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Integrating Automated Writing Evaluation into Saudi EFL Students' Writing Practice

Mona Alshehri
Educational Sciences, Faculty of Education, Turbah College,
Taif University, Taif, Saudi Arabia
Corresponding Author: mona.sh@tu.edu.sa

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Abstract
The increasing influence of artificial intelligence on educational methodologies has led to the emergence of AWE systems, which serve as valuable tools for enhancing writing skills through personalised feedback. This study aims to investigate the integration of AWE systems into EFL writing practices among university students, focusing on their experiences, evaluations, challenges, and satisfaction. A mixed-methods research design was conducted in two stages: the first involved 154 EFL Arabic-speaking undergraduate students at a Saudi university, while the second focused on a convenience sample of eight participants. Data were collected using an online questionnaire in the first stage, semi-structured interviews, reflective notes, and samples of EFL writing assignments before and after utilising the AWE system in the second stage. Findings revealed that participants had limited prior experience with AWE systems; nonetheless, they assessed its usability and utility positively, recognising its effectiveness in enhancing lower-level writing skills, critical thinking, and autonomy. Additionally, students did not encounter significant challenges related to overreliance or cognitive overload, reporting high satisfaction levels with the AWE systems. The study highlighted the promotion of self-evaluation, lifelong learning, and motivation to write in English through AWE utilisation. These findings provide valuable insights into the expanding field of AWE in language learning and offer recommendations for policymakers, educators, and researchers aiming to enhance EFL writing practices through AWE system incorporation.

*Keywords***:** Artificial Intelligence, Automated Writing Evaluation Systems, English as a foreign language, writing skills

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Introduction

As education transitions to digital platforms, computer-based approaches have garnered significant attention, particularly integrating Automated Writing Evaluation (AWE) systems to enhance writing skills. AWE systems like Grammarly and ProWritingAid use Natural Language Processing (NLP) tools to analyse linguistic, syntactic, and semantic text features. These systems employ machine learning and statistical algorithms to generate feedback and scores, offering timely and personalised writing assistance (Chen et al., 2024). Over time, AWE systems have evolved to promote student engagement, provide immediate feedback, and support language acquisition (Miranty & Widiati, 2021).

While AWE systems are widely used globally in English as a Foreign Language (EFL) writing, their application and effectiveness in specific cultural and educational settings, such as Saudi Arabia, remain underexplored. Language proficiency, technological familiarity, and age influence students' experiences with AWE systems (Li et al., 2023). Although studies highlight the positive impact of AWE on writing quality (Waer, 2021; Xu & Zhang, 2022; Fan, 2023), limited research addresses the challenges, evaluations, and satisfaction of students in the Saudi context.

This study aims to address this research gap by investigating the integration of AWE systems into EFL writing practices in a Saudi university. It focuses on students' experiences, evaluations, challenges, and satisfaction when using AWE tools, offering insights into their practical and educational implications in non-Western contexts like Saudi Arabia. By examining these factors, the study seeks to inform educators and policymakers about how AWE can support writing development while addressing potential barriers and improving student satisfaction.

The research also contributes to the broader literature on technology in language learning, guiding the integration of AWE into EFL education. The findings will offer actionable recommendations for optimising the use of AWE in enhancing writing skills and fostering effective learning environments. Therefore, the current study aims to answer the following research questions:

1. What are the experiences of EFL students in integrating AWE into their writing practices?
2. How do EFL students evaluate the usability and effectiveness of AWE systems in enhancing their writing skills?
3. What challenges do EFL students face when integrating AWE into their writing practices?
4. What is the level of satisfaction among EFL students regarding using AWE systems in their writing exercises?

Literature Review

AWE refers to computer-based tools that use natural language processing and machine learning to assess written texts, providing feedback on grammar, vocabulary, structure, and content (Lim et al., 2023; Chen et al., 2024). AWE has become popular in language learning contexts, offering timely, objective, and personalised feedback that can enhance students' writing skills (Chen et al., 2024).

The Effectiveness of AWE in EFL Writing

Improving the quality of writing involves various components. These include low-level skills such as spelling, capitalisation, sentence structure, and grammar and high-level skills like organisation and elaboration techniques. Students need to engage in substantial writing practice to make these improvements (Monk, 2016). However, substantial writing practice alone may not be beneficial without constructive feedback and a system that helps learners identify their writing errors. AWE systems can be a viable alternative or complement when personalised and timely feedback may not be feasible.

Fan and Ma (2022) reviewed 22 studies that examined the effectiveness of AWE in improving writing performance or quality. The study found that AWE helped to improve the writing performance of students who received it compared to those who did not. It was also observed that continuous feedback was necessary for students to benefit most. Another review of studies on the effectiveness of AWE on writing from 2000 to 2020 supported the usefulness of AWE systems for writing learning and instruction. Most studies in the review showed a positive effect of automated feedback in at least one writing-related measure (Nunes et al., 2022). Furthermore, a study showed improvement in the accuracy of writing skills in the long term when they had access to AWE, compared to students who did not have access and appeared to have lower retention (Link et al., 2020). However, other quantitative studies show that AWE did not affect the holistic writing quality of the participants, who are Sixth graders (see Wilson & Roscoe, 2020).

The review by Fan and Ma included studies that examined participants who wrote in their first language and studies that demonstrated the effectiveness of AWE in improving L2 writing skills (Fan & Ma, 2022). The review focused on quantitative studies and did not consider qualitative studies that could offer further insights into the relationship between AWE and students' writing quality. This highlights the need for qualitative or mixed-methods studies to explore how integrating AWE affects writing quality, particularly in EFL contexts. For example, results from Wilson and Roscoe's study emphasise the importance of considering both contextual factors and AWE implementation methods when evaluating AWE effectiveness (Wilson & Roscoe, 2020).

Since 1993, investigating the effectiveness of AWE in EFL/ESL has been a research interest (Ngo et al., 2024). Ngo et al. (2024) conducted a meta-analysis of 24 primary studies that investigated the effectiveness of AWE on EFL/ESL student writing performance from 1993 to 2021. The results of this meta-analysis indicate that AWE is more effective in improving vocabulary usage but less effective in enhancing grammar in students' writing. Furthermore, a medium to long duration of AWE usage leads to a higher effect, while short duration leads to a lower impact on writing outcomes than non-AWE treatment. AWE benefits students in the EFL context and students with intermediate English proficiency (Ngo et al., 2024). Another meta-analysis of 26 empirical studies with a total of 2468 participants from 2010 to 2022 examined the effectiveness of AWE on writing quality. However, the inconclusive results confirmed that the overall effect and factors influencing its effectiveness across studies remained unclear. The results

revealed that AWE had a significant positive overall impact on writing quality and had more benefits for EFL and ESL learners than for Native English Speaker learners (Zhai & Ma, 2023).

Furthermore, other studies revealed that EFL or ESL students' writing scores increased, and errors decreased across multiple drafts produced by the same student writers (Thi & Nikolov, 2022; Marzuki et al., 2023; Geng et al., 2024). More evidence of the effectiveness of AWE in ESL writing quality was obtained through a study of Egyptian university students. This study suggests that AWE might be a remedial classroom treatment for struggling or apprehensive writers (Waer, 2021). A contrary study investigating AWE's impact among some Chinese EFL university learners who were at a lower language level revealed that the integration of automated feedback did not necessarily result in observable improvement in the students' revised drafts (see Huang & Renandya, 2018). This discussion provides an overview of various studies on integrating AWE to improve the quality of student writing. It examines the effectiveness of AWE in terms of language features and skills and with different groups of students, such as Native Language Speakers learners or EFL/ESL learners.

Students' Perceptions Towards Integrating AWE into EFL Writing

Studies regarding the effectiveness of AWE in enhancing students' writing quality should not only evaluate the effectiveness of the AWE system but also consider how students perceive and internalise the feedback (Jiang et al., 2020). Students' perceptions of the impact of AWE's use may be a critical factor (Nunes et al., 2022). According to a study by Roscoe and others (2017), AWE systems' usability, effectiveness, and desirability are significant factors influencing students' perceptions of their integration into the writing process. Additionally, most studies suggest that learners generally hold a positive view of AWE systems, which could be an essential element to engage in the process of AWE integration into their writing, primarily due to their ability to prompt self-efficacy (e.g. Wilson & Roscoe, 2020), their ability to engage students in self-directed learning (e.g. Barrot, 2023) and internalising students' writing knowledge in students' long-term memory (e.g., Geng et al., 2024).

The perceptions of the students of AWE could vary due to different factors, such as the student's language proficiency level. A study with a large college writing class in an Asian context investigated how students perceived integration at different writing stages. The results showed that AWE's integration significantly reinforced AWE's perceived usefulness at the revision stage, and students with varying proficiency levels had notably different attitudes toward AWE (Li et al., 2023). This aligns with a study conducted with English learners with varying proficiency levels. The study showed that the perceived usefulness of AWE feedback was contingent on the learners' language proficiency (see Xu & Zhang, 2022). However, the link between the language proficiency level of students and their experiences in integrating AWE into EFL or ESL writing was not intensively examined.

Teachers' perceived impact of AWE's use in writing practices also may be a critical factor (Nunes et al., 2022). The teachers' perception of students using AWE was also examined in some studies (Marzuki et al., 2023; Awada et al., 2019). A study examined Artificial Intelligence (AI)

writing tools and their impact on students' writing quality. It gathered data from four EFL teachers across three distinct universities in Indonesia, shedding light on the variety of AI writing tools used in their classrooms. The teachers agreed that the AI writing tools could improve the quality of EFL student writing and accordingly perceived them as valuable tools (Marzuki et al., 2023). Positive perceptions of EFL students integrating AWE into their EFL writing practices, the satisfaction of AWE outcomes, and perceived fewer challenges of integrating AWE into their writing practices could lead to maximising the potential benefits.

Recent studies on AWE systems in Saudi EFL contexts highlight their potential to improve writing skills while addressing challenges. Al-Inbari and Al-Wasy (2023) found that AWE enhances peer and self-editing strategies with positive user feedback. Alotaibi (2024) reported Grammarly's effectiveness in improving grammar but cautioned against overreliance. Similarly, Khan et al. (2024) highlighted Grammarly's utility for academic writing, noting device compatibility and user dependence issues. Ozfidan et al. (2024) identified the advantages of AI tools like Grammarly and ChatGPT in grammar improvement and idea generation, alongside concerns about contextual accuracy and ethical implications.

However, these studies do not deeply explore how Saudi university students integrate AWE into EFL writing, particularly their experiences, evaluations, challenges, and satisfaction. Addressing this gap, the present study investigates these dimensions, contributing new insights to the literature on AWE in EFL education.

Method

The study employed an explanatory sequential mixed-method research design consisting of two stages. In the first stage, quantitative data were collected to broadly investigate Saudi university students' use of AWE in their EFL writing, focusing on their experiences, evaluations, challenges, and satisfaction. The second stage involved a qualitative case study, which aimed to provide deeper insights and further evidence to complement and validate the findings from the first stage. This approach allowed for triangulation and comparison to enhance the understanding of students' integration of AWE into their writing practices.

Participants

The first stage of the study involved 154 first-year Arabic-speaking students at Taif University, Saudi Arabia, in March 2024. These students, aged 18 to 20 (with a few over 20), were enrolled in a one-year online English course focused on academic English, preparing them for English-medium instruction in their second year. They had six years of prior English education and majored in Information Technology or Medical Laboratory studies. They attended virtual classes for 12 hours a week and were required to submit 12 writing tasks over the semester. The participants were all female, and some were the researcher's students.

In the second stage, eight participants from the first stage who were willing to continue were selected based on convenience. All were the researcher's students, making it easier to work

with them. Each participant provided reflective notes on eight writing assignments and participated in semi-structured interviews to discuss their experiences integrating AWE into their writing.

Taif University's research department granted ethical approval for the study. The online questionnaire began with a moral statement explaining the study's purpose, voluntary participation, the right to withdraw, and confidentiality measures, such as not requiring participants' names or university identification numbers. After completing the questionnaire, participants interested in the second stage were asked to provide their email addresses and roles. They were then sent detailed information about the second phase, including consent for voluntary participation, the right to withdraw, confidentiality assurances, data recording methods, writing samples, and digital recordings during interviews.

Research Instruments

The study used various methods in two stages. A quantitative method, mainly a questionnaire, was employed in the first stage. In the second stage, qualitative methods were used, including reflective notes and semi-structured interviews.

Online Questionnaire

The researcher developed an online semi-structured questionnaire to explore EFL university students' experiences integrating AWE into their writing, focusing on their experiences, evaluations, challenges, and satisfaction. The questionnaire aimed to provide descriptive information about this phenomenon within the specific context and inform the design of a follow-up case study. Initially containing 55 items, the questionnaire was refined through multiple piloting stages with 20 participants not part of this study, reducing the items to 39. The questionnaire consisted of six sections, starting with whether participants had used AWE tools. If they had, they proceeded with the rest of the survey, which included demographic questions, queries about their experience with AWE, Likert scale items on their experiences, questions about their satisfaction, and suggestions for improvement. The multiple-choice questions allowed for open-ended responses, ensuring participants could provide additional insights. The questionnaire was translated into Arabic to ensure clarity for all respondents. Administered online through Google Forms, it had a Cronbach's alpha value of 0.89 after removing two items excluded from the final analysis.

Reflective Notes

The case study participants used AWE systems to enhance their writing assignments. They compiled all edited versions of their assignments into a Word file, attaching reflective notes about their corrections. These notes, written in Arabic or English based on their preference, included thoughts, feelings, and additional comments about using AWE and modifying their writing. The reflective notes were attached as comments in the Word files and were analysed thematically. The writing tasks were based on the course curriculum using *Unlock 2 and 3: Reading, Writing, and Critical Thinking* by Cambridge University Press and Assessment. Participants submitted one weekly writing task for their Intensive English language course. The tasks focused on academic

writing styles, including narrative paragraphs, comparison and contrast essays, cause-and-effect essays, problem-solution essays, summary paragraphs, response paragraphs, and balanced opinion essays.

For the study, participants provided two versions of each of their eight assignments: 1) an initial draft without AWE assistance and 2) a revised version after using AWE. This process resulted in 64 writing samples. Although the researcher did not analyse the assignments as part of the study methodology, the writing assignments were reviewed for evaluation, and the attached reflective notes were a key part of the data analysis.

Online Semi-structured Interviews

Online semi-structured interviews were used to understand the nature of integrating AWE into their EFL writing in a Saudi university, particularly in terms of experience, evaluation, challenges and satisfaction, seeking to elaborate further on issues arising from the previously employed questionnaire in stage one. The interview questions were generated (followed by prompts and probes) based on the issues and topics highlighted while analysing the data from the questionnaire and the participants' reflective notes on their writing after using AWE. The interview schedule consisted of fourteen questions gathered under seven different themes. To validate the interview questions, the interview schedule was piloted with two EFL university students who were not part of the study to check its efficiency, clarity, and time to answer. The interviews were conducted by the researcher using Zoom. The data from the interviews were analysed thematically.]

Results

EFL Students' Experience in Integrating AWE into EFL Writing in the Saudi Context

This study explores EFL students' experiences with AWE systems. An online questionnaire revealed that 66% of EFL students had used at least one AWE tool for their English writing. Among users, Grammarly is the most popular, used by 73.3%, followed by Microsoft Word (12.9%), LanguageTool (5.9%), ProWritingAid (3%), and Quillbot (1%). The duration of AWE usage varied: 67% reported using these systems for less than six months, 17.5% for six months to one year, and a smaller portion had used them for longer. None had experience with AWE systems before university, indicating that this practice is relatively new in this context. Regarding frequency, only 2.9% used AWE tools frequently, while 58.3% used them occasionally. The Grammar Correction feature was the most beneficial, noted by 55.3% of participants. Improvements in sentence structure and alternative word choices were also highlighted as applicable. When asked about corrections since using AWE, 9.7% reported a significant decrease in errors, while 36.9% noted a decline. Though the short duration of use may limit these results, long-term integration could yield more substantial improvements in writing quality.

Semi-structured interviews provided additional insights, with all eight interviewees expressing a preference for Grammarly due to its ease of use. Students emphasised that AWE tools were invaluable for lower-level writing skills, such as correcting grammatical errors and improving vocabulary. However, they encountered limitations in advanced features, such as clarity and coherence improvement, due to the constraints of free subscription accounts. Reflective notes also supported these findings, with participants highlighting that AWE tools were effective at

identifying and correcting grammatical and vocabulary issues but lacked advanced features necessary for achieving comprehensive writing improvements.

EFL Students' Evaluation of Integrating AWE into their EFL Writing in the Saudi Context

This research explored various aspects of students' evaluations of integrating AWE into their EFL writing. One significant focus was the usability of AWE systems in providing valuable feedback to EFL students. According to the results presented in Table One, most participants found AWE systems easy to use and navigate. They noted that receiving feedback from AWE tools was straightforward and easy to understand. Additionally, AWE tools provide clear instructions on utilising their various functions, and students can easily customise settings and preferences to suit their needs. Participants in the interviews reaffirmed these findings, particularly highlighting the ease of use and navigation of Grammarly, the most commonly used tool among them.

Table 1. *Descriptive statistics on the usability of AWE in EFL writing*

Statements	N	Minimum	Maximum	Mean	Std. Deviation
AWE tools are easy to use and navigate.	102	2.00	5.00	4.38	.675
Receiving feedback from AWE tools is simple and easy to understand.	102	2.00	5.00	4.11	.693
AWE tools provide clear instructions on how to use their various functions.	102	1.00	5.00	3.99	.777
I find it easy to customise settings and preferences in AWE tools according to my needs.	102	1.00	5.00	3.90	.764
Valid N (listwise)	102				

Another crucial aspect of EFL students' evaluations of AWE systems is their effectiveness in EFL writing practice. As indicated in Table Two, students recognised the effectiveness of AWE in addressing their writing needs, correcting grammatical errors, and offering varied word choices. The case study results further corroborated the questionnaire findings, suggesting that AWE systems may be more effective in improving grammar than vocabulary in EFL writing. Participants' reflective notes on their writing assignments demonstrated significant corrections in grammatical errors, accompanied by improvements in word choice. These results contrast with a review of 24 quantitative studies, which reported that AWE systems are generally more effective in enhancing vocabulary usage than addressing grammatical accuracy in students' writing (Nago et al., 2024).

Table 2. *Descriptive statistics on the effectiveness of AWE in EFL writing*

Statements	N	Minimum	Maximum	Mean	Std. Deviation

AWE provides feedback addressing my writing needs.	102	1.00	5.00	4.00	.850
AWE has helped me identify and correct grammatical errors.	102	2.00	5.00	4.23	.616
The grammar correction suggestions provided by AWE are accurate and helpful.	102	2.00	5.00	4.05	.701
AWE offered me more diverse words.	102	1.00	5.00	4.05	.830
Valid N (listwise)	102				

To fully assess the effectiveness of integrating AWE into EFL writing, it is essential to consider its impact on lower-level writing skills, such as grammar and vocabulary, and higher-level skills, such as autonomy and critical thinking. Tables Three and Four illustrate that while the mean scores for independence and critical thinking were lower than those for grammar and vocabulary corrections (as shown in Table Two), AWE was still largely successful in enhancing students' autonomy and critical thinking abilities. For example, participants indicated that AWE tools helped them work independently on second-language writing assignments and empowered them to make decisions about their revisions. Similarly, the tools encouraged students to critically analyse and evaluate their writing choices, fostering more profound engagement with their work.

Table Three presents descriptive statistics regarding participants' perceptions of autonomy and the use of AWE tools in EFL writing. Table Four provides descriptive statistics on the relationship between critical thinking and using AWE tools in EFL writing, underscoring their importance in developing analytical skills and encouraging reflective revision practices.

Table 3. *Descriptive statistics on the autonomy and the use of AWE in EFL writing*

Statements	N	Minimum	Maximum	Mean	Std. Deviation
AWE tools enhance my ability to work independently on L2 writing assignments.	102	2.00	5.00	3.92	.792
AWE tools allow me to set my writing goals and my pace.	102	2.00	5.00	3.98	.730
Using AWE tools empowers me to make independent decisions about my writing revisions.	102	1.00	5.00	3.90	.789
AWE tools allow me to work on my L2 writing assignments at times that best suit my schedule.	102	2.00	5.00	4.05	.686
Valid N (listwise)	102				

Table 4. *Descriptive statistics on critical thinking and the use of AWE in EFL writing*

Statements	N	Minimum	Maximum	Mean	Std. Deviation
Using AWE tools helps me develop my critical thinking skills by analysing the feedback provided.	102	1.00	5.00	3.84	.805
Using AWE tools challenges me to think deeply about the effectiveness of my L2 writing choices and revise accordingly.	102	2.00	5.00	4.05	.715
Using AWE tools challenges me to analyse my L2 writing by considering different perspectives.	102	.00	5.00	3.91	.809

AWE tools encourage me to evaluate evidence and reasoning supporting my arguments.	102	1.00	5.00	3.81	.817
Valid N (listwise)	102				

The thematic analysis of the interviews revealed that using AWE systems to enhance EFL writing skills was an empowering experience for the participants. A key theme that emerged was a sense of empowerment, as students no longer had to rely on others to identify areas for improvement. One participant expressed, *"Knowing more about my writing in English gave me power. Now I know more about my errors and how to correct them."*

Additional sub-themes, such as self-evaluation and confidence, were also identified. Participants noted that AWE tools enabled them to self-evaluate their work more effectively and feel more confident in their writing. One interviewee remarked, *"I feel more confident submitting my EFL assignment after using AWE. It helps me improve my work and see the potential score I may get."*

However, the interview responses also indicated that participants did not always agree with some of the suggestions made by AWE systems to enhance their EFL writing skills. They provided instances where these suggestions prompted them to reflect on specific grammatical points or verify word accuracy using an online dictionary. This reflective process underscored the role of AWE systems as corrective tools and facilitators of critical engagement with writing.

Challenges of Integrating AWE into EFL Writing Faced by EFL Students in the Saudi Context

Although using AWE systems in EFL writing facilitates learning and practice, EFL students still face several challenges. One significant barrier is the lack of knowledge and training in effectively using these systems. Additionally, issues such as limited digital literacy can further hinder the integration of AWE into their writing processes. There is also a concern that over-reliance on AWE systems may negatively impact students' writing skills, leading to cognitive overload during the revision of their EFL assignments. However, Table Five shows that EFL students are not entirely dependent on AWE systems for writing support.

Table 5. *Descriptive statistics on overreliance as a challenge when integrating AWE into EFL writing*

Statements	N	Minimum	Maximum	Mean	Std. Deviation
I am afraid I overly rely on AWE tools when practising L2 writing.	102	1.00	5.00	3.43	1.057
Depending on AWE tools may hinder my ability to think critically about my writing.	102	1.00	5.00	3.29	1.000
I rely on AWE tools more than I should to check my grammar and spelling when I write in English.	102	1.00	5.00	2.96	1.089
Using AWE tools has made me less engaged in the writing-learning process.	102	1.00	5.00	2.53	1.001
Valid N (listwise)	102				

During interviews, participants mentioned that they do not use these systems while writing; they utilise them after completing their EFL assignments for revision and improvement. One participant noted,

"I am not afraid of being overly reliant on AWE when writing in English because you (she meant the researcher) explained how to use those systems to revise our writing rather than to compose it."

Table Six indicates that some participants believe using AWE systems in EFL writing can lead to cognitive overload and frustration. To address these issues of over-reliance and mental strain, a potential solution is to separate the writing and revision processes. This approach would enable EFL students to understand better and learn from AWE feedback while minimising dependence on the system and reducing cognitive demand. Although these findings were not as prominent in the questionnaire data, they were explored more thoroughly in the interview responses.

Table 6. *Descriptive statistics on cognitive overload as a challenge when integrating AWE into EFL writing*

Statements	N	Minimum	Maximum	Mean	Std. Deviation
Dealing with the number of corrections I received from AWE is challenging.	102	1.00	5.00	3.25	.908
When using AWE tools, I feel overwhelmed by the feedback I receive.	102	1.00	5.00	2.73	1.061
Familiarity with the AWE tool increases my ability to understand its feedback.	102	1.00	5.00	2.52	.971
I find it challenging to write and revise when using AWE tools.	102	1.00	5.00	3.42	.974
Valid N (listwise)	102				

In the questionnaire, participants were asked, in a multiple-choice format, how AWE tools could be improved to reduce cognitive overload. Respondents could select multiple options, with results shown in Figure One. Most EFL students suggested prioritising the most critical issues first, followed by providing examples alongside feedback, which would be helpful. These suggestions reflect the perspectives of the system's primary users and emphasise the importance of incorporating user feedback into the development of AWE tools.

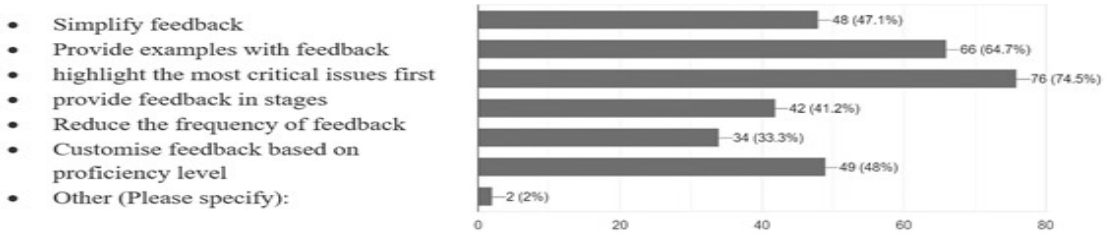


Figure 1. Ways AWE tools to reduce cognitive overload

Another challenge mentioned by case study participants was the financial barrier to accessing all features of AWE systems, which typically require a subscription. Participants noted that free accounts often highlight certain sentences or words without providing specific suggestions for improvement. While this limitation is challenging, it encourages some users to revise and develop their sentences independently to avoid highlighting and enhancing their writing. However, the lack of financial support from universities for such subscriptions could prevent students from accessing the full educational benefits of these technologies. Addressing these financial barriers would ensure broader access to advanced AWE features, supporting students' academic development.

EFL Students' Satisfaction with Using AWE Systems in the Saudi Context

The findings from the questionnaire reveal a high level of satisfaction among EFL students regarding using AWE systems in their English writing practice. When asked to rate their satisfaction with the feedback provided by AWE for improving overall writing proficiency, 21% of respondents reported being "very satisfied," 71% were "satisfied," 7% were "neutral," and 1% were "not satisfied." None indicated they were "not very satisfied." These positive responses were supported by the interviewees, who expressed complete satisfaction with the feedback they received through AWE tools.

The final question in the questionnaire invited participants to offer suggestions for enhancing the integration of AWE systems into EFL writing education. Participants could select multiple options, with the most frequently suggested improvements including "better customisation for language levels," "clearer explanations of corrections," and "more interactive features." These preferences are illustrated in Figure Two, highlighting the areas where students believe AWE tools could better meet their needs.

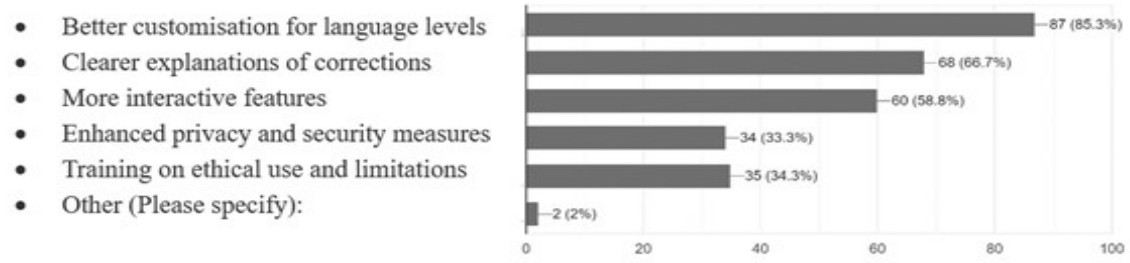


Figure 2. EFL students' suggestions for AWE systems to improve EFL writing education

In the case study, participants elaborated on potential AWE system enhancements. One participant proposed integrating links to video explanations of grammatical errors or detailed descriptions of suggested words. They noted,

> *"Adding links to the AWE systems that involve video explanations of the grammatical errors I made or explanations of the suggested word could be helpful and valuable. It would save me time because I often search for grammatical rules that AWE identifies in my writing or use an online dictionary to learn more about suggested word choices."*

Such suggestions underscore the need for accessible, in-depth learning resources within AWE tools to support independent learning. The benefits of AWE systems extend beyond EFL writing assignments. Four participants mentioned using AWE tools to assist with tasks in other academic disciplines, such as biology and chemistry. One participant remarked, *"I find AWE very helpful. I used it to review my English writing in my biology assignment."* These responses demonstrate the versatility of AWE tools in facilitating academic writing across various fields. Moreover, participants were willing to continue using AWE systems for future educational efforts. One interviewee shared, *"I shared my experience using AWE with my sister to help her write more efficiently in English."* This reflects how AWE tools enhance writing skills and promote lifelong learning among students, particularly those striving to improve their advanced and academic English writing capabilities.

Discussion

The main objective of this study was to investigate how EFL students incorporate AWE systems into their writing practices at Saudi universities. This discussion will address the research questions by analysing the findings and comparing them with previous studies, providing a clearer understanding of AWE systems' impact on EFL students' writing development.

EFL Students' Experience with AWE Systems

The first research question examined the experiences of EFL students in integrating AWE into their writing practices. The results showed that most students had limited experience with AWE tools, having used them for less than six months. This short exposure suggests that AWE integration in EFL writing is still in its early stages, particularly in the Saudi context. This finding aligns with research by Zhai and Ma (2023), which found that while the duration of AWE system use did not significantly affect writing quality, prolonged use could still enhance students' digital literacy and writing skills. A meta-analysis by Ngo et al. (2024) supports this conclusion, indicating that extended AWE tools may improve writing outcomes as students become more familiar with these systems.

In light of these findings, there is a clear need for more extended integration of AWE systems into EFL education. As EFL students become more accustomed to using these tools over time, they will likely experience more significant improvements in their writing practices.

Therefore, universities should consider incorporating AWE systems into the EFL curriculum from the start of students' academic journeys to maximise the benefits of these technologies.

EFL Students' Evaluation of AWE Systems

The second research question examined how EFL students assess AWE systems in their writing practices. The results indicated that students generally have a favourable view of AWE systems, particularly their ability to enhance lower-level writing skills, such as grammar and vocabulary. This finding aligns with previous studies, including a review by Ngo et al. (2024), which concluded that AWE systems effectively improve these foundational aspects of writing. Additionally, the current study found that AWE systems allowed students to focus less on grammar and vocabulary issues and more on higher-order writing skills, such as content development and coherence.

Furthermore, the findings demonstrated that AWE systems foster students' autonomy and critical thinking. This supports Brookfield's (1993) notion of empowerment as a crucial principle of independence and reinforces the idea that AWE systems enable students to take control of their writing processes. The results are also consistent with Knowles' (1980) theory of self-directed learning, which claims that adult learners are intrinsically motivated and capable of directing their education. These findings reflect Barrot's (2023) research, which showed that AWE systems promote self-directed learning by encouraging students to engage critically with the feedback provided by these tools.

AWE systems play a significant role in developing independent learners by enhancing students' autonomy and critical thinking. This underscores the importance of using AWE systems for grammar correction and as tools for self-reflection and lifelong learning.

Challenges in Integrating AWE into EFL Writing

The third research question examined the challenges faced by EFL students when integrating AWE systems into their writing. Surprisingly, the results revealed that participants did not encounter significant challenges, particularly concerning cognitive overload or over-reliance on AWE systems. This finding contrasts with previous studies, such as Barrot (2023), which reported issues like cognitive overload and overcorrection when using AWE systems.

One possible explanation for this discrepancy is the training provided to the participants in this study. Students were instructed to use AWE systems solely to revise their completed writing assignments rather than during the initial drafting process. This separation of the writing and revision phases minimised cognitive overload and reduced the risk of becoming overly reliant on the tool.

However, participants did mention challenges related to the financial cost of accessing premium features of AWE systems, a concern also highlighted in other studies. The lack of financial support from universities to access full versions of AWE tools may limit students' ability to benefit from the advanced features of these systems fully. This suggests that universities should

consider ways to support students financially in accessing the premium functionalities of AWE systems, which could further enhance their writing practices.

EFL Students' Satisfaction with AWE Systems

The final research question examined the satisfaction of EFL students with using AWE systems. The study found a high level of satisfaction among the participants, with the majority indicating that they were satisfied with the feedback provided by AWE systems. This finding suggests that students positively perceive AWE tools and value their role in improving their writing skills. This aligns with research by Zhai and Ma (2023), which indicated that students' satisfaction with AWE systems is a significant predictor of their continued use and engagement.

Participants also reported that using AWE systems boosted their confidence in completing writing assignments, as they felt more empowered to revise and improve their work independently. This is consistent with previous research highlighting how AWE systems foster self-efficacy and motivation in language learners (e.g., Barrot, 2023). Students' high satisfaction indicates that AWE systems can significantly motivate students to engage more deeply with their writing, contributing to their overall academic success.

Conclusion

The current research aimed to investigate students' experiences, evaluations, challenges, and satisfaction with AWE, providing insights into the effectiveness of these systems in enhancing writing skills. The findings revealed that while participants had limited experience with AWE systems, they positively evaluated their usability, particularly in improving lower-level writing skills such as grammar and vocabulary. The study also demonstrated that AWE systems supported students in developing critical thinking skills when engaging with feedback, encouraging autonomy in their writing practices. Participants reported high satisfaction with the system, noting that it contributed to their self-evaluation, motivation, and lifelong learning. Regarding challenges, the study found no significant issues related to over-reliance or cognitive overload, contrasting with some previous research. This may be attributed to the structured training provided to participants, helping them use AWE effectively without feeling overwhelmed. However, participants did mention a lack of financial support for accessing advanced features of AWE systems, which could hinder their full utilisation. The study shows that AWE systems can positively impact EFL writing skills by improving lower-level writing components, fostering critical thinking, and enhancing students' autonomy. These findings suggest that AWE systems are valuable tools for EFL education and should be integrated into university curricula with appropriate training and support. The study also recommends further research to explore the connection between AWE use and language proficiency and the potential for longitudinal studies to assess the long-term impact of AWE integration.

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About the Author:

Mona Alshehri is an Assistant Professor at the Department of Educational Sciences at Taif University. Her research interests include exploring innovative approaches to English language teaching, curriculum development, and educational research, focusing on enhancing learning outcomes through evidence-based practices. ORCID: https://orcid.org/0009-0001-6165-3713

References

Al-Inbari, F. A. Y., & Al-Wasy, B. Q. M. (2023). The impact of automated writing evaluation (AWE) on EFL learners' peer and self-editing. *Education and Information Technologies*, *28*(6), 6645-6665.https://doi.org/10.1007/s10639-022-11458-x

Alotaibi, A. H. E. (2023). The impact of AI-powered Grammarly on enhancing grammar proficiency among Saudi EFL students. *Remittances Review*, *8*(4).

Awada, G., Burston, J., & Ghannage, R. (2019). Effect of student team achievement division through WebQuest on EFL students' argumentative writing skills and their instructors' perceptions. *Computer Assisted Language Learning*, *33*(3), 275–300. https://doi.org/10.1080/09588221.2018.1558254

Barrot, J. S. (2021). Using automated written corrective feedback in the writing classrooms: effects on L2 writing accuracy. *Computer Assisted Language Learning*, *36*(4), 584–607. https://doi.org/10.1080/09588221.2021.1936071

Brookfield, S. (1993). Self-Directed Learning, Political Clarity, and the Critical Practice of Adult Education. *Adult Education Quarterly*, *43*(4), 227–242.

Chen, B., Bao, L., Zhang, R., Zhang, J., Liu, F., Wang, S., & Li, M. (2024). A Multi-Strategy Computer-Assisted EFL Writing Learning System With Deep Learning Incorporated and Its Effects on Learning: A Writing Feedback Perspective. *Journal of Educational Computing Research*, *61*(8), 60-102. https://doi.org/10.1177/07356331231189294

Fan, N. (2023). Exploring the Effects of Automated Written Corrective Feedback on EFL Students' Writing Quality: A Mixed-Methods Study. *SAGE Open*. https://doi.org/10.1177/21582440231181296

Fan, N., & Ma, Y. (2022). The Effects of Automated Writing Evaluation (AWE) Feedback on Students' English Writing Quality: A Systematic Literature Review. *Language Teaching Research Quarterly*, *28*, 53-73. https://doi:10.32038/ltrq.2022.28.03

Geng, J., Razali, A. B., Ismail, L., & Noordin, N. (2024). Effectiveness of automated writing evaluation program to enhance EFL undergraduates' writing performance in China. *Asia Pacific Education Review*, 1-16. https://doi.org/10.1007/s12564-023-09922-5

Huang, S., & Renandya, W. A. (2018). Exploring the integration of automated feedback among lower-proficiency EFL learners. *Innovation in Language Learning and Teaching*, *14*(1), 15–26. https://doi.org/10.1080/17501229.2018.1471083

Jiang, L., Yu, S., & Wang, C. (2020). Second language writing instructors' feedback practice in response to automated writing evaluation: A sociocultural perspective. *System*, *93*, 102302. https://doi.org/10.1016/j.system.2020.102302

Khan, M. O., Nazim, M., & Alzubi, A. A. F. (2024). Exploring Arab EFL Learners' Attitudes: Is Grammarly a Game-Changer in Academic Writing Classes? *Educational Administration: Theory And Practice*, *30*(4), 1365-3171.https://doi.org/10.53555/kuey.v30i4.1612

Knowles, M. S**.** (1980) *The Modern Practice of Adult Education: From Pedagogy to Androgogy.* (2nd ed.) New York: Cambridge Books.

Li, W. Y., Kau, K., & Shiung, Y. J. (2023). Pedagogic Exploration Into Adapting Automated Writing Evaluation and Peer Review Integrated Feedback Into Large-Sized University Writing Classes. *SAGE Open*, *13*(4), 21582440231209087.

Lim, K., Song, J., & Park, J. (2023). Neural automated writing evaluation for Korean L2 writing. *Natural Language Engineering*, *29*(5), 1341–1363. https://doi:10.1017/S1351324922000298

Link, S., Mehrzad, M., & Rahimi, M. (2020). Impact of automated writing evaluation on teacher feedback, student revision, and writing improvement. *Computer Assisted Language Learning*, *35*(4), 605–634. https://doi.org/10.1080/09588221.2020.1743323

Marzuki, , Widiati, U., Rusdin, D., Darwin, , & Indrawati, I. (2023). The impact of AI writing tools on the content and organisation of students' writing: EFL teachers' perspective. *Cogent Education*, *10*(2). https://doi.org/10.1080/2331186X.2023.2236469

Miranty, D., & Widiati, U. (2021). An automated writing evaluation (AWE) in higher education. *Pegem Journal of Education and Instruction*, *11*(4), 126-137. https://doi.org/10.47750/pegegog.11.04.12

Monk, J. (2016). Revealing the Iceberg: Creative Writing, Process & Deliberate Practice. *English in Education*, *50*(2), 95–115. https://doi.org/10.1111/17548845.2016.11912565

Ngo, T. T. N., Chen, H. H. J., & Lai, K. K. W. (2024). The effectiveness of automated writing evaluation in EFL/ESL writing: a three-level meta-analysis. *Interactive Learning Environments*, *32*(2), 727–744. https://doi.org/10.1080/10494820.2022.2096642

Nunes, A., Cordeiro, C., Limpo, T., & Castro, S. L. (2022). Effectiveness of automated writing evaluation systems in school settings: A systematic review of studies from 2000 to 2020. *Journal of Computer Assisted Learning*, *38*(2), 599-620. https://doi.org/10.1111/jcal.12635

Ozfidan, B., El-Dakhs, D. A. S., & Alsalim, L. A. (2024). The Use of AI Tools in English Academic Writing by Saudi Undergraduates. *Contemporary Educational Technology*, *16*(4).

Thi N. K., & Nikolov M. (2022). How a teacher and Grammarly feedback complement one another in Myanmar EFL students' writing. *The Asia-Pacific Education Researcher, 31*, 767–779. https://doi.org/10.1007/s40299-021-00625-2

Waer, H. (2021). Integrating automated writing evaluation affects EFL writing apprehension and grammatical knowledge. Innovation in Language Learning and Teaching. https://doi.org/10.1080/17501229.2021.1914062

Wilson, J., & Roscoe, R. D. (2020). Automated Writing Evaluation and Feedback: Multiple Metrics of Efficacy. *Journal of Educational Computing Research*, *58*(1), 87-125. https://doi.org/10.1177/0735633119830764

Xu, J., & Zhang, S. (2022). Understanding AWE feedback and English writing of learners with different proficiency levels in an EFL classroom: A sociocultural perspective. *The Asia-Pacific Education Researcher*, *31*(4), 357-367. https://doi.org/10.1007/s40299-021-00577-7

Zhai, N., & Ma, X. (2023). The Effectiveness of Automated Writing Evaluation on Writing Quality: A Meta-Analysis. *Journal of Educational Computing Research*, *61*(4), 875-900. https://doi.org/10.1177/07356331221127300