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Leveraging AI for Teacher Support: Integrating AI-Driven Tools in Writing Instruction to Enhance Pedagogical Strategies

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Received: Sep 11, 2024; Revised: Feb 12, 2025; Accepted: Aug 21, 2025; Published: Dec 30, 2025

Abstract: This study examines the factors that influence students' acceptance and preference for Automated Writing Evaluation (AWE) tools and how these tools affect their writing performance. Fifty second-year English majors were surveyed regarding their utilization of seven Automated Writing Enhancement (AWE) tools: QuillBot, Scribens, Language Tool, Reverso, OnlineCorrection.com, ProwritingAid, and Grammarly. The results suggest that familiarity, user experience, and functionality significantly impact acceptance. Grammarly was widely embraced as the most favored tool, whereas Reverso faced the least acceptance primarily because of its intricate interface. The key determinants impacting students' choice of tools were the inclusion of extensive features and user-friendly interfaces. The study emphasizes the advantages of AWE tools in enhancing writing abilities and alleviating writing apprehension while also suggesting possible disadvantages, such as excessive dependence on technology. These observations emphasize the significance of incorporating AWE (Automated Writing Evaluation) tools into writing instruction to improve student learning outcomes.

Keywords: AWE tools, Student acceptance, User preference, Writing improvement, Educational technology

1. Introduction

Automated Writing Evaluation (AWE) tools are increasingly used in educational environments to aid writing. These tools offer automated feedback on grammar, style, and other aspects of writing. They are specifically designed to reduce the workload for teachers and improve students' writing abilities. The teachers' perceptions of using AWE tools are crucial in this technology-enhanced environment (Li, 2021). However, the approval and inclination of students towards these tools are not just crucial; they are indispensable factors that impact their efficacy in enhancing writing proficiency. The level of involvement of individual students in the feedback produced by the AWE tools is a crucial determinant for assessing their perceptions and acceptance (Zhang, 2020). Wilson et al. (2024) employed a mixed-method approach to investigate the students' perspectives on the usability, usefulness, and desirability of MI Write, an AWE system. The researchers examined the relationship between students' writing-related beliefs, writing proficiency, and perceptions.

Although there is increasing research on the efficacy of AWE tools, there is limited comprehension regarding students' perceptions and acceptance of these tools. This study seeks to address this deficiency by examining the factors that impact students' acceptance and preference for AWE tools and the perceived advantages and disadvantages from the students' point of view. The study aims to investigate the following research questions:

- (1) What factors influence students' acceptance of AWE tools in their writing processes?
- (2) How do students' preferences for different AWE tools impact their writing performance?
- (3) What are the perceived benefits and drawbacks of using AWE tools from the students' perspectives?

2. Literature Review

2.1. The Application and Impact of AWE in Writing

The use of AWE facilitates the improvement of writing skills by providing guidance in both the teaching and learning aspects, involving technology, learners, teachers, and peers (Wilson & Roscoe, 2020). The AWE tools can reduce the workload for teachers in proofreading students' writing assignments individually and enhance students' confidence in their writing abilities through

automated feedback. Wei et al. (2023) examined the impact of utilizing Grammarly, a type of Automated Writing Evaluation (AWE) tool, on different aspects of writing proficiency, such as task accomplishment, coherence, and cohesion, among English as a Foreign Language (EFL) students in China. The findings demonstrated that learners' beliefs and self-assurance in their writing skills are strong indicators of their ability to complete tasks effectively and create coherent and cohesive texts. This emphasizes the pivotal importance of writing self-efficacy in influencing students' writing abilities.

Furthermore, the AWE tools enhance self-efficacy in writing and reduce writing anxiety. During the early era, teacher feedback was crucial for students. Deprived of their assistance, the students would experience a state of being excessively burdened, and this would hurt the quality of their writing output. According to Sybing (2021), Teacher Feedback (TF) created a favorable atmosphere for productive discussions between teachers and students, which allowed students to effectively revise and rephrase their texts. AWE feedback enhances the provision of superior feedback and accelerates the feedback process, thereby reducing the workload of teachers and enabling more targeted feedback (Wilson & Czik, 2016). Therefore, the AWE tools are a practical and effective means of conducting formative assessment (Ajabshir & Ebadi, 2023).

2.2. Students' Perceptions and Preferences for AWE Tools

The degree of accuracy and quality of automated scoring and feedback were moderately consistent with students' expectations and perceptions. However, their direct interactions with the software had the most significant impact on their perceptions, as stated by Roscoe et al. (2017). Mat et al. (2024) examined how users perceive and anticipate AWE. Some of the respondents acknowledged that AWE was effective in improving vocabulary, language usage, spelling, and punctuation. Nevertheless, the results suggested that even with the incorporation of technology in digital learning settings, the evaluation of ESL writing still necessitated conventional approaches, such as educators' guidance in structuring and enhancing effective ESL writing resources. Both types of feedback should be present in the current digital learning environment. Sari and Han (2024) conducted a quasi-experiment to investigate the impact of combined automated-teacher feedback on the self-efficacy, self-regulation, anxiety, and performance of EFL learners. The suggestion was made to enhance the writing effectiveness and performance of EFL learners by utilizing a combination of automated and teacher feedback. These studies emphasized the significance of using a combination of automated and traditional feedback methods to effectively address different aspects of language learning. Subsequent studies should investigate the most effective methods of incorporating these feedback mechanisms to enhance their efficacy. Ultimately, the combination of automated and traditional feedback methods proved to be crucial in maximizing students' writing progress in digital learning settings.

3. Method

3.1. Participants

The researcher conducted a study to examine students' awareness and acceptance of the Automated Writing Evaluation (AWE) tool. The AWE tool is designed to assist in making corrections and providing feedback on writing. The use of AWE (Automated Writing Evaluation) is advantageous and has a beneficial impact on enhancing the writing proficiency of English as a Foreign Language (EFL) learners (Parra & Calero, 2019; Wang et al., 2022). Many EFL learners frequently experience a sense of unease when writing a composition. The AWE tools can assist EFL learners in diminishing apprehension and enhancing their grammatical knowledge (Waer, 2023). Apprehension can significantly impact writing performance. However, certain studies primarily concentrate on the impact of AWE tools rather than students' acceptance (Zhai & Ma, 2022). Therefore, the researcher selected 50 sophomores majoring in the Department of Applied English at a Technology University as participants for the study. The study aimed to examine their willingness to use seven different Automated Writing Evaluation (AWE) tools, namely QuillBot, Scribens, Language Tool, Reverso, Onlinecorrecion.com, ProwritingAid, and Grammarly. Most participants had an English proficiency level ranging from 500 to 600, and they had limited knowledge about the AWE tools—seventy percent of the individuals utilized Grammarly with greater frequency.

3.2. Data Collection

The researcher designed a questionnaire to investigate the participants' acceptance and level of preference for the seven AWE tools. There were four sections in the questionnaire. First, before exploring the acceptance and level of preference for the seven AWE tools, there was a background information, like gender, English proficiency, recognition of the AWE tools, and the kind of AWE tools utilization (Refer to Table 1). Second, each AWE tool included two questions pertaining to acceptance and the degree of preference (refer to Table 2). Furthermore, there were three open-ended inquiries aimed at eliciting the participants' responses

regarding their utilization of the seven AWE tools (refer to Table 3). Consequently, the questionnaire comprised a total of 21 questions.

3.2.1. AWE Tools

(1) QuillBot

QuillBot is a practical tool for rephrasing text by employing synonyms, altering word form and order, and paraphrasing through the use of active sentences (Fitria, 2021). The study identified three advantages: fostering students' favorable attitudes towards writing, offering a diverse range of user-friendly writing functionalities, and facilitating students' language proficiency development (Kurniati & Fithriani, 2022).

(2) Scribens

Scribens offers several essential features, including a grammar and spelling checker, suggestions for punctuation, and enhanced accessibility.

(3) Language Tool

The software is compatible with more than 20 languages and offers more precise grammar suggestions. It has the capability to be seamlessly incorporated into a range of platforms, such as web browsers and word processors.

(4) Reverso

The software offers a range of features including a grammar and spell checker, translation services, and contextual synonyms and rephrasing. It suggests synonyms and alternative phrasings based on context, assisting users in expanding their vocabulary and enhancing sentence variety.

(5) Online Correction.com

It offers style recommendations, such as suggesting more suitable word selections and improving sentence structures to enhance readability.

(6) Prowriting Aid

The tool produces comprehensive reports that emphasize different aspects of writing, such as readability, sentence structure, and writing style. This enables users to pinpoint areas that need improvement.

(7) Grammarly

Dewi (2022) conducted a study to investigate the effectiveness of using Grammarly in writing. The participants expressed that there were certain benefits. For instance, it improved the ability to rephrase sentences effectively and reduced mistakes. Consequently, there was a discernible improvement in the writing proficiency.

Table 1. Background Information of the Participants (N = 50).

Background Information			Questions		
Gender			Male	Female	
English proficiency			500~600	601~700	700 above
Recognition of AWE tools			Yes		No
AWE tools utilization	QuillBot	Scribens	Language Tool		Reverso
			ProwritingAid		Onlinecorrection.com
			Grammarly		

Table 2. Survey Items Measuring Acceptance and Preference for the Seven AWE Tools.

AWE Tools	Questions
QuillBot	1. My acceptance of using QuillBot as an English writing correction tool. 2. My preference for using QuillBot as an English writing correction tool.
Scribens	3. My acceptance of using Scribens as an English writing correction tool. 4. My preference for using Scribens as an English writing correction tool.
Language Tool	5. My acceptance of using Language Tool as an English writing correction tool. 6. My preference for using Language Tool as an English writing correction tool.
Reverso	7. My acceptance of using Reverso as an English writing correction tool. 8. My preference for using Reverso as an English writing correction tool.
Onlinecorrection.com	9. My acceptance of using Onlinecorrection.com as an English writing correction tool. 10. My preference for using Onlinecorrection.com as an English writing correction tool.
ProwritingAid	11. My acceptance of using ProwritingAid as an English writing correction tool. 12. My preference for using ProwritingAid as an English writing correction tool.
Grammarly	13. My acceptance of using Grammarly as an English writing correction tool. 14. My preference for using Grammarly as an English writing correction tool.

3.2.2. Open-Ended Questions

The three open-ended questions were related to the process of using the seven AWE tools and their improvement for the writing performance.

Table 3. Open-ended Questions Regarding Students' Experiences with the AWE Tools.

No.	Questions
Q15	When using these AWE systems, have you encountered any difficulties in terms of usability, such as with the software interface?
Q16	Do you agree with the feedback provided by these AWE systems, and why?
Q17	After using these AWE systems, have you gained more confidence in English writing and do you feel that your writing has improved, and why?

3.3. Data Analysis

The 14 questions that were related to the seven AWE tools in the survey will be analyzed using SPSS, and the researcher will analyze the results using descriptive statistics. The questionnaire included seven dimensions: QuillBot, Scribens, Language Tools, Reverso, Onlinecorrection.com, ProwritingAid, and Grammarly. The initial question aimed to assess the participants' receptiveness towards the seven tools, specifically addressing research question one. Next, the researcher would categorize the seven tools into three groups based on the level of preference for research question two (refer to Table 4). The third research question will be examined by analyzing the responses to three open-ended questions, which aim to investigate the students' perspectives on the use of the tools.

Table 4. Categorization of the Seven AWE Tools Based on Anticipated Preference Levels.

Preference Level	Items
Most favored	1. Grammarly 2. ProwritingAid
The middle	3. QuillBot 4. Scribens 5. Language Tool
Least favored	6. Reverso 7. Onlinecorrection.com

4. Results

4.1. RQ1: What Factors Influence Students' Acceptance of AWE Tools in Their Writing Processes?

The adoption of AWE tools among students exhibited variation depending on multiple factors, as demonstrated by the results of the end-of-course survey. Table 5 displayed the descriptive statistics of the end-of-course survey regarding acceptance of using the AWE tools. The highest average score was achieved by Grammarly with a mean of 4.10. This score reflects the participant's acceptance of using Grammarly as a tool for correcting English writing. The majority of the participants (70%) were familiar with Grammarly and frequently utilized it for their English writing (38% strongly agreed; 36% agreed). The statement "My acceptance of using Onlinecorrection.com as an English writing correction tool" represented the second highest mean ($M = 3.70$) on Onlinecorrection.com, thirty-six percent of the participants had ever used. A total of twenty-three participants expressed satisfaction with using the tool for improving their writing performance, as it offered valuable suggestions for enhancing their writing styles. (14% of respondents strongly agree, while 46% agree). The subsequent average score was 3.62 for QuillBot forty-eight percent of the participants used. Out of the total number of participants, 22 individuals believed that QuillBot was effective in enhancing their understanding of various vocabulary. This was achieved by offering useful recommendations for improving writing through the use of synonyms to rephrase the content. Specifically, 12% strongly agreed with this notion, while 44% agreed.

The lowest average score was obtained by Reverso ($M = 3.48$) twenty-six percent of the participants used as indicated by the statement: "My acceptance of using Reverso as an English writing correction tool." Fifteen participants indicated that they found the range of function to be somewhat intricate, and they perceived it as challenging to comprehend the content and suggestions.

Hence, factors such as proficiency in tool usage, writing effectiveness, feedback, prior experience and complexity can impact students' acceptance. As a researcher, these findings emphasized the significance of user experience, functionality, and familiarity in the implementation of AWE tools. The differing degrees of acceptance among various tools highlight the necessity of integrating these tools into writing instruction, while considering students' preferences and the distinct advantages of each tool.

Table 5. Descriptive Statistics for Student Acceptance of the Seven AWE Tools.

AWE tools	N	M	SD	Percentage	
				Strongly Agree	Agree
QuillBot	50	3.62	0.805	12	44
Scribens	50	3.54	0.762	10	40
Language Tool	50	3.56	0.733	12	34
Reverso	50	3.48	0.789	12	30
Onlinecorrection.com	50	3.70	0.763	14	46
ProwritingAid	50	3.58	0.785	14	30
Grammarly	50	4.10	0.839	38	36

4.2. RQ2: How do Students' Preferences for Different AWE Tools Impact Their Writing Performance?

The end-of-course survey analyzed students' inclinations towards different AWE tools, uncovering clear and discernible patterns of preference. Table 6 displayed the descriptive statistics of the end-of-course survey regarding the preference for utilizing the AWE tools. The items were categorized into three groups based on their level of preference: highly favored, moderately favored, and least favored. In the category of most preferred, Grammarly had the highest average score of 4.16. This was indicated by the statement: "I prefer using Grammarly as a tool for correcting English writing." A majority of the participants (42%) expressed a strong agreement that Grammarly significantly enhanced their writing performance. Besides, thirty-five participants ever used it among the fifty participants. Within the middle section, the highest average score was achieved by QuillBot ($M=3.66$), as indicated by the statement: "My preference for utilizing QuillBot as a tool for correcting English writing." 40% of the participants expressed a predominantly neutral attitude towards using the QuillBot. They believed it was sufficient for fundamental utilization. Among the least popular options, the highest average was attributed to Onlinecorrection.com, as indicated by the statement: "I prefer using Onlinecorrection.com as a tool for correcting English writing." A mere 2% of the participants expressed dissatisfaction with the usage of the product due to its limited functionality, which hindered its ability to deliver superior writing performance.

The findings indicated that students showed a preference for AWE tools that provided extensive features, user-friendly interfaces, and tangible enhancements in writing performance. Conversely, tools with restricted functionality or intricate interfaces were less favored.

Table 6. Descriptive Statistics for Student Preference Levels for the Seven AWE Tools.

Level of Preference	Items	N	M	SD	Percentage	
					Strongly Agree	Agree
Most favored	1. Grammarly	50	4.16	0.842	42	34
	2. ProwritingAid	50	3.56	0.812	12	16
The middle					Neutral	Agree
	1. QuillBot	50	3.66	0.745	44	20
	2. Scribens	50	3.5	0.763	48	36
	3. Language Tool	50	3.56	0.705	56	32
Least favored					Strongly Disagree	Agree
	1. Reverso	50	3.5	0.763	6	36
	2. Onlinecorrection.com	50	3.66	0.745	2	40

4.3. RQ3: What Are the Perceived Benefits and Drawbacks of Using AWE Tools from the Students' Perspectives?

The three unstructured inquiries yielded valuable insights into the students' encounters and perspectives regarding the utilization of AWE tools.

The questions (Q15~Q17) aimed to investigate the students' perspectives on the utilization of AWE tools. The initial inquiry was posed as follows: "Have you experienced any challenges in terms of usability, specifically with the software interface, while utilizing these AWE systems?" The majority of participants did not encounter any difficulties with the interface, either because they were already familiar with it or because they found it easy to operate. Only a small number of participants believed that certain interfaces required financial investment and that certain applications needed to be downloaded in order to input account information. The subsequent inquiry posed was "Do you concur with the feedback furnished by these Automated Writing Evaluation (AWE) systems, and if so, what is your rationale?" The majority of participants found the feedback from the systems to be valuable, as it provided them with insights on how to enhance their writing and reduce grammatical errors. A minority of participants believed that it would be preferable to eliminate the requirement for payment for certain words. The previous inquiry inquired about the extent to which the utilization of these AWE (Automated Writing Evaluation) systems has bolstered your confidence in English writing and whether you perceive any improvement in your writing skills, along with the reasons behind such observations. Twenty-nine participants reported that the AWE tools were beneficial in expanding their knowledge of synonyms and improving their ability to use alternative words to convey the same meaning in sentences. This led to a reduction in errors and improved performance in their work. Nevertheless, certain participants expressed a strong dependence on utilizing the AWE tools, while others believed that progress could be constrained due to individuals failing to review and internalize the feedback provided. Consequently, they may continue to encounter difficulties with writing in the future.

These responses revealed students' opinions for using these AWE tools, highlighting both the benefits in improving writing skills and vocabulary, as well as potential drawbacks such as over-reliance and the need for active engagement with feedbacks. It implicated while AWE tools could be valuable aids in language learning, their effectiveness might depend on how students integrated them into their learning process and their ability to apply the feedback independently in writing tasks in the future.

4.4. Summary

In summary, the majority of participants concurred that the AWE tools facilitated the identification and rectification of grammatical errors, resulting in improved writing proficiency. Additionally, these tools were commended for aiding users in acquiring synonyms and employing diverse vocabulary to convey similar concepts, thereby enhancing their writing abilities. Nevertheless, there were certain disadvantages. Some participants voiced apprehension that excessive dependence on AWE tools could curtail their ability to write independently and impede their long-term progress. Additionally, a few participants noted the inconvenience of having to spend money on particular features or download specific applications.

5. Conclusions

The study aimed to examine the acceptance and preferences of AWE tools among sophomore English majors.

5.1. Findings

The findings indicated that several factors influenced the writing processes, including the functions, user experience, and familiarity. The AWE tools function as a proofreader, assisting in the modification of uploaded paragraphs and offering improved writing instructions (Heintz et al., 2022). The students' preference for AWE tools was influenced by the elements of an easy interface and practical feedback for writing performance. The AWE tools, also known as Automated Corrective Feedback (ACF), have been extensively studied and commonly used in the field of English language learning, particularly in ESL learning, as noted by Shadiev and Feng (2024). The students' viewpoints regarding the AWE tools primarily rely on their utilization and their level of English proficiency (Li et al., 2015).

5.2. Limitation

Although this study has provided valuable insights, it is important to acknowledge its limitations. The limited sample size of 50 participants from a single university may restrict the applicability of the findings to a wider population of English as a Foreign Language (EFL) learners. Subsequent investigations would be enhanced by a broader and more varied sample encompassing multiple institutions.

Furthermore, the study specifically examined seven distinct AWE tools, which may not encompass the complete spectrum of tools currently available in the market. Given the continuous development of new tools, future studies should incorporate a broader range of AWE tools to enhance the understanding of student preferences and acceptance.

Moreover, the study heavily depended on self-reported data obtained through the use of questionnaires and open-ended questions. Although this approach yielded valuable insights into students' perceptions, it may not comprehensively measure the true impact of AWE tools on writing performance. Incorporating objective measures of writing improvement in future research would be beneficial in addition to the self-reported data.

Finally, the study was conducted within a relatively brief timeframe. A longitudinal study could offer additional insights into the evolution of students' acceptance and preferences for AWE tools over time, as well as the long-term effects of these tools on writing development.

Although this study had some limitations, it offered valuable insights into the acceptance and preferences of students regarding AWE tools. This information can be used by educators and developers to enhance the integration and design of these tools for EFL writing instruction.

Author Contributions: Both authors contributed equally to this work. All authors have read and agreed to the published version of the manuscript.

Funding: This research did not receive external funding.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest: The authors declare no conflict of interest.

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