groups received automated feedback on their work from their respective AI tools. The Grammarly group received feedback on grammatical errors, punctuation issues, style improvements, and lexical suggestions, while the ChatGPT group received suggestions for revisions, rewordings, and explanations of errors in grammar, sentence structure, and content coherence. After receiving feedback, participants revised their essays and submitted the final versions to the teacher for evaluation.

4. FINDINGS

4.1 Shapiro-Wilk Test

The normality of the pre-test and post-test scores was assessed using the Shapiro-Wilk test. The results indicate a non-normal distribution for both pre and post-test scores ($p < 0.05$), leading to the rejection of the null hypothesis suggesting that the data does not meet the assumption of normality.

Table no. 1: Shapiro-Wilk

	Statistic	Df	Sig.
Pre-test	.789	50	.000
Post-test	.784	50	.000

The above table shows that the Shapiro-Wilk test statistics for the pre-test and post-test, the p-value is approximately 0.0001, which is below the common alpha level of 0.05. Therefore, we reject the null hypothesis, indicating

that the data is not normally distributed, underscoring the need for nonparametric tests.

4.2 Mann Whitney Test

Subsequently, we conducted the Mann-Whitney U test to compare the effectiveness of Grammarly versus ChatGPT in improving the writing proficiency of Pakistani ESL learners.

The results are as follows:

Table no. 2: Mann-Whitney Test

Table no. 2: Ranks

	Group	N	Mean Rank	Sum of Ranks
Pre-test	ChatGPT	25	27.54	688.50
	Grammarly	25	23.46	586.50
	Total	50		
Post-test	ChatGPT	25	27.14	678.50
	Grammarly	25	23.86	596.50
	Total	50		

Test Statistics

	Pre-test	Post-test
Mann-Whitney U	261.500	271.500
Wilcoxon W	586.500	596.500
Z	-1.089	-.844
Asymp. Sig. (2-tailed)	.276	.398

4.2.1 Pre-Test Mean Ranks

Prior to any intervention (using Grammarly or ChatGPT), the ChatGPT group had a somewhat superior average rank (27.54) in comparison to the Grammarly group (23.46). This implies that, on average, individuals in the ChatGPT group had somewhat greater beginning writing competence compared to those in the Grammarly group.

4.2.2 Post-Test Mean Ranks

Following the intervention, the ChatGPT group maintains a higher mean rank of 27.14 compared to the Grammarly group's 23.86. This disparity implies that the ChatGPT group has sustained a somewhat superior degree of writing skill even after receiving the feedback.

Although the ChatGPT group recorded higher mean ranks as compared to Grammarly both before and after the intervention, the p-values: for the pre-test ($p=0.276$) and for the post-test ($p = 0.398$) which is greater than 0.05 ($p>.05$), exhibits that the null hypothesis failed to be rejected, indicating that there is no statistically significant difference between the effectiveness of Grammarly and ChatGPT in improving the writing proficiency of ESL students. This suggests that both tools are equally effective in enhancing the writing skills of ESL learners.

4.3 Average Score Analysis

The quantitative analysis aimed to assess the effectiveness of Grammarly versus ChatGPT as automated feedback tools for enhancing the writing skills of Pakistani ESL learners. Utilizing the pre and post-test scores, the averages were calculated for each aspect of writing proficiency, including Task Response, Coherence and Cohesion, Lexical Resource, Grammatical Range and Accuracy, and overall Bands, both before and after the intervention.

Table no. 3: The average of the scores of both groups

ChatGPT group										
	Task Response		Coherence and Cohesion		Lexical Resource		Grammatical range and accuracy		Bands	
	Before	After	Before	After	Before	After	Before	After	Before	After
Gr	6.5	7.1	6.3	7.0	6.2	6.8	6.2	6.9	6.14	6.86
Average										
GPT	6.6	7.2	6.4	7.1	6.3	7.0	6.3	7.0	6.32	7.02
Average										

Table 3 presents the average scores of ESL learners in both the Grammarly (Gr) and ChatGPT (GPT) groups across various writing proficiency parameters before and after the intervention. The table offers a comparative overview of the mean scores attained by participants in each group, facilitating an assessment of the effectiveness of the respective feedback tool.

Before the intervention, the average scores for Task Response were 6.5 and 6.6 for Grammarly and ChatGPT groups, respectively. Following the intervention, there was a mere improvement in task response scores, with the Grammarly group achieving an average score of 7.1, slightly lower than the ChatGPT group's average score of 7.2.

Similarly, both groups exhibit enhancement in Coherence and Cohesion, as reflected in the increased average scores from before to after the intervention. The ChatGPT group showed an improvement from 6.4 to 7.1, while the Grammarly group also saw an increase from 6.3 to 7.0.

For Lexical Resource, both groups demonstrate a consistent pattern of improvement, with average scores rising from before to after the intervention. The ChatGPT group scores increased from 6.3 to 7.0, while the Grammarly group scores improved from 6.2 to 6.8.

In terms of Grammatical Range and Accuracy, both groups experienced a notable enhancement in their average scores post-intervention. The ChatGPT group exhibited an increase from 6.3 to 7.0, while the Grammarly Group's scores improved from 6.2 to 6.9.

Both Grammarly and ChatGPT AI tools showed significant improvements in their Task Response scores, with ChatGPT users slightly outperforming Grammarly users. This suggests that both tools are effective in helping students address writing prompts more effectively, providing clear feedback on task fulfillment. The ChatGPT group offered more comprehensive feedback on task fulfillment. Both tools improved in Coherence and Cohesion scores, suggesting they help students structure their writing more logically and ensure ideas flow better. The ChatGPT group showed greater improvement in vocabulary use, suggesting it might provide more comprehensive feedback on vocabulary usage, encouraging a broader and more sophisticated lexicon. Both tools improved in Grammatical Range and Accuracy, with ChatGPT users showing slightly greater improvement. This suggests that both tools are effective in correcting grammatical errors and enhancing the grammatical complexity of students' writing. The slightly higher increase for ChatGPT may indicate its feedback is more effective at identifying and correcting a wider range of grammatical issues or encouraging the use of more complex grammatical structures. Overall, the GPT group improved from 6.3 to 7.0, and another group's mean score increased from 6.1 to 6.8. Table 3 underscores the positive impact of both ChatGPT and Grammarly on ESL learners' writing proficiency.

4.4 Findings of Qualitative Data

The study analyzed ESL students' perceptions about the experience of using ChatGPT and Grammarly for academic writing. Four key themes emerged: User experience and accessibility, Feedback personalization, Comparison with traditional feedback, and Feedback accuracy and reliability, providing a comprehensive understanding of the students' experiences. Thematic analysis from each group's interviews was presented side-by-side,

allowing for a comparative examination of the experiences and perceptions of different interventions. The total number of participants for the qualitative interviews was 50, with 25 from the ChatGPT group (coded as GPT) and 25 from the Grammarly group (coded as G).

Table no. 4

Theme	Sub-theme	ChatGPT group's Findings	Grammarly group's Findings
User Experience and Interface	Ease of Use	Mixed initial experiences; improved with practice.	Generally found Grammarly intuitive and easy to use.
	Accessibility	Accessible via web and mobile, convenient for ESL learning.	Seamless integration with browsers and word processors.
Feedback Personalization	Tailored Feedback	Appreciate personalized feedback from ChatGPT.	Desired more customization for individual needs.
	Desire for Improvement	Acknowledged the need for further improvements.	Suggested more tailored feedback for specific struggles
Comparison with Traditional Feedback	Supplementary Nature	Seen as a supplement to traditional feedback.	Mostly viewed as complementary to human feedback.
	Value of Human Feedback	Recognized the value of human feedback for depth and context.	Appreciated AI feedback but acknowledged limitations.
Feedback Accuracy and Reliability	Trustworthiness	Generally trusted feedback for error identification.	High trust in accuracy; some preferred verification.
	Need for Verification	Some preferred cross-referencing for accuracy.	Few expressed needs for additional verification.

i) User Experience and Accessibility

One of the key themes in the qualitative findings is user experience and accessibility, it explored how participants from both groups experienced their usage during the intervention and their opinions about the accessibility of both tools for academic writing.

For Pakistani ESL students, the usability and accessibility of ChatGPT and Grammarly as automated feedback tools are essential considerations, especially in a context where access to technology and internet connectivity may vary. Students may value tools that offer intuitive interfaces and can be easily accessed on various devices, ensuring flexibility in usage across different learning environments.

Sub-Theme1: Ease of Use

Students in the ChatGPT group noted that the tool was intuitive and easy to navigate, while others had mixed feelings.

"I see ChatGPT as a lifesaver for students like me who want to improve but easily and effectively." (GPT22)

However, there were variations in the initial experience with some students finding it slightly challenging to adapt to the interface. While ChatGPT posed some initial challenges in terms of usability for certain students, with time and practice they were able to adapt to its interface and functionalities.

"I was not impressed by ChatGPT at first but gradually I grasped its features" (GPT24)

Some students initially struggled with ChatGPT's interface, particularly its chat-based format, which felt less intuitive for editing purposes. However, with practice and familiarity, students were able to navigate ChatGPT more comfortably, albeit with some initial learning curves.

"I was not in favour of ChatGPT, at the beginning but when I used it, I was impressed by its user-friendly interface and conversational style which is indeed easy to use." (GPT2)

On the other hand, Students in the Grammarly group reported more favorable remarks for its user-friendly features, real-time feedback, quick error detection, and suggestions.

"Grammarly is convenient to use and manage, as it is handy, can be used in phone, computer, and laptop, it detects errors, and the plus point is the word suggestions it provides" (G19)

Most students from the Grammarly group unanimously found it beneficial with its straightforward interface design, facilitating students to learn smoothly, and allowing them to quickly grasp its functionalities and incorporate them into their writing process.

"I liked its features like its keyboard suggestions in the phone, simple interface and context-based word suggestions in our writings" (G11)

Grammarly's ease of navigation was particularly appreciated, making it simpler for students to access and apply feedback effectively.

"Grammarly is easy to use, and it is quite simple for students to learn it and get benefits" (G4).

Sub-Theme 2: Accessibility

For the participants of the ChatGPT group accessibility to ChatGPT was of no issue as they could use its web-based platform and its compatibility with messaging apps ensured that students could access feedback and suggestions conveniently at any time and from any location.

"I can access it in my mobile app and browser too, so it is making my task easy for me" (GPT22)

The responsive design of ChatGPT allowed for seamless transitions between different devices, enabling students to continue their writing tasks uninterrupted across various environments.

Similarly, accessibility was not a significant issue for students in the Grammarly group. Once students became accustomed to Grammarly, they were able to navigate through its interface with moderate ease.

"It is really handy to use, once I was familiar with its features, I was so comfortable using it" (G8)

Grammarly's browser extension and integration with popular word processing software such as Microsoft Word and Google Docs made it easily accessible during various writing tasks.

"I have installed its app in my phone and its browser extension in my laptop has helped me to use it" (G16)

The availability of Grammarly across various devices was appreciated by students. As it allowed participants to access feedback and suggestions conveniently at any time and from any location.

"...not just for a particular time but throughout your day at any device and any place I use Grammarly now" (G13)

ii) **Feedback Personalization**

In the Pakistani ESL context, students may have diverse language learning needs and preferences based on factors such as educational background, proficiency level and language goals. Therefore, personalized feedback from ChatGPT and Grammarly that addresses specific language challenges relevant to Pakistani learners, such as grammar, vocabulary, and sentence structure, may be highly valued.

This theme delves into students' perceptions regarding the personalization of the feedback provided by ChatGPT and Grammarly. It explores how well these tools cater to individual learning needs and preferences, as well as any desires for further customization.

Sub-Theme 1: Tailored Feedback

ESL students across both groups appreciated the personalized nature of the feedback offered by ChatGPT and Grammarly, recognizing its alignment with their individual language learning needs and preferences.

Participants in the ChatGPT group valued the tailored feedback provided by the tools, which addressed specific areas of improvement based on their writing samples.

"I found ChatGPT's feedback to be personalized and relevant to my writing style and language proficiency level. It offered suggestions that were tailored to my individual learning needs." (GPT1)

"ChatGPT's feedback felt personalized and targeted, focusing on areas where I needed the most improvement. It helped me identify my weaknesses and work on them effectively." (GPT20)

Similarly, students in the Grammarly Group appreciated the customized feedback offered by the AI-powered tool, which addressed their unique writing challenges and language preferences.

"I liked how Grammarly's automated feedback on my writing was tailored according to standard suggestions however, it provided suggestions that were specific to my areas of weakness in English writing and helped me improve them gradually." (G4)

"Grammarly's feedback was standard yet personalized and adaptive, adapting to my writing style and offering suggestions that resonated with my learning goals. It made the learning process more engaging and effective." (G9)

Sub-Theme 2: Desire For Improvement

Despite the personalized feedback provided by ChatGPT and Grammarly, some students expressed a desire for further customization to better address their specific challenges and learning styles.

A few participants in the ChatGPT group felt that while the feedback provided by the tool was helpful, there was room for improvement in terms of tailoring it to their individual learning preferences.

"I appreciate the automated feedback provided by ChatGPT on my writing skills, but I felt that it could be more customized to my specific writing challenges and language goals. More options for personalization would enhance the learning experience." (GPT16)

"There were times when I felt the feedback was too generic and could be more personalized." (GPT6)

Similarly, students in the Grammarly group expressed a desire for more customized options to better align the tool's feedback with their individual learning needs and preferences.

"Grammarly's feedback was helpful, but I wished there were more options to customize it according to my writing goals and language proficiency level. A more tailored learning experience."(G14)

iii) Comparison with Traditional Feedback

In exploring the efficacy of AI tools like ChatGPT and Grammarly, students expressed their views on how these automated systems compared to traditional feedback methods provided by teachers or peers. This theme delves into the perceived strengths and limitations of AI-driven feedback in comparison to the nuanced insights and personalized guidance offered by human feedback.

Traditional ESL education in Pakistan relies heavily on teacher-led instruction and feedback. Therefore, Pakistani ESL students may compare the automated feedback provided by ChatGPT and Grammarly with the feedback they received from teachers or peers. While recognizing the convenience and accessibility of AI-driven AWE, students may also acknowledge the unique insights and contextual understanding offered by human feedback.

Sub-Theme 1: Supplementary Tools

Participants from both groups recognized ChatGPT and Grammarly as valuable supplements to traditional feedback rather than outright replacements. While they appreciated the immediacy and consistency of AI-generated feedback tools, they also acknowledged the irreplaceable role of human feedback in their improvements of English Language writing skills. Students in the ChatGPT group appreciated the quick feedback provided by the AI tool but highlighted its limitations in providing comprehensive feedback like a teacher or peer.

"While ChatGPT helped me identify errors quickly, it lacks the depth and contextual understanding that human feedback offers" (GPT23)

"ChatGPT is useful for picking out grammar mistakes, but it doesn't provide the personalized guidance that a teacher can offer based on my writing style." (GPT11)

Similarly, participants in the Grammarly group valued the efficiency of Grammarly in catching errors but emphasized the need for human feedback to address deeper aspects of their writing.

"Grammarly is great for proofreading, but it can't replace the detailed feedback I get from my teacher on the overall coherence and structure of my essays" (G7)

Sub-Theme 2: Value of Human Feedback

Despite the convenience of AI tools, students emphasized the unique value of human feedback in providing personalized guidance and fostering deeper learning. Students in the ChatGPT group highlighted the importance of human feedback in offering qualitative insights and constructive feedback that ChatGPT and Grammarly cannot replace and replicate.

"While ChatGPT helps identify grammar mistakes, it cannot provide meaningful explanations and suggestions for improvement like a teacher can." (GPT19)

Human feedback goes beyond just correcting errors; it helps me understand the underlying principles of writing and improves my overall writing skills." (GPT15)

"I didn't find the feedback provided by ChatGPT helpful in developing coherent arguments and organizing my ideas logically." (GPT2)

Participants in the Grammarly group echoed similar sentiments, emphasizing the holistic nature of human feedback in addressing not just grammatical errors but also stylistic and structural aspects of their writing.

"I appreciate Grammarly for catching typos but it's my teachers' feedback that helps me refine my arguments and refine my writing style." (G10)

"Human feedback also helps me develop my creativity and expressiveness in writing, which AI tools may overlook" (G7)

"Human feedback provides valuable insights into the coherence and flow of my writing, which Grammarly cannot fully capture." (G12).

iv) Feedback Accuracy and Reliability

This theme explores ESL students' perceptions regarding the accuracy and reliability of the feedback provided by ChatGPT and Grammarly. It investigates whether ESL students of ChatGPT and Grammarly groups perceive the feedback generated by Grammarly and ChatGPT for their English language writing skills as trustworthy in identifying grammatical errors and offering suggestions for improvement and whether they feel the need to independently verify suggestions regarding vocabulary, grammar, and stylistics to ensure accuracy.

In the Pakistani ESL context, where English proficiency is often linked to academic and professional success, students place a premium on the accuracy and reliability of feedback provided by language learning tools. Pakistani ESL students may trust ChatGPT and Grammarly to identify grammatical errors and provide relevant suggestions for improvements, but they may also exercise caution and verify suggestions to ensure accuracy, reflecting a desire for high-quality feedback aligned with their English language learning goals.

Sub-Theme 1: Trustworthiness

Students generally expressed trust in the accuracy of feedback provided by both ChatGPT and Grammarly, particularly in identifying grammatical errors and offering language enhancement suggestions.

Participants in the ChatGPT group acknowledged the reliability of the tool's feedback, emphasizing its effectiveness in pinpointing grammatical errors and providing relevant suggestions for improvements.

I found ChatGPT's feedback to be trustworthy and accurate in identifying grammatical errors in my writing. It helped me correct mistakes and refine my language usage" (GPT8)

"ChatGPT's feedback was reliable in detecting Grammatical errors and offering suggestions for improvement. I trusted its recommendations and used them to enhance the quality of my writing" (GPT14)

Similarly, students in the Grammarly group expressed confidence in the tool's feedback, citing its ability to accurately identify errors and offer meaningful corrections.

"Grammarly's feedback is quite accurate, and the suggestions are correct so I can rely on the automated feedback provided by Grammarly on my writing skills." (G5)

Students also highlighted that it was the error detection and suggestion of alternative phrases which they relied on the feedback provided by Grammarly.

"It was reliable in highlighting grammatical mistakes and suggesting alternative phrasing" (G3)

Sub-Theme 2: Need for Verification

Despite their trust in the feedback provided by ChatGPT and Grammarly, some students expressed a preference for independently verifying suggestions to ensure the accuracy of the feedback provided by their respective feedback tools.

A few participants in the ChatGPT group felt the need to verify suggestions independently, especially for more complex grammatical issues or subtle writing conventions.

"While I trusted ChatGPT's feedback for basic grammatical errors, I preferred to double-check suggestions for more advanced writing rules. It is always good to verify things on your own to ensure accuracy." (GPT8)

Student's views for cross-checking ChatGPT feedback as it could not provide real context-based feedback to the students

"I appreciated ChatGPT's feedback, but for certain writing rules and tips, I felt the need to verify suggestions independently to ensure accuracy. It's important to cross-reference to avoid potential errors because it can provide feedback that could be general and sometimes, we need context-based feedback, so I cross-checked the feedback sometimes." (GPT14)

Similarly, students in the Grammarly group acknowledged the importance of independence in verifying suggestions, especially for complex grammatical issues or stylistic choices.

"It was good to practice with Grammarly, but I used to check its feedback from other resources, for certain grammatical roles and stylistic choices." (G9)

It was not only suggestions for words of grammar but writing style as well which was cross-checked by students in the Grammarly group. It provided only built-in grammatical, vocabulary and stylistic suggestions which was not entirely convenient for students of their writing style.

"I used to write long sentences and Grammarly's feedback underlined my sentences with yellow lines indicating that they could be written in another way but to clear my doubts I used to check my sentence structure by myself and didn't compromise on my personal writing style." (G7).

5. DISCUSSION

5.1 Quantitative Data

The quantitative data obtained from this study provides evidence that both ChatGPT and Grammarly had a positive impact on several dimensions of writing abilities among ESL learners following the intervention. This finding is consistent with the already available literature on language learning aids powered by artificial intelligence.

Improvements were seen in task responsiveness, coherence, cohesion, lexical resource, and grammatical accuracy among the ChatGPT study group. These findings corroborate the wider study that highlights the significance of interactive AI platforms in improving language output (Fatin et al., 2024; Gordon et al., 2024). The enhancements in coherence and cohesiveness shown in ChatGPT can be attributed to the iterative feedback mechanism, which aligns with research that emphasizes the advantages of engaging continuously in language activities (Gordon et al., 2024; Johnson et al., 2023). The observed increase in lexical resource aligns with literature indicating that exposure to a wide range of language using artificial intelligence technologies might result

in a more extensive lexical repertoire (Baskara, 2023; Johnson et al., 2023). Enhancements in grammatical precision and breadth support the claim that AI-powered tools can greatly assist in acquiring proficiency in intricate syntax and grammatical structures (Baskara, 2023; Ullah et al., 2024).

Similarly, the Grammarly group demonstrated enhancements in various language categories. The present findings align with previous research that emphasize the significance of Grammarly in improving task-specific replies and augmenting general communication abilities (Xiao & Zhi, 2023; Abd El Rasoul et al., 2024). Studies have shown that the enhancement in coherence and cohesion skills may be attributed to Grammarly's real-time feedback systems, which contribute to the improvement of written text flow and organization (Alam et al., 2023; Fahmi & Cahyono, 2021). The improved lexical resource abilities of the group are consistent with research that demonstrate the efficacy of Grammarly in providing alternative word options, decreasing repeats, and enhancing language literacy (Faisal & Carabella, 2023; Mohammed et al., 2023). Results indicating improvements in grammatical correctness and range emphasize the influence of Grammarly on sentence formation and syntax, highlighting its effectiveness in improving grammatical competence (Syapitri et al., 2023; Idham et al., 2024).

The comparison of both groups revealed that although both groups showed notable increases, there were no statistically significant differences in terms of total language proficiency gains between the ChatGPT and Grammarly groups. This discovery is consistent with previous studies indicating that various AI-driven language tools have similar impacts when used with similar initial levels of language competence (Mahapatra, 2024; Shoah et al., 2024). The results suggest that both tools are similarly efficacious in improving different facets of writing abilities, making similar contributions to the development of English writing skills (Salam et al., 2024).

5.2 Qualitative Data

The study examines ESL students' perceptions about ChatGPT and Grammarly revealing four key themes providing a comprehensive understanding of AWE feedback systems.

5.2.1 User Experience and Accessibility

The efficacy of ChatGPT and Grammarly was greatly impacted by user experience and accessibility characteristics. Grammarly was generally perceived as more user-friendly by participants, however both groups saw an enhancement in user experiences as time progressed. Initially, certain users encountered difficulties with ChatGPT's chat-based structure, but their

experience with it enhanced its usefulness, suggesting the presence of a learning curve (Abdullayeva & Musayeva, 2023). The participants highly valued the accessibility of both tools across many platforms, such as online and mobile devices, which enabled their seamless incorporation into their everyday routines (Ayu & Pratiwi, 2021; O'Neill & Russell, 2019).

5.2.2 A Comparative Analysis of Automated Feedback Tools and Traditional Feedback

Participants emphasized that these tools should supplement rather than replace customary feedback methods. The results underscore that while ChatGPT and Grammarly exhibit competence in identifying grammatical issues and providing general suggestions, they lack the contextual understanding and qualitative depth offered by human input. ESL learners offered a balanced approach that integrates automated and traditional feedback to create a comprehensive feedback ecosystem that enhances learning outcomes (Buzdar, 2024).

5.2.3 Feedback Accuracy and Reliability

Overall, the participants demonstrated a notable level of confidence in the accuracy and reliability of the comments provided by ChatGPT and Grammarly. Accurate feedback, particularly in identifying grammatical errors, is essential for language proficiency, and both systems demonstrated effectiveness in this regard (Purnamika Utami & Mahardika, 2023).

While ChatGPT and Grammarly showed reliability in identifying superficial errors, participants recognized the limitations of these tools in providing feedback that is specifically suited to individual situations. Interpersonal communication was still considered crucial for tackling more intricate language challenges to give the most insightful and accurate guidance (Mahapatra, 2024).

5.3 Feedback Personalization

Individualized feedback is seen as a vital component in the effectiveness of ChatGPT and Grammarly. The participants conveyed their contentment with the tailored feedback provided by these tools, which served their individual learning needs, addressing specific writing challenges and levels of language proficiency. The tailored approach enabled the identification of areas in need of improvement by students and provided precise suggestions that had a beneficial impact on their cumulative language development (Wu et al., 2023; Ismail & Heydarnejad, 2023).

The qualitative results found that ESL students are generally satisfied with ChatGPT and Grammarly for automated feedback. ChatGPT's conversational feedback approach and Grammarly's emphasis on vocabulary and grammatical precision are particularly appreciated. Despite initial usability issues, users reported improved user experiences over time. Instructors can create a conducive learning environment for language proficiency by leveraging AI-generated feedback while acknowledging its limitations.

6. CONCLUSION & RECOMMENDATIONS

This study evaluates the effectiveness of Grammarly and ChatGPT as AWE tool for improving the writing abilities of Pakistani ESL students. The results show that both tools have comparable efficacy in enhancing writing skills, such as Task Response, Coherence and Cohesion, Lexical Recourse, and Grammatical Range and correctness. However, there is no statistically significant difference between them, suggesting that both tools have similar effects on ESL learners' writing abilities.

The study also explores the perspectives of ESL learners about automated feedback provided by ChatGPT and Grammarly. Qualitative analysis offers a deeper understanding of students' engagement with these technological tools, enhancing the wider discussion on the role of AI tools in writing evaluation.

This research contributes to the growth of knowledge in teaching English writing by providing empirical proof of the efficacy of Grammarly and ChatGPT as automated feedback systems for ESL learners. It provides useful information that can guide educators in making effective judgments about using these two AI tools in teaching academic writing.

Further research is needed to understand the long-term effects of ChatGPT and Grammarly on ESL learners' writing skills, including longitudinal studies, teacher training programs, ethical considerations, and cross-cultural comparisons - this could help inform culturally sensitive, pedagogical practices, and promote academic integrity.

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