
RESEARCH ARTICLE

The Impact of Using the QuillBot AI Application on English Writing Skills Development among EFL Learners in Saudi Arabia

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ABSTRACT

This study explores the effect of employing the QuillBot AI application on Saudi EFL learners' writing skills development. The study recruited 54 school students as participants; they were split into two groups: the experimental group (27 students) and the control group (27 students). The quasi-experimental design was used with the two groups; for each group, the pre- and post-tests were conducted before and after the intervention. For data analysis, the study used the SPSS package programme. The study results revealed that there are statistically significant differences between the two groups in favour of the experimental group, which implies a positive role of using QuillBot in enhancing the writing skills of Saudi EFL learners. The results of the study confirm that the QuillBot application is a necessary instrument for enhancing writing skills as it offers many useful features such as instant feedback, instant error correction, and suggestions of synonyms and sentence structure. Finally, the study made some recommendations for teachers and learners of EFL, including the incorporation of QuillBot and other AI applications in teaching and learning writing skills.

KEYWORDS

QuillBot; English language writing skills; EFL learners; AI tools.

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1. Introduction

English has become the most widespread and important language around the world, as it is used as an international communication language in multiple fields, such as education, business, scientific research and technology. English is the official language of 85% of international organisations and international conferences; it is the primary language of communication in the banking, technology, tourism, and health sectors, and it is the language of 90% of the information on the Internet (Al-Oraimi, 2021).

Writing is one of the four language skills in learning English, which gained great importance throughout history, as humans didn't recognise history and previous events in detail until humans used writing. So, it has been the second means of communication, exchanging ideas and information between nations since the ancient era (Almalki, 2020). Writing skill is one of the most important skills that students should learn, as it is a prerequisite for academic success, and it is essential after tertiary education (Cabudbod, Osias and Comon, 2024).

Nevertheless, English writing skills remain a sort of challenge for many English learners (EFL), as it requires integrated ability in the things you want to write, and it requires a high ability for using the correct grammatical rules, selecting appropriate vocabulary, and creating clear texts (Michael, 2023). According to Al-Hussaini and Kharim (2010), 50% of students face difficulty in writing skills.

This is confirmed by many previous studies in Saudi Arabia. For example, Ankawi (2023), Almalki (2020) and Hafiz, Omar and Shaher (2018) demonstrated that difficulties in writing skills caused many of the errors committed by Saudi EFL learners; these difficulties include: using verb agreement, using prepositions and conjunctions, using tenses and using articles. Another example is Abdalkader (2022) and Nasser (2019), whose studies revealed that students' errors in writing skills can be classified into grammar, vocabulary, sentence structure, spelling and the organisation of ideas. Additionally, cultural and linguistic differences are prominent challenges for EFL learners, as Arabic is a figurative language using long sentences, while English is more concise and direct. This makes writing more difficult for Arab learners of EFL (Ankawi, 2023; Shukri, 2014). This implies that there is an urgent need to explore effective tools to help Arab learners of EFL overcome these obstacles and challenges.

In this regard, the 'QuillBot AI application' is one of the artificial intelligence tools which depends on various artificial intelligence techniques and linguistic software algorithms to create high-quality content and paraphrase texts more professionally (Abbas, 2024).

QuillBot is an online application designed for the development of academic writing in many aspects, rewording text, distinguishing and avoiding plagiarism, abbreviating long words, and improving grammar to reach higher accuracy and more sophisticated writing (Gurbuz, 2024). It has gained prominent attention in writing skill development as it has various innovative features to enhance productivity and improve the quality of written text (Latifah, Muth'm, and Nasrullah, 2024).

QuillBot AI application is characterized by various artificial intelligence techniques and natural linguistic treatment, such as grammar checking, using active or passive sentences, re-arranging the words in the sentence, providing synonyms and summaries, which make it a crucial tool seeking to improve EFL learners' writing skill and train them to produce high-quality written content (Nguyen and Dieu, 2024; Trivette, 2020).

According to Latifah et al. (2024), QuillBot can be a useful tool for improving writing fluency by helping students produce sophisticated and well-organised texts, as it provides alternative sentence options and paraphrasing suggestions. It is useful as it paraphrases texts without changing the meaning (Nurmayanti and Suryadi, 2023).

Several previous studies demonstrated that the QuillBot AI application positively affected the students' writing skills and motivated them to participate in teaching and learning (e.g., Mohammad et al., 2023; Kurniati and Fathriani, 2022; Inayah and Sulistyaningrum, 2021). Furthermore, Nguyen and Dieu (2024) and Mohammad (2024) recommended that teachers use the QuillBot AI application in writing classes to help students improve their writing skills. Furthermore, the QuillBot effect is not limited to improving writing skill comprehension but also affects the psychological side, such as its effect on students' confidence. In this regard, Pham (2024) reported that the students were more confident after using the QuillBot application.

However, despite the positive results of the previous studies related to the effect of the QuillBot AI application on improving writing skills, there is still a need for further research to investigate the effect of the QuillBot AI application on improving writing skills in the Saudi context. Therefore, the present study seeks to investigate the impact of using the QuillBot AI application on mastery learning and developing English writing skills among EFL learners in Saudi Arabia.

As English language teachers, the researchers noticed that many students face enormous obstacles and challenges in learning English as a foreign language, especially in learning writing skills; they commit various errors in writing, including spelling, using correct instructions, and generating ideas. Even those who are good at other skills find it difficult to write a simple English paragraph.

The previous studies have shown that Saudi EFL learners encountered difficulties in English writing. For instance, a study conducted by Aloairdhi (2019) showed that a lack of confidence and difficulties in applying grammatical rules and creating ideas were responsible for Saudi EFL learners' writing anxiety at AlQassim University. In addition, Saudi EFL learners encounter difficulties in distinguishing written from spoken English, avoiding plague expressions and creating ideas, leading to obstacles in their academic writing (Ankawi, 2023).

These challenges motivate searching for effective educational tools that offer real opportunities for enhancing EFL learners' writing skills. In this regard, AI tools such as QuillBot appear as obvious instruments to overcome these obstacles. It can be a crucial tool for improving student skills in paraphrasing and using grammar and vocabulary, thereby improving overall writing skills (Safrida and Puspitasari, 2024; Amanda et al., 2023). According to Kurniati and Fithriani (2022), online paraphrase tools like QuillBot AI help EFL learners overcome the challenges they face in writing academic papers and improve the quality of writing results. Bakri et al. (2024) added that the QuillBot AI application plays a vital role in assisting students in overcoming the challenges and obstacles in the writing process. According to Gurbuz (2024), artificial tools in language learning demonstrate remarkable adaptability to the students' learning aptitudes and deficiencies and that using tools like QuillBot provides the students equal chances to acquire language skills, regardless of their attitudes towards learning. Additionally, many previous studies demonstrated QuillBot's positive effect in improving writing skills (e.g., Abbas, 2024; Mohammad et al., 2023; Nguyen and Dieu, 2024; Kurniati and Fithriani, 2022; Inayah and Sulistyaningrum, 2021).

Despite that many previous studies explored the effect of QuillBot AI application in various contexts, there is still a scarcity of studies that investigated the effect of QuillBot AI application within the Saudi context. This gap in the literature highlights the need for further investigation that considers the cultural and educational factors. Therefore, the current research problem is identified in the following main question: 'What is the impact of using the QuillBot AI application on mastery learning and developing English writing skills among EFL learners in Saudi Arabia?'

2. Literature Review

2.1. QuillBot Application AI

2.1.1. QuillBot Definition

Researchers have introduced many definitions for the QuillBot AI application. Amanda et al. (2023) defined QuillBot as one of the modern-era technologies that many students use in learning English writing. QuillBot can help them find writing errors such as punctuation, grammar and other aspects. According to Bakri et al. (2024) and Thohir et al. (2024), the QuillBot Application is an online application that depends on artificial intelligence to change the sentence format or reconstruct the sentence in English without changing the overall meaning; using AI technology, it supports language learners in their writing by offering corrections and effectively rewriting the text. Likewise, QuillBot was defined by Fitria (2021) as an online application intended to help learners with paraphrasing and writing texts. It utilises diverse techniques, including offering synonyms, altering word forms, and changing sentence structures to preserve the intended meaning, making the text appear more professional. Furthermore, Mohammad (2024) and Safirdia et al. (2024) defined QuillBot as an AI-mediated learning instrument intended to improve whole writing skills, including learners' abilities in rephrasing, vocabulary, grammar and sentence restructuring.

2.1.2. QuillBot Functions

Principally, the QuillBot application was proposed as a supportive tool for English writing. It offers learners diverse tools, assisting them in all phases of writing from generating ideas to refining grammar and style. It is eminent for its ability to write and rephrase texts. QuillBot depends on advanced algorithms for analysing the written text input and generating alternative forms, providing users with various options for choosing the suitable form (Fitria, 2021). Nurmayanti and Suryadi (2023) added that QuillBot detects grammatical and linguistic errors in the text and provides users with various alternative, accurate suggestions. It also offers stylistic suggestions to enhance the overall quality of writing. It can guide sentence structure.

QuillBot's function is not limited to paraphrasing and correcting errors, but also provides the user with immediate feedback. While learners write the text, QuillBot analyses the text and points out any errors committed by the users, allowing for immediate correction and understanding of the mistake (Fitria, 2021; Alharbi, 2023). Additionally, it offers several features designed to improve vocabulary, such as synonym suggestions; it provides learners with numerous alternative words and replaces repetitive or simplistic language with more precise and engaging vocabulary (Fitria, 2021). Furthermore, Nurmayanti and Suryadi (2023) stated that QuillBot provides contextualised recommendations, as it analyses the text and then suggests more meaningful synonyms in the specific context of the writing, ensuring accuracy and avoiding inappropriate or awkward word choices.

2.1.3. QuillBot's Mode

QuillBot application tool offers several modes. Each is designed to achieve a specific level of rephrasing. The following six QuillBot modes were described by Fitria (2021).

1. Standard Mode: This mode strikes a balance between modifying the text and preserving the original message, making it suitable for general paraphrasing needs.
2. Fluency Mode: This mode focuses on using proper grammar and making the text sound natural, making it ideal for improving readability and fluency.
3. Creative Mode: This mode changes the text extensively, potentially altering its coherence and meaning, making it useful for generating new ideas or exploring different writing styles.
4. Formal Mode: This mode modifies the text to sound appropriate for a formal audience, making it suitable for academic or business writing.
5. Shorten Mode: This mode reduces the text's length while retaining its meaning, making it useful for condensing information or meeting word count limits.
6. Expand Mode: This mode increases the text's length by adding more words if possible, making it helpful for elaborating on ideas or providing more detailed explanations.

2.1.4. QuillBot in Teaching Writing Skills

Recently, according to Latifah et al. (2024), the QuillBot application has become substantial in academic writing as it drastically improves the quality and effectiveness of writing by spotting errors, rephrasing, increasing vocabulary, addressing language difficulties and plagiarism issues. Additionally, Zulfa et al. (2023) assert the vitality of QuillBot as a writing tool that supports learners in dealing with diverse difficulties they face in their writing. They add that QuillBot can address linguistic barriers as it offers corrections, checks the grammaticality of sentences and proposes extra phrasing choices.

Amyatun and Kholis (2023) outline a number of steps to be followed while using the QuillBot in teaching writing skills. The first step is that the teacher should introduce the concept of QuillBot to the learners and explain all its features that support them in the writing process.

The goal is to introduce the students to how QuillBot can serve as a valuable tool in facing their writing challenges. Second, students are assigned the formation of a simple presentation of the exhibition, a selection from the list of topics that includes thesis, support for arguments, and recommendations. After that, students are asked to use QuillBot AI effectively. Finally, upon completion of its texts, students are directed to employ QuillBot AI to review their writings and determine any errors. Then they are directed to capture screenshots of their results, which provide concrete evidence of their progress in writing.

2.2. Writing Skill

2.2.1. Writing Definition

Since writing skill is a complex skill that requires multiple efforts and backgrounds, researchers have defined it from various views. For example, Richard (2024) defined 'writing skill' from the product theories view; he states that writing is demonstrating knowledge in the written text by using grammar, punctuation, vocabulary, spelling and cohesive devices. Harmer (2004, p. 5) defined the term 'writing' from the productivity view as

It [writing] is a process of discovery as well as a process of productivity. In contrast to oral-aural skills, writing can provide students with the chance to work at their own pace, especially if it is done at home or without any limited time assigned by teachers and allows them to think the task over before producing language.

Furthermore, Bakri et al. (2024) defined 'writing skill' as a person's ability to communicate an idea and concept in detail in written English.

2.2.2. Approaches to Teaching Writing to EFL Learners

Richard (2024) suggested the following three approaches to teaching writing skills: the product approach consists of four phases including, familiarization of the learners with the text and identifying the grammar issues, controlled writing in which students are required to introduce some simple sentences about the topic, producing a piece of writing based on the given topic, and free writing which requires the students to write the final form of the written text. The second approach is the process approach, where students are encouraged to engage in the writing process; this approach changes the way of teaching writing from learning by doing to learning by instruction. The third approach to teaching writing is the genre approach, which can be taught in multiple ways. The common stages for this approach are modeling students with the genre they produce, constructing the text, and the independent construction of the text by the learner.

2.2.3. Strategies for Improving Writing Skills

Writing skills can be enhanced by employing various approaches and strategies. The following three strategies are highlighted:

1. Integrating teaching approaches: combining genre, product, and process approaches in writing instruction can improve students' writing proficiency. These strategies help students understand the structure and objectives of various writing styles (Tangpermpoon, 2008).
2. Regular practice and feedback: commitment to regular writing practices and providing supportive feedback are essential requirements for improving writing skills. Students should engage with various writing styles and try to produce creative writing to improve their language abilities (Ingale, 2017).
3. Vocabulary and reading: expanding vocabulary through deliberate and incidental teaching, along with wide reading, can significantly enhance writing skills. According to Fitria (2024), reading various literary works helps learners to understand diverse writing styles and develop their vocabulary.

3. Methodology

3.1. Research Approaches

The research employed two approaches according to the nature of the research problem and research question: the experimental approach was employed to test the research hypothesis related to the effect of QuillBot on writing skills. This approach allows the intervention of the research throughout pre- and post-tests.

3.2. Research Design and Participants

This research employs a Quasi-experimental design with two groups: the experimental group consisted of 27 students selected from the Eleventh Grade, and the control group, which consisted of 27 students selected from the Eleventh Grade. The experimental group received the intervention while the control group was taught writing using the traditional method. The pre-test and post-test were used to investigate the effectiveness of QuillBot on writing skill development among EFL students. The study participants were randomly selected from a public school in Saudi Arabia.

3.3. Research Tool

To investigate the impact of QuillBot on writing skill development, the researchers designed a test to measure the ability of the students before and after the intervention. The test consisted of two parts. The first part requires the students to perform a writing task, whereas the second part requires the students to perform informative writing. Each part consists of 10 cores, considering spelling, punctuation, cohesive devices, grammar structure and the heart of the matter topic.

3.4. The Reliability and Validity of the Test

To verify the reliability and validity of the research test, the researchers depended on the following scientific procedures and statistical methods:

1. Reviewers' validity: The researchers presented the test to a group of experts in curriculum and teaching methods. They were required to review the test and state their opinion about the test's items, considering clarity, suitability of the test to the academic level of the research sample, and the grammatical and linguistic accuracy, and to suggest any additions or deletions of some questions. Then, the researchers adjusted the test according to the reviewers' feedback and suggestions.
2. Test-retest Method: To verify the reliability of the test, the researchers depended on the Test-retest method. The test was conducted on a pilot sample of 18 EFL students outside the main research sample, and after an appropriate time (2 weeks), the retest was conducted on the sample. After that, the researchers assessed the Pearson correlation coefficient between the scores of the pilot sample in the first and second administrations. The value was 86%, indicating a high level of reliability, which made the test suitable for the current research.
3. Cronbach's Alpha: To ensure the reliability of the test, the researchers used the Cronbach's Alpha method through the pilot testing. The value of Cronbach's Alpha was 81% for the writing skill test, indicating high reliability for the test and confirming its suitability for the current research objectives.

3.5. The Normality of the Data Test

To verify the normality of the data, the researchers conducted Kolmogorov-Smirnova and Shapiro-Wilk. The results are presented in Table 1.

Table 1. Kolmogorov-Smirnova and Shapiro-Wilk for testing the normality of the data							
Test Type	Group Type	Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Post-test	Experimental Group	0.096	27	.200*	0.964	27	0.461
	Control Group	0.156	27	0.089	0.966	27	0.503
Pre-test	Experimental Group	0.482	27	0.06	0.262	27	0.057
	Control Group	0.101	27	.200*	0.958	27	0.324

Table 1 demonstrates that the data were normally distributed since the values of Kolmogorov-Smirnova and Shapiro-Wilk were greater than 0.05. Based on these results, the parametric statistical methods were used.

4. Study Results

The research question states, 'What is the impact of QuillBot on English writing skills among EFL students in Saudi Arabia?' The research hypothesis states, 'There are statistically significant differences between the mean scores of the experimental group and the control group in the post-test of writing skills'. The researchers employed the following tests:

4.1. Descriptive Statistics

To provide a preview of the performance of the sample, the researchers calculated the mean scores, standard deviation and the minimum and maximum scores for the pre-test and post-test. Table 2 shows the results.

Table 2. The descriptive statistics for the experimental and control group in the pre-test and post-test						
Group	Test	No.	Mean	Standard Deviation	Minimum Score	Maximum Score
Experimental	Pre-test	27	15.64815	23.9398	8	17
	Post-test	27	17.27778	1.851887	13	20
Control	Pre-test	27	12.22222	2.1765	8.6	16
	Post-test	27	13.204	2.2586	8	17

As seen in Table 2, the experimental group achieved higher performance than the control group. The mean score of the experimental group in the post-test was (M=17.278) while the mean score for the control group in the post-test was (13.204). This result provides insight into the effect of the QuillBot AI application on improving EFL learners' writing skills.

4.2. ANCOVA Analysis of Variances

To verify if the differences between the experimental group and control group are statistically significant and attributing to the effect of QuillBot, the researchers assessed the ANCOVA analysis of variances, which allowed them to control the pre-test effect as coefficients. Table 3 presents the results after controlling the pre-test effect.

Table 3. ANCOVA analysis of variances						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	228.382 ^a	2	114.191	26.777	.000	.512
Intercept	7160.184	1	7160.184	1679.032	.000	.971
Pre-test	4.308	1	4.308	1.010	.320	.019
Group	215.466	1	215.466	1.526	.000	.498
Error	217.488	51	4.264			
Total	12989.000	54				
Corrected Total	445.870	53				
a. R Squared = .512 (Adjusted R Squared = .493)						

As seen in Table 3, the group effect (using the QuillBot application) is statistically significant (F=1.010) and (Sig = 0.000) is smaller than 0.05. Based on these results, the research hypothesis is accepted, indicating the effectiveness of QuillBot in improving writing skills. Also, the partial Eta squared is .498, indicating that QuillBot has a large effect size on improving writing skills among EFL students. Additionally, the adjusted Squared = (.493), indicating 49,3% of the variance is interpreted by the post-test.

Furthermore, the Estimated Marginal Means was assessed for the experimental and control groups. Table 4 presents the results.

Table 4. The Estimated Marginal Means for the experimental and control groups				
Group Type	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Experimental group	17.249 ^a	.398	16.449	18.049
Control Group (section 5)	13.233 ^a	.398	12.433	14.033
a. Covariates appearing in the model are evaluated at the following values: Pre-test = 13.935.				

Table 4 indicates the extent to which the QuillBot application affects EFL writing skills. The experimental group obtained higher mean scores ($M=17.249$) while the control group obtained ($M=13.233$), confirming the effectiveness of using the QuillBot AI application on the experimental group.

5. Discussion

The results of the present study revealed statistically significant differences between the experimental group and the control group in the post-test. The mean score of the experimental group was higher than that of the control group, confirming the positive impact of using the QuillBot application on enhancing Saudi EFL learners' writing skills. Another evidence of the positive effect of using the QuillBot application in writing comes from the effect size measured by the Eta square value, which was 49%; this was very high according to Cohen's criteria.

The findings of the current study confirmed the usefulness of employing QuillBot as a tool to improve EFL learners' writing skills. The application offers instant feedback, which, in turn, advances students' writing abilities. This was indicated by the results of many previous studies, such as Smith and Jones (2018), Dhanya and Alemalu (2019), and Wang and Chan (2021) who highlighted the vital role of feedback in developing and mastering students' English skills, including writing. Moreover, the positive effect of using the QuillBot application on students' writing, as revealed by the results of the present study, can be attributed to its feature of immediate correction of errors, offering users suggestions and alternative synonyms. This result is in line with the findings of some recent studies, such as Bakri et al. (2024), Pham (2024), Gurbuz (2024), and Nguyen and Dieu (2024), who emphasised the simplicity of using the application and its contribution to improving students' writing skills.

6. Conclusion

6.1. Key Findings and Academic Contributions

This study aims to examine the effect of using the QuillBot AI application as a writing tool on the English writing skills of Saudi students. The study confirmed the positive effect of using the application on the improvement of the students' writing, as the experimental group scored higher than the control group. The statistical differences between the two groups were significant in favour of the experimental group, who used the QuillBot application. This learning experience motivates their autonomous learning instead of heavily relying on the instructor to correct their writing errors and increases their academic performance with a higher level of self-confidence.

The results of the present study offer an important perception of the effect of using the QuillBot AI application on language skills in general and writing skills in particular. The results show that the application is a useful instrument for enhancing writing skills, as it offers instant feedback, error corrections, synonyms, paraphrasing and summarising. Such features help users overcome writing obstacles and avoid errors, which ultimately develop better writing skills.

6.2. Future Research

Although the results of the present study are fruitful, further research is needed to investigate the long-term impact of the application on different facets of writing skills, including self-confidence, anxiety and motivation. Future research may explore the effect of AI applications on other language learning aspects, such as critical thinking, creativity and academic expression. This leads to having a panoramic view of the advantages of using AI tools in education. Furthermore, researchers are encouraged to examine the effect of the QuillBot application in other educational environments, such as universities and institutes to ensure the effectiveness of the QuillBot application on different levels of writing skills. Finally, future studies may explore the difficulties that EFL learners may encounter when using the QuillBot AI application.

6.3. Recommendations

Based on the findings, the researchers make the following recommendations for teachers and students to obtain the maximum advantages of using QuillBot:

1. Integrating AI applications besides the traditional teaching strategies: It is recommended that teachers use artificial intelligence applications as a supportive tool, besides traditional methods, in teaching English writing skills.
2. Using QuillBot outside the classroom: It is recommended that students use the QuillBot application for practising writing outside the classroom, as it provides immediate correction of errors and suggestions; when students know the mistakes and errors in their writing, they will avoid them.
3. Providing teachers with training programs: It is suggested to provide training programs for teachers on the way of using artificial intelligence applications in the classroom for teaching writing skills to obtain the maximum advantages of using these techniques in the classroom.
4. Designing advanced artificial intelligence tools: It is recommended to design other artificial intelligence applications, considering the needs of EFL learners at different academic levels through the cooperation between experts in programming and linguists.

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