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Exploring Postgraduates' Attitudes towards Grammarly as an Automated Writing Evaluation Tool in Academic Writing

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Abstract

Automated writing evaluation (AWE) tools are viral among English as a foreign language (EFL) students in academic writing. Thus, the current study explored EFL postgraduates' attitudes toward using Grammarly as an AWE tool in academic writing. Furthermore, the study investigated whether there were significant differences in postgraduates' attitudes toward using Grammarly in academic writing based on gender. The study participants were 23 postgraduate students at the English Department of a public university in Saudi Arabia. The study employed a mixed-methods approach to collect data on research design, utilizing both a questionnaire and interview questions. The quantitative data was analyzed using SPSS software, while the qualitative data was analyzed thematically. The findings of the quantitative analysis revealed that the postgraduates had a positive attitude toward using Grammarly in academic writing. The independent t-test resulted in no significant differences among the postgraduates' attitudes based on gender. Moreover, based on quantitative and qualitative data analysis, Grammarly provides constructive feedback on students' writing as it positively impacts academic writing regarding clarity, accuracy, style, and mechanics. Nonetheless, the results reveal some limitations of using Grammarly, such as incorrect suggestions and an overdependence on AWE tools, which can diminish the writer's expression.

Keywords: Academic writing, attitudes, automated writing evaluation, EFL, Grammarly, postgraduate.

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1. INTRODUCTION

Automated writing evaluation (AWE) tools are an exciting area in English as a foreign language (Guo et al., 2022; Huang et al., 2020; Parra & Calero, 2019). AWE tools help English as a foreign language (EFL) students develop and improve their writing in vocabulary, grammar, style, and organization, and help EFL students write accurately (Arisandi & Sudarajat, 2023; Fitriana & Nurazni, 2022). It is helpful for students and helps EFL teachers decrease burdens by giving them a chance to focus on other students (Dizon & Gayed, 2021; Grimes & Warschauer, 2010).

Academic writing is a critical and demanding skill for many postgraduate students, particularly EFL students who write a second or foreign language and need help with writing correctly. Even if they are aware of grammatical structure, they make several mistakes in terms of vocabulary usage and mechanics (spelling and punctuation), often leaving them needing additional support. Hakiki (2021) stated that EFL students need help to write their assignments correctly, even if they repeat them several times. Effective communication is an essential requirement in academia. Since the ability to express the writers' ideas is a crucial component to success, writing skills play a crucial role in conveying the writers' ideas.

In response to these needs, AWE tools, such as Grammarly, have become accessible resources that offer immediate feedback and foster learner autonomy to ensure their writing quality. One of the favored AWE tools among EFL students is Grammarly, which provides extensive corrective suggestions based on artificial intelligence (Arisandi & Sudarajat, 2023). Moreover, it aids EFL instructors in reducing teaching encumbrance (Huang et al., 2020). Grammarly can be defined as a technology-based assistant that evaluates users' writing in terms of grammar, spelling, and writing style. In addition, it includes a plagiarism detection feature to discover any kind of plagiarism in writing. It also provides tips and suggestions for a writer to develop a paragraph that has been checked (Fitriana & Nurazni, 2022). Grammarly provides detailed feedback for most flagged usages, improving response accuracy (Suzuki et al., 2019). Grammarly offers synchronous, immediate, automated written corrective feedback (AWCF) (Guo et al., 2022).

Like many second-language learners, Arab postgraduate students can benefit significantly from tools like Grammarly to refine and enhance their academic writing. EFL postgraduates can use this tool to evaluate and develop their academic writing. Writing is a significant challenge due to the complex interplay of many cognitive and linguistic abilities (Faller, 2018; Maharani, 2018). In contrast, the postgraduates receive unidirectional feedback that is considered a barrier to progressing and negotiating with their supervisors (Al Qunayeer, 2020). AWCF has made a noticeable contribution to developing EFL students' writing. Specifically, Guo et al. (2022) show that the errors in students' writing decreased after using Grammarly's corrective feedback. Providing feedback on students' writing is a crucial task in academic advising. Nevertheless, the communication between students and their supervisors is considered a barrier to progress when they provide extensive feedback on students' writing. An appropriate approach is to blend automated writing evaluation tools with supervisors' corrective feedback. This approach may enhance students' writing competence and self-regulation (Cavalieri & Dianati, 2016).

Recently, AWE has been a growing tool employed by FL teachers in second-language writing classrooms. This appeared due to teachers' belief that AWE tools may assist lower-level skills, while teachers' feedback assists high-level skills (Link et al., 2022). Although significant studies (Arisandi & Sudarajat, 2023; Fitriana & Nurazni, 2022; Guo et al., 2022; Suzuki et al., 2019) have been conducted on using AWE tools in academic writing, more thorough investigations are needed, especially to explore postgraduate attitudes toward using Grammarly as an AWE in academic writing in higher education. This study tries to fill the gap in previous studies (Arisandi & Sudarajat, 2023; Fitriana & Nurazni, 2022; Ghufroon & Rosyida, 2018; Guo et al., 2022; Suzuki et al., 2019), which put a heavy focus on the impact of AWE on academic writing. The postgraduates face challenges in receiving limited supervision time, and therefore, there is a need for a more interactive approach that combines AWE tools such as Grammarly in

academic writing with supervisors' feedback within the Saudi context, with a particular focus on gender differences in attitudes.

The importance of this study lies in the limited research exploring gender-based differences in students' perceptions and attitudes toward AWE tools within the Saudi context. The gap in understanding how male and female postgraduate students respond to tools like Grammarly highlights the need for further investigation. Identifying these gender differences can help educators and AWE developers provide more tailored feedback and support. Including gender as a variable enables the development of more inclusive educational strategies that address diverse learner needs (Tambunan et al., 2022; Yousofi, 2022). This study specifically examines postgraduate students' attitudes toward Grammarly during research proposal development. All participants were in their final semester and actively engaged in writing their proposals, an academically demanding task where AWE tools are frequently used. This context provides a meaningful backdrop for analyzing gender-based differences in how students engage with such technology.

Based on the background above, this study was conducted to answer the following research questions:

1. What are the attitudes of postgraduate EFL students toward using Grammarly as an AWE in academic writing in general?
2. Are there any differences between male and female students in terms of their attitudes toward Grammarly as an AWE in academic writing?

2. LITERATURE REVIEW

2.1 Theoretical Perspective on Grammarly as an AWE Tool in Academic Writing

The investigation of the current study on the attitudes of postgraduate EFL students toward using Grammarly as an AWE in academic writing reported in this study is grounded on two theoretical perspectives: the Expectancy Theory (Vroom, 1964) and the Technology Acceptance Model (TAM) (Davis, 1989). The Expectancy Theory investigates the correlation between technology usage, educational achievements, the impact of learners' expectations, perceived usefulness, and emotional response on their motivation and involvement in technology-based learning settings. The term 'expectancy' refers to the correlation of behavior's outcomes in the individuals' minds, which has an impact on individuals' perceptions of their work performance (Thoha & Rasidi, 2020).

Furthermore, Expectancy Theory is one of the most favorable models of individual motivation and how individuals make decisions and choose behaviors based on their expectations of achieving specific outcomes (Burton et al., 1992; Roca et al., 2006). Davis (1989) argues that TAM is a theoretical framework that provides insightful remarks on how individuals accept and use technology and users' attitudes toward the usefulness and ease of using technology. The TAM framework has been widely employed in prior research on the acceptance of technology (Al-Gahtani, 2016; Lee et al., 2014; Sumak et al., 2011; Wu & Zhang, 2014).

2.2 The Effectiveness of Grammarly as a Writing Evaluation Tool

Grammarly, as an AWE, has been gaining increasing interest in EFL contexts due to its ability to enhance students' writing. On the other hand, previous studies (Dewi, 2022; Dizon & Gayed, 2021; Hakiki, 2021; Nova, 2018; Yousofi, 2022) reflect a multifaceted, sometimes contradictory view of results on effectiveness, pedagogical value, and attitudes towards it. Regarding Grammarly's positive affordances, Dizon and Gayed (2021) conducted an 8-week experimental study with Japanese university students and revealed that L2 students produced a few grammatical mistakes when they used Grammarly as an assistant, which provides immediate corrective feedback.

This aligns with the studies undertaken by Dewi (2022), Ghufon and Rosyida (2018), and Hakiki (2021). In Dewi's (2022) mixed-method research study in Indonesia, 75 EFL writing students reported that Grammarly was useful for grammar, vocabulary, and paraphrasing. The students also showed positive perceptions of using Grammarly to edit their writing. Besides that, Grammarly has some drawbacks regarding free accessibility to all features. Further, Hakiki (2021) also validated these perspectives, pointing out that students found Grammarly helpful in rectifying surface errors, especially in essay writing. Ghufon and Rosyida (2018) indicated that using Grammarly reduces grammatical and spelling mistakes among EFL learners and provides corrective feedback on students' writing regarding spelling, grammar, vocabulary usage, and plagiarism detection.

Grammarly provides corrective feedback on spelling and punctuation errors, it also identifies a variety of grammatical mistakes, such as fragment sentences (Daniels & Leslie, 2013; Ghufon & Rosyida, 2018; Hakiki, 2021). Grimes and Warschauer (2010) stated that AWE is a tool consisting of two essential engines, scoring and feedback engines, relying upon a specific type of artificial intelligence. AWE is considered a method that is appropriate in writing classrooms of L2 students (Miranty et al., 2021; Tambunan et al., 2022; Zhai & Ma, 2022).

2.3 Previous Related Studies

Regarding studies on the effectiveness of AWE, Ngo et al. (2022) acknowledged that an AWE tool is effective for students at intermediate and advanced levels. Ware (2018) reported that AWE helps teachers sort students according to their proficiency level and provides different options to extend the evaluation scale. Other studies highlighted the role of AWE tools in academic writing (Alharbi, 2023; Dizon & Gayed, 2021; Ghufon & Rosyida, 2018; Parra & Calero, 2019). Parra and Calero (2019) argue that AWE tools positively impact students' academic writing performance. Other studies (Miranty et al., 2021; Park, 2019) argued that even though AWE is effective, teachers need corrective feedback. Furthermore, Karyuatry's (2018) study revealed that Grammarly is an appropriate and effective tool that can be used to reduce students' writing problems. Ashrafganjoe et al. (2022) evaluated the influence of Grammarly as a program that provides immediate feedback on students' writing.

Regarding studies on the attitudes toward Grammarly as an AWE, many previous studies (Dewi, 2022; Fahmi & Cahyono, 2021; Fitriana & Nurazni, 2022; Fitria et al., 2022; Hakiki, 2021; Pratama, 2021; Yousofi, 2022) have examined students' attitudes regarding Grammarly. Fahmi and Cahyono (2021) indicated that EFL students have positive attitudes toward using Grammarly at high and low English proficiency levels. Similarly, Hakiki (2021) indicated that Grammarly has some weaknesses and lacks accuracy. Therefore, there is a need for teachers' feedback, and advanced students require different methods to improve their writing.

In addition, Yousofi's (2022) study revealed that EFL teachers had positive attitudes toward Grammarly as it can aid EFL students in enhancing their academic writing. Pratama (2021) declared that the students thought that Grammarly helps develop their grammar and check their writing in terms of mechanics (spelling, punctuation, and grammatical structure). However, the students indicated that Grammarly has some downsides, such as requiring a good internet connection to use Grammarly. In addition, the students argued that sometimes Grammarly provides inappropriate feedback. Fitria et al. (2022) found that while students generally had positive attitudes toward Grammarly as a writing assistant for their undergraduate theses, they also noted drawbacks such as the requirement to pay for access to certain features.

While Grammarly is a popular tool for academic writing and offers benefits like immediate feedback, it has several disadvantages, including misleading feedback (Nova, 2018), lack of contextual understanding crucial for higher-order writing skills (Llausas et al., 2024; Nova, 2018), potential over-reliance that may hinder students' writing development (Llausas et al., 2024; Zaragoza et al., 2024), and restricted features in the free version (Fitriana & Nurazni, 2022). Although many studies report students' positive attitudes toward Grammarly, others (Aidil, 2021; Ananda et al., 2021; Fitriana & Nurazni, 2022) highlight downsides such as vague suggestions, over-checking, miscorrection, limited free access, internet connectivity issues, and difficulties

understanding Grammarly's feedback. In conclusion, providing corrective feedback on students' writing remains a vital role of academic advising, while AWE tools like Grammarly help supervisors focus on other aspects of academic support, potentially enhancing students' writing proficiency and self-regulation (Cavalieri & Dianati, 2016).

3. METHODS

The current study adopted a mixed-methods approach in collecting the data to enrich our understanding of the postgraduates' attitudes toward using Grammarly as an AWE tool in academic writing. This method provides an accurate measure of a phenomenon where the researchers use two or more varied methods (Salehi & Golafshani, 2010) to reveal the findings of the research questions.

3.1 Study Setting and Participants

The sample of this study consisted of 8 male and 15 female EFL postgraduates. All the participants were local Saudi students (Table 1). Furthermore, their ages ranged from 25 to 32 years old, and their native language is Arabic. The postgraduates were joining the Applied Linguistics program at the English Department at a public university in Saudi Arabia. They were in the final semester of research proposal development in the Applied Linguistics program. The study adopted a purposive sampling method to collect the data. Since the main objective of this study was focused on EFL postgraduates, the researchers determined the sample to include male and female EFL postgraduates in the final year. The rationale behind this selection was that the postgraduates had started writing their proposals.

Table 1. Demographic information of the participants.

Questionnaire participants						
N	GENDER	%	Educational background	English proficiency level	Prior experience with Grammarly	Digital literacy
8	Male	34.80%	MA	Advanced	Regular User	Proficient
15	Female	65.20%	MA	Advanced	Regular User	Proficient
Interview Participants						
Pseudonym	Gender	%	Educational background	English proficiency level	Prior experience with Grammarly	Digital literacy
P1	Male	80%	MA	Advanced	Regular User	Proficient
P2	Male		MA	Advanced	Regular User	Proficient
P3	Female		MA	Advanced	Regular User	Proficient
P4	Female		MA	Advanced	Regular User	Proficient
P5	Female		MA	Advanced	Regular User	Proficient
P6	Female		MA	Advanced	Regular User	Proficient

Table 1 presents the distribution of the participants based on their gender. As presented in Table 1, the male postgraduate students who participated in this questionnaire were (34.80%), whereas the female postgraduate students were (65.20%). Furthermore, it presents the participants' educational background, English proficiency level, prior experience with Grammarly, and digital literacy.

3.2 Instruments

The first instrument used in this study was a questionnaire to collect data. The researchers adopted the questionnaire from Yousofi's (2022) study. The questionnaire passed the reliability

test with a high internal consistency of all items, with 0.805. of the Cronbach's alpha value. The questionnaire consisted of 12 statements following the ABC model developed by Breckler (1984). The ABC model of attitudes is divided into the affective construct, behavioral construct, and cognitive construct. Solomon et al. (2016) stated that the ABC Model of attitudes consists of three components: affective (emotions and feelings), which describes how we feel about something emotionally; behavioral (behavior and intentions), which involves the behaviors brought about by a person's mood; and cognitive (thoughts and beliefs) is what a person believes or thinks about something. These three elements combined provide a comprehensive image of how attitudes are formed and how attitudes affect behavior (Eagly & Chaiken, 1993). The questionnaire used the form of a Likert scale with five options: strongly disagree, to strongly agree.

The second instrument was a semi-structured interview. Some of the participants were interviewed to deeply understand their attitudes with follow-up questions, clarification, interpretation, and justification of their responses. The researchers adopted the interview questions from Yousofi (2022). The interview consisted of seven questions, which were based on the effective, behavioral, and cognitive constructs.

3.3 Procedures

Prior to data collection, the approval of the institutional review board with the letter number of MUREC-Mar. 10/COM-2024/8-5 was obtained from the Deanship of Scientific Research. The data was collected throughout the academic year of 2024. The selected participants were asked to use a premium Grammarly account for a month in their academic writing. Additionally, the researchers provided a tutorial on how to use all the features to generate better results in their writing. The researchers asked the participants to answer the questionnaire by the end of the determined duration.

Concerning the interview, the researchers determined that a few students were to be interviewed based on their proficiency level to understand their attitudes, relying upon a semi-structured interview instrument. It consisted of seven questions. The questionnaire was divided into three parts: students' perspectives on Grammarly's effectiveness for EFL learners, writing aspects Grammarly helps improve, and overall student views of Grammarly as an AWE tool.

3.4 Data Analysis

The participants were classified based on their gender (male or female), and the data were analyzed quantitatively and qualitatively. A quantitative method was employed to analyze the questionnaire via SPSS software; mean, standard deviations, and independent t-tests were calculated. The results have been shown in descriptive statistical forms to provide clear findings. The means were categorized as high (3.67-5), moderate (2.34-3.66), and low (1-2.33). The means were categorized into three cut-off scores utilized in previous research (AbuSa'aleek & Alotaibi, 2022; AbuSa'aleek & Yaghi, 2024; Ishtaiwa & Aburezeq, 2015; Jamrus & Razali, 2021). The researchers used these cut-off scores to determine the status of each questionnaire item.

The qualitative data obtained from the interviews were collected upon the questionnaire. They were conducted online using Google Meet and Zoom. All interviews were recorded after obtaining permission from the participants to facilitate the process of data collection and create transcripts that were analyzed and interpreted based on thematic analysis (Braun & Clarke, 2021). The researchers used these transcripts to code the themes of the answers as the questions are divided into three subscales: affective construct, behavioral construct, and cognitive construct.

4. RESULTS

Exploratory data analysis was performed before additional analyses to ensure that the data met the necessary assumptions. The internal reliability values for each questionnaire domain were

assessed using Cronbach's alpha. Further, the Kolmogorov-Smirnov and Shapiro-Wilk Tests of Normality were performed to assess the normality of a data distribution.

Table 2. Internal reliability values for each of the questionnaire's domains.

Questionnaire subscales	Cronbach's alpha
Affective	0.854
Behavioral	0.854
Cognitive	0.864
Overall value	0.857

The internal reliability values for each questionnaire domain were measured as shown in Table 2. The overall Cronbach's alpha value of the questionnaire was 0.857. Further, the affective domain got 0.854, while the behavioral domain achieved 0.854, and the cognitive domain reached 0.864. These initial analyses confirmed that the data were suitable for subsequent statistical testing.

Table 3. Test of normality.

	Gender	Kolmogorov-Smirnov ^a			Shapiro-Wilk	
		Statistic	df	Sig.	Statistic	df
The affective construct	Male	.179	8	.200*	.948	8
	Female	.232	15	.030	.892	15
The behavioral construct	Male	.242	8	.187	.876	8
	Female	.090	15	.200*	.984	15
The cognitive construct	Male	.247	8	.162	.843	8
	Female	.200	15	.108	.907	15

Table 3 presents the results from two well-known tests of normality, the Kolmogorov-Smirnov and Shapiro-Wilk Tests. Both tests are more appropriate for small sample sizes. The data were normally distributed, as shown in Table 3.

4.1 Postgraduates' Attitudes Toward Using Grammarly as an AWE Tool in Academic Writing

The following section presents the study's findings in three ways. The first part presents the findings related to the postgraduates' attitudes through the lens of affective, behavioral, and cognitive subscales. In addition, the second part shows the results of the independent t-test that was used to investigate statistical differences among attitudes based on gender. Furthermore, the last part of this chapter provides the findings of the qualitative analysis of the postgraduates' interviews.

Table 4. Descriptive statistics of questionnaire subscales.

Questionnaire Subscales	Mean	Std. deviation	Level
Affective	4.16	0.86	High
Behavioral	3.49	1.11	Moderate
Cognitive	4.16	0.87	High
Total	3.94	0.95	High

High (3.67-5), moderate (2.34-3.66), and low (1- 2.33) apply to mean scores only.

Table 4 addresses the descriptive statistics of the three subscales. Overall, postgraduates' attitudes gained a high score (M=3.94, SD=0.95), indicating that postgraduates had a highly positive attitude toward using Grammarly as an AWE tool in academic writing. In addition, the analysis showed the average mean score and standard deviation of each subscale of postgraduates' attitudes toward using Grammarly as an AWE tool in academic writing. Table 4 indicates that the affective subscale had a Mean score of 4.16 and an SD of 0.86. Moreover, the cognitive subscale scored the highest (Mean=4.16, SD=0.87). However, the behavioral subscale gained the lowest score (Mean=3.49, SD=1.11).

Table 5. Mean and SD of the students' responses on the affective subscale.

No.	Statement	Mean	SD
1.	I am satisfied with the feedback Grammarly provides.	4.17	0.89
2.	I feel that Grammarly's feedback is good for developing writing skills.	4.35	0.83
7.	I like the way Grammarly provides in-depth feedback.	3.96	0.82
12.	Considering all aspects of Grammarly, I am very happy with Grammarly's utilization in writing research proposals.	4.17	0.89
	Total	4.16	0.86

High (3.67-5), moderate (2.34-3.66), and low (1- 2.33) apply to mean scores only.

Table 5 shows the score of the affective subscale of postgraduates' attitudes toward using Grammarly in academic writing. It presents the mean score and standard deviation of each item regarding the affective subscale. The average score of responses to the four items ranged from 4.35 to 3.96. These results indicated that postgraduates felt satisfied with Grammarly's feedback in developing academic writing. Also, they agreed upon the efficiency of Grammarly in writing their proposals, as it provides in-depth feedback. Furthermore, the second item of the affective subscale gained the highest score ($M=4.35$, $SD=0.83$), indicating that postgraduates considered Grammarly feedback effective and helpful in enhancing their academic writing.

Table 6. Mean and SD of the students' responses on the Behavioral subscale

No.	Statement	Mean	SD
3.	I prefer Grammarly feedback to other kinds of feedback, even if Grammarly seems to be complicated due to its in-depth feedback.	3.70	1.15
4.	I want my supervisor to keep providing feedback on my research proposal through Grammarly.	2.74	1.36
8.	I will follow Grammarly's feedback to enhance my writing skills.	4.00	0.85
9	I prefer automated written corrective feedback (Grammarly) to direct or indirect feedback.	3.52	1.08
	Total	3.49	1.11

High (3.67-5), moderate (2.34-3.66), and low (1- 2.33) apply to mean scores only.

Table 6 shows the score of the behavioral subscale of postgraduates' attitudes toward using Grammarly in academic writing. The average score of responses to the four items ranged from 4.00 to 2.74. These findings declare that postgraduates believed that the feedback that Grammarly provides effectively enhances their academic writing, especially in writing their proposals. Also, they agreed that Grammarly is a preferable tool for postgraduates to write their proposals. Additionally, the fourth item of the questionnaire gained the highest score ($M=4$, $SD=0.85$), showing that postgraduates take into consideration the feedback that Grammarly provides to improve their writing skills.

Table 7. Mean and SD of students' responses on the cognitive subscale.

No.	Statement	Mean	SD
5.	I think Grammarly helps students to become autonomous.	4.17	0.89
6.	In my opinion, Grammarly boosts students' self-confidence in writing.	4.22	0.80
10.	From my point of view, Grammarly is adequate for students with different levels.	3.87	1.06
11.	Grammarly is a good assistant for a writer.	4.39	0.72
	Total	4.16	0.87

High (3.67-5), moderate (2.34-3.66), and low (1- 2.33) apply to mean scores only.

Table 7 addresses the score of the cognitive subscale of postgraduates' attitudes toward using Grammarly in academic writing. It reports the mean and standard deviation of each item regarding the cognitive subscale. The average score of responses on the four items ranged from 3.87 to 4.39. The outcomes indicated that postgraduates think that Grammarly enhances students' self-confidence in writing skills as it helps them correct their writing mistakes immediately without going back to the teacher. Furthermore, postgraduates agreed that Grammarly can be considered an assistant for writers at different levels. In addition, the fourth item of the questionnaire gained the highest score ($M=4.39$, $SD=0.72$). This score highlights that postgraduates believed using Grammarly as an assistant boosts the writers' self-confidence.

4.2 Gender Differences in Postgraduates' Attitudes toward Using Grammarly as an AWE Tool

This section shows the results of the independent t-test used to investigate the attitude differences statistically among the students based on gender.

Table 8. The descriptive statistics of postgraduates' gender.

	Gender	N	Mean	Std. deviation	Std. error mean
Affective construct	Male	8	4.22	0.604	0.214
	Female	15	4.13	0.706	0.182
Behavioral construct	Male	8	3.70	1.009	-.35657
	Female	15	3.59	0.699	0.180
Cognitive construct	Male	8	4.17	0.535	0.189
	Female	15	4.16	0.700	0.1807

High (3.67-5), moderate (2.34-3.66), and low (1- 2.33) apply to mean scores only.

Table 8 illustrates the descriptive statistics of postgraduates' gender in three different constructs: affective, behavioral, and cognitive. These statistics summarize the gender differences in postgraduates' scores across the three constructs. The affective construct indicates a high mean in male (M=4.22) and female (M=4.13) postgraduates, indicating positive affective attitudes toward Grammarly. In addition, the cognitive construct yields similarly high mean scores (M=4.17 for males, M=4.16 for females), identifying clear cognitive benefits that result from using Grammarly, such as better comprehension and awareness. Finally, the behavioral construct demonstrates slightly lower means, especially among females (M=3.59), indicating moderate engagement with Grammarly in practice, hence indicating occasional use.

Table 9. Independent sample t-test of the postgraduates' gender.

Construct	Independent sample test	Significance		
	Gender	df	One-sided P	Two-sided P
Affective construct	Equal Variances assumed	21	0.388	0.775
	Equal Variances not assumed	16	0.382	0.765
Behavioral construct	Equal Variances assumed	21	0.377	0.754
	Equal Variances not assumed	10	0.391	0.782
Cognitive construct	Equal Variances assumed	21	0.485	0.969
	Equal Variances not assumed	18	0.483	0.967

The second question of the study aims to investigate whether there are significant differences in postgraduates' attitudes toward using Grammarly as an AWE tool in academic writing based on gender. Thus, an independent sample t-test was conducted for each construct. Table 9 presents the findings of the independent sample t-test, which illustrates that there was no significant difference among male and female postgraduates' attitudes toward using Grammarly as an AWE tool in academic writing in the three constructs: affective, behavioral, and cognitive constructs. The P value of the three t-tests regarding the gender of postgraduates for the affective construct was 0.388, for the behavioral construct 0.377, and for the cognitive construct 0.485, which are higher than the significance level of 0.05. This indicates that there was no significant difference between male and female attitudes.

4.3 Themes Emerged From the Qualitative Analysis of the Semi-Structured Interview

4.3.1 The effectiveness of Grammarly

The first theme that emerged from the interviews was the effectiveness of using Grammarly as an AWE tool in academic writing. The interviews with the male and female postgraduate students showed that Grammarly was an effective and helpful tool in academic writing since all the participants agreed upon the efficiency of Grammarly's feedback. There are several benefits

of using Grammarly in academic writing, such as helping writers enhance their academic writing by identifying mistakes in the text. For instance, P1 stated:

- (1) I feel satisfied with the feedback Grammarly provides, which helps me to find out the mistakes, especially Grammatical and spelling mistakes. (P1)

Another postgraduate student, P2, alluded to the clarity feature in Grammarly. He stated:

- (2) I feel satisfied with Grammarly's feedback because it checks spelling and grammatical errors. Also, I used the function of clarity to make my writing better and to not depend on an editor. (P2)

Indeed, some postgraduate students declared that Grammarly provides feedback on various aspects of academic writing, leading to readable and well-organized text. For example, P3 further explained this feature:

- (3) It offers comprehensive suggestions and corrections covering various writing aspects, including grammar, punctuation, clarity, and style. (P3)

In this regard, the postgraduate students showed positive experiences with Grammarly in academic writing. This shows that Grammarly feedback is helpful and effective for postgraduate students in enhancing their academic writing.

4.3.2 Areas that Grammarly develops

As Grammarly provides immediate corrective feedback on students' writing, the interviews shed light on the writing areas that Grammarly identifies. The postgraduate students highlighted that Grammarly develops several parts and areas of academic writing, which helped these students enhance their academic writing, such as clarity, grammar, spelling, punctuation, and style. For instance, P2 explained how Grammarly helped him write his proposal. He said:

- (4) I think Grammarly is holistic editing because it edits the text grammatically, spelling, and even clarity, making the text clearer. I used Grammarly after writing my proposal because my supervisor commented on the clarity. When I used Grammarly, it pointed out vagueness or ambiguous aspects of how I wrote down my ideas, which helped me find the vague aspects. (P2)

Furthermore, P1 agreed with the same idea that Grammarly is effective in mechanics. He explained:

- (5) Grammarly enhanced specific parts of my writing. For instance, Grammarly highly encouraged me in punctuation, such as the appropriate place of commas and hyphens. (P1)

Moreover, P4 mentioned that Grammarly helped her enhance her punctuation and vocabulary competence. She further explained that Grammarly develops vocabulary competence in writing. She stated:

- (6) Grammarly enhanced my writing, especially in the punctuation part. I usually misplace the punctuation in the correct place in my text. So, after repeated exposure to the feedback, it became easier for me to detect its correct place. There is another point, which is the suggestions section in Grammarly. It helps me choose better word alternatives to deliver the intended meaning. So, with the time passing, I noticed that I was unintentionally employing these words in my text, which developed my vocabulary competence. (P4)

4.3.3 Grammarly and AWE tools

There are several kinds of feedback, such as using AWE tools and teachers' corrective feedback. Throughout the interviews, these types of feedback were highlighted. Regarding AWE tools, most of the participants preferred Grammarly to other AWE tools. For example, P1 declared:

- (7) According to comparing Grammarly to other AWE tools, Grammarly is the best due to its accuracy and promptness. (P1)

Additionally, P5 did not try any other AWE tools, but she considered Grammarly a preferable tool for editing her proposal. She expressed:

- (8) I have never used another program, but I highly prefer Grammarly's feedback for its efficiency and comprehensiveness. Other programs may not provide detailed suggestions to identify writing errors effectively. (P5)

On the other hand, P6 did not prefer Grammarly to other AWE tools. When I asked her if she prefers Grammarly to other types of feedback, she responded:

- (9) I never prefer Grammarly over teachers' feedback and even other AWE tools. (P6)

During the interview, I asked her if she felt satisfied with the feedback Grammarly provides, and she answered:

- (10) I considered Grammarly as an effective tool, but overall, I did not rely on it in my writing due to its inaccurate feedback. (P7)

4.3.4 *Grammarly and teachers' feedback*

Teachers' corrective feedback has been a valuable method to enhance students' writing skills. Nowadays, many AWE tools have been created to aid students in checking their writing by receiving immediate corrective feedback. Based on the interview, the students' attitudes toward Grammarly were explored compared to teachers' corrective feedback. The results show that most participants preferred Grammarly to teachers' feedback for many reasons, such as saving time and avoiding judgments. For instance, P4 expressed:

- (11) Teachers' feedback is good as well, but it requires time. So, the writer needs instant feedback to help him save his effort and time. (P4)

Further, P3 emphasized the preference for Grammarly over teachers' feedback due to saving the writer's time and effort. She further explained:

- (12) I prefer Grammarly over other types of feedback. Unlike traditional proofreading methods or manual editing, Grammarly offers instant feedback and correction, which saves time and effort. Also, it creates a supportive learning environment where I can confidently improve my writing skills without fear of judgment. (P3)

P2 highlights that Grammarly provides a more comfortable and non-judgmental space for writing compared to teacher feedback. This reduces embarrassment and fear of mistakes, allowing him to write more freely and confidently. Grammarly's impersonal feedback helps ease the stress often associated with negative comments from teachers:

- (13) I prefer Grammarly over teachers' corrective feedback since I feel free to write whatever I want, even if I make mistakes. I feel that making mistakes in writing is personal, and I do not feel embarrassed when I use Grammarly to correct my writing. Thus, I write more freely when I use Grammarly because it is not always a good feeling to have negative feedback from a teacher. (P2)

On the other hand, the two participants had different points of view, choosing the teacher's feedback over Grammarly's. For example, P1 indicated that human editing can overcome the barrier of the writer's style. He further explained:

- (14) Regarding comparing Grammarly with human editing, I believe human editing is more important than Grammarly. Human editing is not limited to correcting grammatical errors; it corrects the text deeply as it understands the writer's style, which leads to displaying the writer's voice. (P1)

4.3.4 Downsides of Grammarly

As most participants had positive experiences with Grammarly, they were asked if there was any downside to it. The interviews displayed some downsides in Grammarly. For example, two participants mentioned that the over-reliance on Grammarly may hinder independent writing and writing development. As P5 mentioned:

(15) The risk of over-reliance on Grammarly could hinder independent writing growth. (P5)

P4 agreed with this idea; she acknowledged Grammarly's usefulness in enhancing writing skills but cautioned that excessive dependence on the tool may limit writers' ability to improve independently over time.

(16) Grammarly is very helpful in developing writing skills. However, some writers rely heavily on it to correct their mistakes, which can hinder their development eventually.

P1 noted that although Grammarly is accurate, it lacks the deep contextual understanding of human editors, and its suggestions can sometimes overshadow the writer's unique voice:

(17) Although Grammarly is an accurate tool, it cannot be compared with human editing since it can understand the text deeply based on the context. As a researcher, I often face an issue in Grammarly: it provides better suggestions for my sentences, which may hide the writer's voice. (P1)

Some participants highlighted the importance of critically reviewing Grammarly's feedback, noting that while the tool generally offers accurate suggestions, it can sometimes misinterpret the context. P4 emphasized that writers should carefully evaluate the corrections instead of accepting them blindly to maintain the intended meaning and ensure writing quality.

(18) Grammarly provides accurate feedback, but I noticed sometimes wrong corrections according to the context. So, the writer has to pay attention to these corrections and not rely solely on them without checking the feedback that Grammarly provides. (P4)

Following the presentation of the interview data, Table 10 provides a concise summary of the key recurring ideas and central themes that emerged from the participants' responses. It highlights perceptions of Grammarly's overall effectiveness, the specific writing areas it helps develop, its role within the broader context of AWE tools, comparisons with teachers' feedback, and the noted limitations or downsides of using Grammarly. This summary shows a clear overview of the main findings gathered from the qualitative data.

Table 10. Summary of emerging repeating ideas and central themes

Themes	Sub-themes	Examples
The effectiveness of Grammarly	All of the postgraduate students agreed that Grammarly provides effective feedback.	P1, P2, P3
Areas that Grammarly develops	Grammarly helps develop the mechanics of writing.	P2, P1, P4
Grammarly and AWE tools	While Grammarly is helpful and some postgraduates prefer Grammarly over other feedback, some postgraduates didn't use any other tool, e.g., P5.	P1, P5, P6
Grammarly and Teachers' feedback	Most of the postgraduates preferred Grammarly over Teachers' corrective feedback.	P4, P3, P2, P1
Downsides of Grammarly	Postgraduates shed light on some downsides of Grammarly, such as missing corrections, over-reliance, and hiding the writers' voice.	P5, P4, P1

To further enhance the analysis, Table 11 integrates both quantitative and qualitative findings to show a comprehensive perspective on postgraduates' attitudes toward using Grammarly as an AWE tool across the affective, behavioral, and cognitive dimensions.

Table 11. Integration of quantitative and qualitative findings.

Theme	Quantitative findings	Qualitative findings	Integration
Affective	Postgraduates' attitudes gained a high score in the affective subscale (Mean=4.16, SD=0.86), indicating that they have a highly positive attitude toward using Grammarly as an AWE tool in academic writing.	The interviews with the postgraduate students showed that Grammarly is an effective and helpful tool in academic writing since all the postgraduates agreed upon the efficiency of Grammarly's feedback.	The quantitative findings for the affective construct were supported by qualitative findings that all the postgraduates agreed upon the efficiency of Grammarly's feedback in developing academic writing.
Behavioral	The behavioral subscale gained the lowest score (Mean=3.49, SD=1.11). The postgraduates agreed that Grammarly is a preferable tool for writing their proposals, showing that they considered the feedback Grammarly provided improved their writing skills.	The postgraduate students highlighted that Grammarly develops several parts and areas of academic writing, such as clarity, grammar, spelling, punctuation, and style.	Quantitative and qualitative data showed that Grammarly was preferred by the postgraduates to help them write their proposals with clarity, correct grammar, spelling, punctuation, and style.
Cognitive	The cognitive subscale scored the highest (Mean=4.16, SD=0.87). The outcomes indicated that the postgraduates thought Grammarly enhanced students' self-confidence in writing skills as it helped them correct their writing mistakes immediately without going back to the teacher. The postgraduates believed using Grammarly as an assistant boosted the writers' self-confidence.	Most postgraduates preferred Grammarly to teachers' feedback for many reasons, such as saving time and avoiding judgments.	The quantitative and qualitative data proved that Grammarly boosted the students' confidence as it saved time and could avoid direct negative judgment.

5. DISCUSSION

The primary purpose of the study was to explore the attitudes of postgraduate students in the English Department of a public university in Saudi Arabia toward using Grammarly as an AWE tool in academic writing. Moreover, it aimed to find whether there were significant differences between male and female attitudes toward using Grammarly in academic writing. The study results are discussed below in light of the research questions.

The findings indicated that postgraduate students positively viewed Grammarly as an AWE tool in academic writing. This finding is aligned with previous studies (Hakiki, 2021; Yousofi, 2022), where Hakiki (2021) revealed that Grammarly gained positive attitudes from EFL students for several reasons, such as providing accurate feedback, comprehensible clarification, and ease of use. Furthermore, concerning gender, the findings revealed no significant differences in attitudes between males and females toward using Grammarly as an AWE tool in academic writing. In terms of gender differences, this finding is in line with the previous study by Yousofi (2022), which confirms that there were no differences in the students' attitudes toward Grammarly based on gender. Thus, this finding may be because both the male and female postgraduates shared the exact purpose of using Grammarly as they were in the phase of writing their proposals and theses.

The analysis of the interviews revealed some critical points, such as Grammarly providing immediate corrective feedback covering different areas, such as style, clarity, diction, grammar, and mechanics. Thus, the postgraduate students agreed that Grammarly is an effective AWE tool in enhancing academic writing. These results agree with the findings of Ghuftron and Rosyida (2018) that using Grammarly by EFL students contributes positively to enhancing students'

writing in terms of grammar, vocabulary usage, and mechanics. Furthermore, for two reasons, most EFL postgraduate students consider Grammarly a preferable tool for checking their writing rather than teachers' corrective feedback. First, teachers' corrective feedback needed time to correct the students' writing and return it to them. On the contrary, Grammarly provided immediate corrective feedback, saving students' time and teachers' effort. This result is consistent with the data obtained by [Fahmi and Cahyono \(2021\)](#), indicating that the feedback that Grammarly provided was efficient, as it provided real-time feedback.

Undoubtedly, AWE tools in academic writing greatly assisted EFL students. Second, most postgraduate students preferred using Grammarly instead of having teachers' feedback to avoid judgment before submitting their writing; it enhanced their self-confidence. [Alharbi \(2023\)](#) emphasized that AWE tools assist writers during and after the writing process, where many writers highly depend on these tools. Furthermore, some students feel embarrassed if they make mistakes in their writing, especially those at an advanced level. Thus, this mirrors the previous study by [Fahmi and Cahyono \(2021\)](#), which examined the students' perception of Grammarly and teacher feedback in writing. The study confirms that all participating students agreed that Grammarly enhanced their self-confidence.

Grammarly sometimes provides inaccurate corrections in terms of context. This is not surprising; even though Grammarly is an effective AWE tool that provides accurate feedback regarding vocabulary usage, grammar, and mechanics, it is considered an AI tool that needs help understanding the writer's context and background. [Aidil \(2021\)](#) further supported this idea, indicating that several students faced misleading feedback from Grammarly. A previous study by [Fitriana and Nurazni \(2022\)](#) noted that the accessible version of Grammarly restricts users from benefiting from all of Grammarly's features. Another important finding was that Grammarly has some downsides regarding miscorrection and usage. The overreliance on Grammarly to correct writing mistakes may hinder independent writing and writing development. These findings support the previous studies ([Dewi, 2022](#); [Fahmi & Cahyono, 2021](#); [Fitria et al., 2022](#); [Fitriana & Nurazni, 2022](#); [Hakiki, 2021](#); [Pratama, 2021](#); [Yousofi, 2022](#)) on students' positive attitude and the effectiveness of Grammarly as an AWE tool in enhancing academic writing.

Connecting the findings mentioned above to the Expectancy Theory, it is clear that the postgraduates who relied on Grammarly as a writing tool were more willing to utilize it consistently and revealed gradual progress in their writing skills; if they recognized the usefulness of Grammarly in enhancing their writing, they were more motivated to incorporate Grammarly into their writing practices. This study is also grounded in the TAM model, which indicates that postgraduates were more willing to embrace Grammarly if they perceived it as user-friendly and valuable for effectively improving their academic writing skills.

Concerning the pedagogical implications of implementing Grammarly in educational practices, EFL instructors and supervisors should guide their students in integrating Grammarly as an AWE tool in their writing practices. Furthermore, implementing AWE tools in academic writing will save time and effort for both students and teachers. Educational institutions should provide accessibility for their students as a supportive way to encourage them to develop their writing skills.

6. CONCLUSION

The quantitative analysis's findings revealed that the postgraduates had a positive attitude toward using Grammarly in academic writing. The findings indicated no significant differences among the postgraduates' attitudes based on gender. Moreover, the qualitative findings reported that Grammarly provides constructive feedback on students' writing as it positively impacts academic writing regarding clarity, accuracy, style, and mechanics, and some students preferred Grammarly to teachers' feedback for many reasons. However, the findings highlight certain drawbacks of using Grammarly, including inaccurate corrections and excessive dependence on AWE tools, which can obscure the writer's personal voice.

The contribution of this study has been to confirm that integrating AWE tools in academic writing is highly recommended by EFL postgraduates, as they found noteworthy developments in enhancing their academic writing in different aspects. Additionally, since postgraduates had limited time to accomplish their proposals, relying on Grammarly to obtain immediate corrective feedback remarkably contributed to saving their time and effort. Despite their advisors providing feedback on their writing, they still need these tools to avoid delay and be more confident. Undoubtedly, the utilization of AWE tools encourages EFL postgraduates to accomplish their tasks and helps advisors focus on the content of these tasks.

Despite this study's contribution to earlier studies, a few limitations must be addressed for future research. First, the major limitation of this study is that this study could have been more extensive in terms of the sample size. It only examined the attitudes of 15 females and 8 males of EFL postgraduates toward Grammarly as an AWE tool. Therefore, further studies require a larger sample size to enhance the generalizability of the findings. Further investigations are needed to include different departments, universities, and EFL students' levels. This will contribute to establishing a deep understanding of implementing AWE tools in academia. Another significant limitation is that the study was limited to exploring the EFL postgraduates' attitudes toward a specific AWE tool, the Grammarly platform. Thus, further work should include other AWE tools to provide EFL teachers and instructors with options to implement AWE tools in writing practices.

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