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ARTIFICIAL INTELLIGENCE TOOLS VERSUS STUDENTS: COMPARISON OF PARAPHRASES OF ACADEMIC TEXTS

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Abstract

Paraphrasing is an important skill for learners to take part in academic discourse and successful paraphrasing provides solutions to learners of the difficulties they face during the academic writing process (Chen & Liou, 2015). With the advancement of AI paraphrasing tools, learners paraphrase and incorporate that text in their writing without double-checking the validity of the paraphrased text. This article aimed to investigate the differences between students' paraphrases of academic texts and the paraphrases done through different AI tools. Furthermore, this study also explored how corpus can help students evaluate the paraphrases of academic texts. The concurrent mixed methods approach was used. Twenty-five graduate students were selected randomly and five AI tools were chosen purposively. Five passages in English with different levels of complexity were given to the participants to paraphrase. The grammar, coherence, academic vocabulary, and organization of the paraphrases were then assessed through the Independent Samples Test. The triangulation was sought through the corpus-based approach. The independent samples t-test results show statistically significant differences between the three variables except for the academic vocabulary variable. The results of academic vocabulary and grammar variables obtained

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through the corpus website also support the results obtained through the t-test. While AI technologies are less precise and coherent when paraphrasing English texts, there could be a better sense of grammar and academic vocabulary use. As a result, it is advised that students may use AI tools to benefit from the technology, but they need to be the decision-makers for the relevance, accuracy, preciseness and validity of the paraphrases.

Keywords: concurrent, paraphrase, AI tools, t-test, corpus

1. Introductions

The traditional methods of teaching and learning face an ever-present challenge as a result of the continuous evolution of new Artificial Intelligence (AI) tools like ChatGPT, QuillBot, Grammarly, and many others. Educators find themselves increasingly compelled to incorporate these innovative tools into their daily teaching practices to enhance the learning experience. This adaptation to technological advancements offers a two-fold opportunity for educators.

First, it allows teachers to update their skills and align their methods with current trends in education. This not only enhances their proficiency but also ensures that they remain relevant and effective in an ever-changing educational landscape. It's an opportunity for professional growth and staying on the cutting edge of pedagogical approaches.

Secondly, it offers a chance to investigate how these technological tools can be effectively harnessed for the benefit of both students and educators. This topic underscores the need of the hour as we, the teachers, seek to understand the practical applications of these tools and evaluate their reliability. By delving into this investigation, we aim to ascertain the extent to which AI tools can improve the teaching and learning process. It's an exploration of the potential advantages, as well as any limitations or challenges these tools may present in an educational context.

In essence, this effort is driven by the recognition that embracing AI tools can not only modernise and enrich our teaching methodologies but can also contribute to the overall growth and success of our students. It is a proactive response to the demands of the digital age and a commitment to providing the best possible education to the learners of today and tomorrow.

1.2. Background of the Study

Technology is not limited to AI tools; rather, it is a broader term and includes electronic devices like multimedia, computers, and mobile phones used in the classroom for teaching and learning purposes. The advent of AI tools falls under the umbrella of technology, and their integration into language learning and teaching is significantly increasing. Students and educators utilise these AI tools for various purposes, including grammar and spelling checks, text paraphrasing, and corpus searches for learning and teaching purposes. However, when students use these tools for their assignments and term papers, their texts reveal plagiarised content. Plagiarism in academic research and reports has prompted researchers to propose strategies for educators to teach students how to avoid direct plagiarism while teaching language and research-related reporting (Keck, 2006). She conducted a study comparing paraphrasing techniques used by first-language (L1) and second-language (L2) users in summary writing. Her study involved the use of paraphrasing techniques and classified those techniques under four broader techniques: "Near Copy, Minimal Revision, Moderate Revision, and Substantial Revision" (pp. 1–18). She concluded that paraphrasing is an "important skill for academic writing", and it can be a helpful technique to avoid direct "copying from the source text" (p.1). Reading has long been acknowledged as a cornerstone of effective writing, and researchers have sought to provide educators with methods for teaching students how to avoid direct text plagiarism (Currie, 1998). One approach recommended for educators is to teach students various strategies for paraphrasing their readings when citing others. Educators have been encouraged to emphasise the importance of paraphrasing as a key strategy for avoiding plagiarism (Campbell, 1990). Providing feedback on plagiarism to students is challenging, as educators must carefully distinguish between plagiarised and original content (Hyland, 2001). However, advancements in technology have alleviated this challenge, as various tools can now easily detect instances of plagiarism in students' reports, assignments, and theses. Moreover, technology not only provides plagiarism detection tools but also offers paraphrasing tools that save time and energy for both students and educators.

Marzuki, Widiati, Rusdin, Darwin, and Indrawati (2023) studied the " impact of AI writing tools on content and organisation of the students' written texts" (pp. 1-17). They investigated the influence of the AI tools such as "QuillBot, WordTune, Jenni, Chat-GPT, Paperpal, Copy.ai, and Essay Writer " (p. 1). Through the semi-structured interviews with ESL teachers in Indonesian Universities, they claimed that these AI tools have positive impacts on students' writing skills. These AI tools have significantly eased the academic workload, offering students, researchers, and educators efficiency and convenience. Some of the tools mentioned above have powerful paraphrasing tools as well. These tools may help learners to get their tasks done in a smart way. Therefore, training students to use these tools may bring better results. Paraphrasing is a critical skill for academic discourse, enabling learners to effectively engage in the academic writing process (Chen & Liou, 2015). It is a means of conveying a message in simpler words and is crucial for both reading comprehension and writing skills (Keck, 2006). Both native and non-native learners encounter challenges with paraphrasing, prompting researchers to investigate learners' paraphrasing abilities (McInnis, 2009). However, the equal importance should be given to the paraphrasing skills. With the use of technology, learners can work smartly and benefit from different AI tools such as QuillBot and Grammarly. Syahnaz and Fithriani (2023) conducted a case study to investigate the perceptions of sixth-semester EFL students about using QuillBot in their academic writing course. The findings of their online and face-to-face interviews "exhibited positive responses toward the utilisation of QuillBot in academic writing (pp. 210-218)". They claimed that the use of QuillBot benefits learners in three ways: "Content, grammar, and language use (p.21 7)". Their study also stressed upon the further use of AI tools, specifically QuillBot. A review by Fitria (2021) examined the use of QuillBot as an AI tool, noting that students employ it as an alternative to manual paraphrasing. This study uses document analysis to investigate the use of the free and premium version of QuillBot. The documents that she analysed were the abstracts of journal articles. The findings of this study revealed that QuillBot employs four important language techniques to rewrite texts: "Using equations or synonyms, changing word forms, altering voice,

and rearranging word order (pp. 183-196).” Fitria's findings suggest that students can use AI tools like QuillBot to support their paraphrasing efforts, provided they have a strong grasp of vocabulary and grammar. Inayah (2021) explored the challenges faced by mechanical engineering students when paraphrasing in academic writing courses and how online paraphrasing tools assist them in overcoming these challenges. The study indicated that online paraphrasing tools play a crucial role in helping students surmount difficulties. Another study by Na and Mai (2017) examined paraphrasing as a cognitive ability used by tertiary students in Vietnam. The research revealed that students primarily employed synonym substitution and seldom made changes to syntactic structures. The review of the literature indicates that paraphrasing is one of the important techniques employed by students in academic writing. Researchers have investigated the techniques and strategies learners use to address challenges in paraphrasing, including manual and online methods. With technological advancements, online tools have become increasingly popular for efficient language education. The studies by Fitria (2021) and Syahnaz and Fithriani (2023) explored the use of QuillBot, an AI online paraphrasing tool, and found that students had a positive view of its use.

This paper addresses the research problem stemming from the increasing use of AI paraphrasing tools. Learners are increasingly paraphrasing and incorporating text into their writing without verifying the validity of their paraphrases. Consequently, assignments, projects, and theses submitted by students often suffer from cohesion and coherence issues, organisational challenges, and academic vocabulary deficiencies. As a result, paraphrases can be misleading, leading to comprehension issues for readers and evaluators. In light of these concerns, this study explores the challenges faced by graduate students in paraphrasing during their academic writing journey and seeks to determine how technology, and more specifically AI tools such as QuillBot, Grammarly, and Online Paraphraser can support students in their academic endeavours. The research questions guiding this study are as under:

Q1. In what way, the students’ paraphrases of academic texts are different from the paraphrases generated through different AI tools?

Q2. How does corpus help students to evaluate the paraphrases of academic texts?

Q3. What are the differences in paraphrases of academic texts done through different AI tools?

2. Methodology

This study employed a concurrent or convergent mixed methods approach to investigate the effectiveness of paraphrases using artificial intelligence (AI) paraphrasing tools in comparison to students' paraphrasing abilities. Creswell and Clark (2018) propose the following characteristics for mixed methods.

Screenshot of characteristics of mixed methods by Creswell and Clark

- collects and analyzes both qualitative and quantitative data rigorously in response to research questions and hypotheses,
- integrates (or mixes or combines) the two forms of data and their results,
- organizes these procedures into specific research designs that provide the logic and procedures for conducting the study, and
- frames these procedures within theory and philosophy.

The study involved a total of 30 participants, comprising five AI tools and 25 graduate students. The five AI tools were selected purposefully, while the 25 graduate students were randomly chosen from a pool of 70 students enrolled in literature and linguistics programs at Shah Abdul Latif University Khairpur, encompassing those taking coursework and those working on their theses. Five academic writing short paragraphs, each with varying levels of complexity, were thoughtfully selected from a single English-language research article. The graduate students were tasked with paraphrasing these paragraphs using traditional paper and pencil methods. Simultaneously, the lead researcher paraphrased the same paragraphs using five paraphrasing tools: QuillBot, Grammarly, Paraphrase Online, Paraphraser.Io, and GoodContent's online phrase. The study employed the free versions of these online paraphrasing tools.

3. Material and Methods

The data collected for this study includes quantitative data through test scores and qualitative data through corpus analysis. The quantitative data

was collected from the participants. There are two types of participants for two independent groups: AI tools and graduate students. The paraphrases are evaluated against a website, namely EAPFoundation.com, qualitatively. The paraphrases were assessed based on four variables: Grammar (gr), academic vocabulary (vocab), coherence (coh), and organisation (org) through independent samples t-test for quantitative design. To ensure the reliability of the results, inter-rater reliability is established through three examiners, who utilised a rubric to assess both AI-generated and student-generated paraphrases (see Appendix-1). The scores from two ratters whose assessments are similar or identical have been chosen for the study.

The quantitative part of the study utilises the independent samples t-test to analyse the results. Additionally, methodological triangulation has been carried out by applying a corpus-based approach to answer the second research question and validate the findings. The Academic Word List (AWL) has been utilised to assess the use of academic vocabulary in the original paragraphs and the paraphrases generated by AI tools and students. The EAPFoundation website's AWL tool has been employed, as it offers a comprehensive corpus-based approach. To compare and evaluate academic vocabulary (vocab), the AWL word finder function has been applied to two sample examples. Additionally, the grammar (gr) variable has been assessed by employing Grammarly and QuillBot to compare the grammar of the original paragraphs, AI paraphrases, and student paraphrases. The two-sample examples of academic vocabulary and grammar serve to confirm the findings. The EAPFoundation website has remained a valuable resource throughout the study, offering support for academic vocabulary and grammar assessments. The two variables, i.e., grammar and academic vocabulary, complement the results obtained through the independent samples t-test. The analysis of academic vocabulary and grammar cross-validates, demonstrating consistency and rigour in the study's methodology.

4. Findings

4.1. Findings of Quantitative Design

This section presents the results of the quantitative design used in this study. The results for the quantitative part are shown in Table 1 and Table 2. The

following research questions have been answered, and their results have been interpreted and presented in this section.

Q1. In what way, the students' paraphrases of academic texts are different from the paraphrases generated through different AI tools?

The following sections contain the answer to research question number one. The independent sample t-test was used to analyse the data. First, the group statistics table is presented and interpreted, and then the independent sample test results are reproduced. Table 1 shows the group statistics.

Table 1

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Gr	1	25	20.6000	2.19089	.97980
	2.00	5	27.2000	1.48324	.66332
Voc	1	25	12.2000	3.56371	1.59374
	2.00	5	14.0000	4.18330	1.87083
Coh	1	25	23.4000	2.19089	.97980
	2.00	5	19.2000	1.92354	.86023
Org	1	25	21.4000	1.14018	.50990
	2.00	5	17.8000	.83666	.37417

Table 1 shows the group statistics of the participants in this study. The paraphrases done by the two independent groups were compared by using an independent sample t-test. There were four variables in which the paraphrases were compared: gr=grammar, voc=academic vocabulary, coh=coherence, and org=organisation. There were twenty-five paraphrases from students and five done through AI tools. The group column shows the number of groups being compared. The N indicates the sample size. The mean column refers to the averages of the variables in this study. The standard deviations show the deviation of values between the groups. The smaller standard deviation suggests that the spread is closer to the mean scores. The "std" error mean shows the standard deviation of the mean scores. The smaller std error indicates the precision in the estimates of the mean.

Table 2

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	Upper
Gr	Equal variances assumed	.417	.536	-5.578	8	.001	-6.60000	1.18322	-9.32850	-3.87150
	Equal variances not assumed			-5.578	7.030	.001	-6.60000	1.18322	-9.39543	-3.80457
Voc	Equal variances assumed	.011	.919	-.732	8	.485	-1.80000	2.45764	-7.46733	3.86733
	Equal variances not assumed			-.732	7.803	.485	-1.80000	2.45764	-7.49235	3.89235
Coh	Equal variances assumed	.011	.921	3.221	8	.012	4.20000	1.30384	1.19334	7.20666
	Equal			3.22	7.86	.012	4.20000	1.30384	1.1845	7.2154

	variances not assumed		1	8				5	5
Org	Equal variances assumed	.554	.478	5.692	8	.002	3.60000	.63246	2.14155	5.05845
	Equal variances not assumed			5.692	7.339	.001	3.60000	.63246	2.11839	5.08161

Table 2 shows the results of the independent samples t-test paraphrase scores secured by students and AI tools. The results show that there is an average mean score for gr1(20.600) and an average mean score for gr2(27.200), which shows that there is a significant difference, p=0 .001, for the paraphrases by both groups.

The variables voc1(12) and voc2(14) suggest a smaller mean difference between the variables of both groups. The study shows that there is no statistically significant difference, p=.485, between the variables of both groups. The test of equality of the means for this variable suggests rejecting the idea that there is a statistically significant difference between the academic vocabularies used in paraphrases by the two groups.

The variables coh1(23) and coh2(19) suggest a considerable average mean difference between the variables of both groups. The study shows a statistically significant difference, p=0.012, for the variables of both groups.

The variables org1(21), and org2(17), suggest a considerable average mean difference between variables of both groups. The study shows that there is a statistically significant difference in scores of paraphrases secured by students and AI tools. p=0.002, and p=0.001. for the variables of both groups. Hence, the results of all four variables were tested, and it was found that three variables were significantly different in mean scores of paraphrases. However, only one variable did not show significance. There are the chances that the sample size has impacted on the results for this variable

or the result may have arisen due to chance, experience, or overreliance on the original texts by the students.

4. 2. Findings of Qualitative Design

4.2.1. Corpus Analysis

This section answers the research question number 2.

Q2. How does corpus help students to evaluate the paraphrases of academic texts?

The corpus-based method was used to triangulate the results found from the independent test results in the quantitative part of this study. The EAPFOUNDTION, a corpus website, was used to support the findings in one variable, which is academic vocabulary. The EAP corpus website contains pages for all language skills, including academic vocabulary. It has a 570 academic words list and the list has 10 subcategories and each subcategory contains 60 academic word families except sub-list 10. The three texts, including Original texts for paraphrasing, AI-generated Paraphrase, and students' generated paraphrases, were checked through an academic word finder in the subcategory of academic vocabulary list (AWL). The two sample examples have been reproduced for academic vocabulary used in the original paragraph, AI paraphrases, and students' phrases. The academic vocabulary was assessed through the academic word finder (vocab). This website can be used for academic writing as a whole. However, the scope of this study is limited to checking the use of academic vocabulary through the academic word list tool on the website to evaluate the use of academic vocabulary. The following section contains the output and analysis of the results.

Academic Vocabulary

The results for the academic vocabulary list are given under

Figure 1

Academic Vocabulary Checked through AWL Function in EAPFOUNDTION Corpus.

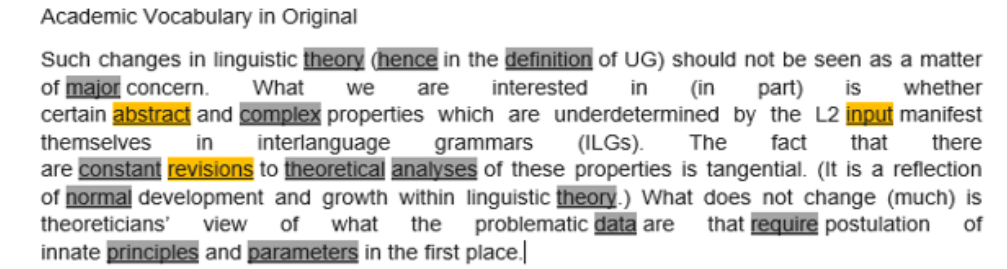


Figure 1 shows the academic vocabulary highlighted in different colours according to the academic vocabulary word list (AWL) in the EAPFOUNDTION corpus. The seventeen (17) words are present in the original paragraph examined through the word finder function in the AWL corpus. This list was generated to first count the overall academic words used in the original texts as that can be compared later with paraphrases.

Figure 2

Academic Vocabulary in Paraphrase through QuillBot

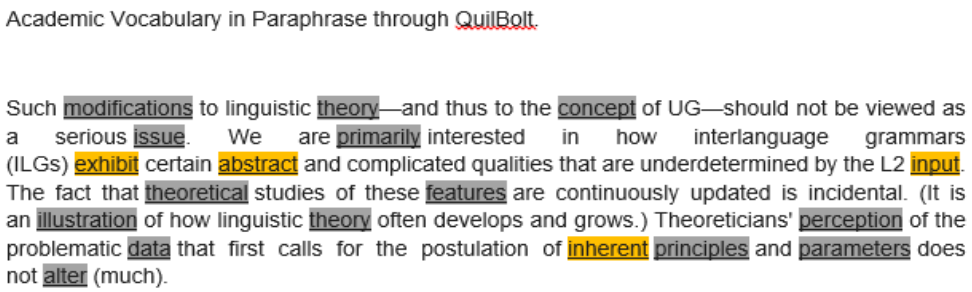


Figure 2 shows the academic vocabulary highlighted in different colours as per the AWL list. This figure shows the paraphrase done through QuillBot, one of the AI tools. The paraphrase consists of 18 academic words. This figure includes one academic word more than the original list which suggests that the AI tools may generate more academic words than the original. Although the difference is not so big and this difference can be ignored, a cautious approach must be applied if the academic words increase from the original texts. Therefore, the students need to be aware while

paraphrasing through AI tools. They need to double-check and use the paraphrase.

Figure 3

Academic Vocabulary in Student's Paraphrase

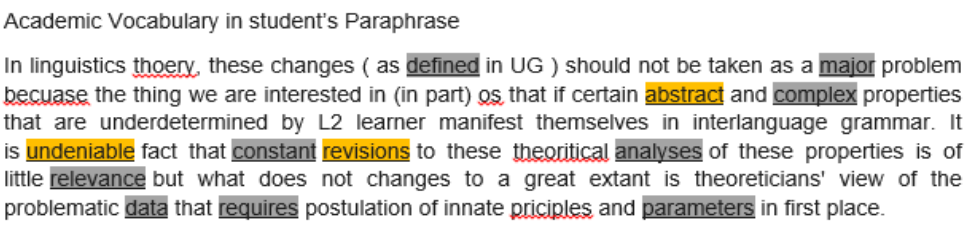


Figure 3 shows the academic vocabulary used by a student in his paraphrase. The student has used 12 academic words in his paraphrase which shows a considerable difference between original and QuillBot paraphrase and student's paraphrase. However, there are other paraphrases where students' paraphrases and AI paraphrases are very near or similar in results concerning academic vocabulary. One of the interesting implications of this paraphrase can also be that students produce shorter paraphrases as compared to the AI-generated paraphrase.

Figure 4

Academic Vocabulary in Text 2 Original Paragraph

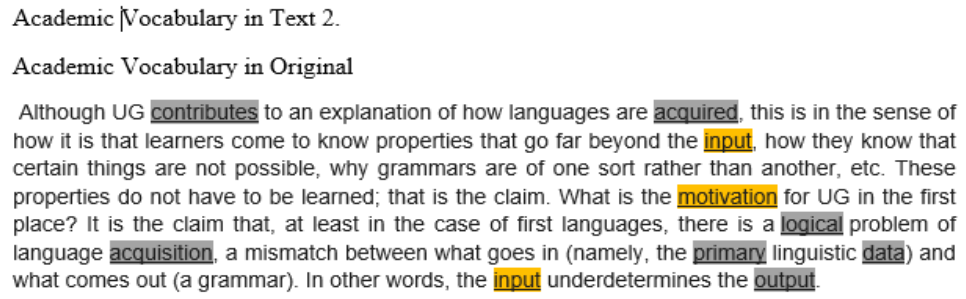


Figure 4 shows the 10 instances of the academic vocabulary used in the original paragraph selected for this study as per the AWL available on the EAPFoundation website. This academic word count helps the researchers to

differentiate between the use of the highlighted academic words in paraphrases done through AI tools and students.

Figure 5

Academic Vocabulary in Paraphrase through QuillBot

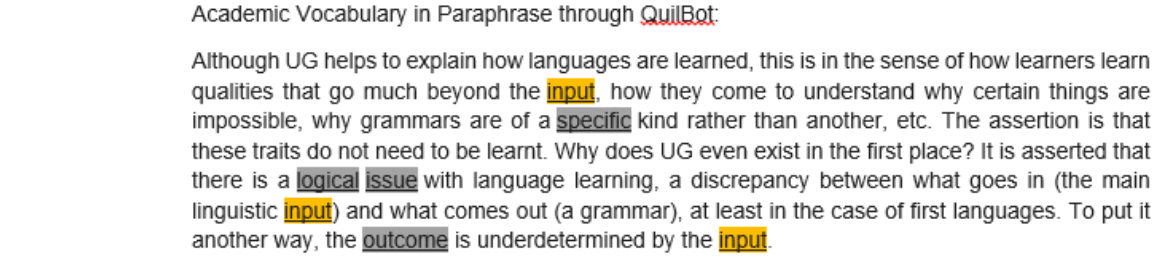


Figure 5 shows the 7 instances of the academic words used in the paraphrase done through the QuillBot. This result suggests variation in the use of academic words used in the texts, and in paraphrases. Although the difference is not so big, this variation suggests that students need to be aware of such variations and use the paraphrases as per their aim of the assignment.

Figure 6

Academic Vocabulary in Student's Paraphrase

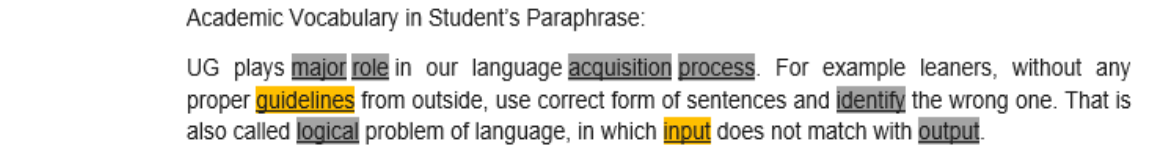


Figure 6 shows the 9 instances of the academic words used in this paraphrase by the student. However, one of the interesting observations shows that this paraphrase is comparatively shorter than the original paragraph, and paraphrases are done through QuillBot; there are nine instances of the academic words. This observation suggests that students while paraphrasing, may take into account the main words or salient words of the texts that they paraphrase. However, the AI tools do not perform functions as per the required goals of the paraphrasers.

Grammar

The other variable that is grammar (gr) was double-checked for grammatical accuracy through Grammarly and QuillBot.

Q3. What are the differences in paraphrases of academic texts done through different AI tools?

The results for grammar (gr) are given as under.

Figure 7

Grammar Errors in Student's Paraphrase Checked through QuillBot

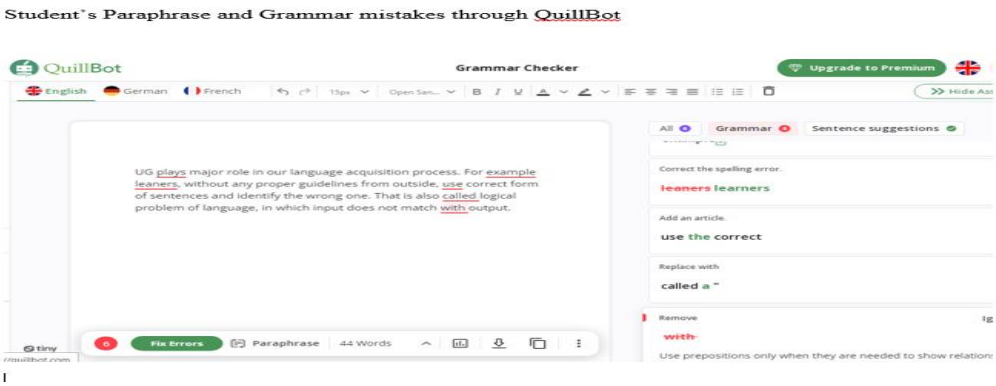


Figure 7 shows the results of the grammar errors in students' paraphrases through QuillBot. The QuillBot shows a total of 6 suggestions for grammar. The suggestions are underlined in red colour in the figure.

Figure 8

Grammar Errors in Student's Paraphrase checked through Grammarly

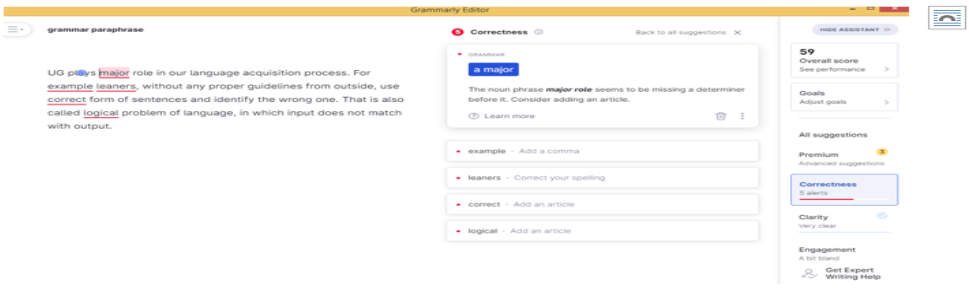


Figure 8 shows the grammar errors in students' paraphrases through Grammarly. Grammarly shows a total of five basic suggestions. There seem differences among the online tools concerning grammar checking. Therefore, the students may make cautious decisions while performing any academic activity and using the paraphrases done through AI tools.

Figure 9

Grammar Errors in the Paraphrase done through QuillBot

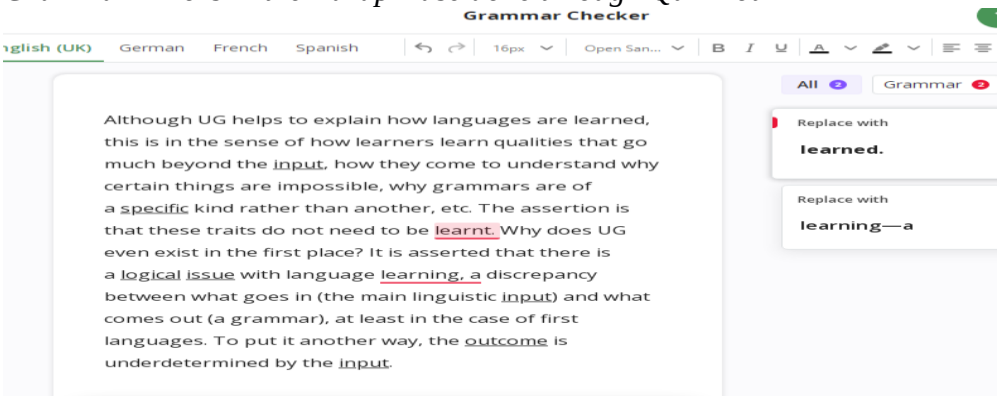


Figure 9 shows two words underlined with red colour and a side pane also can be seen that suggests the standard or most frequently used form of these words. One of the interesting things about this figure is that this text was paraphrased through QuillBot itself. It underlines *learnt* which suggests that it is a less frequent form of the word currently. The second mistake is underlined again which has a punctuation problem. Even though the text was paraphrased by the AI tool QuillBot itself, there are chances that the output may have non-standard forms, less frequently used forms, or grammatical errors. By looking at the findings, it can be inferred that these tools need to be cautiously used. Another inference can also be taken by considering the length of the text. There are chances of more errors if the longer than the above texts are checked for grammar errors through QuillBot.

Figure 10

Grammar Errors Checked through QuillBot

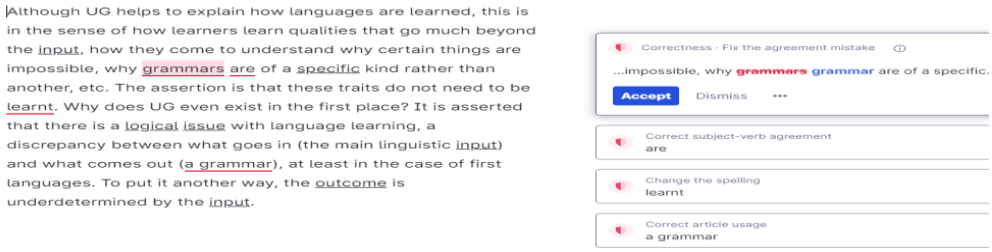


Figure 10 contains the same text as Figure 9, which was paraphrased through QuillBot. There are four words underlined in this figure. Both figures have different occurrences of the underlined words. One of the warnings that the researcher gives is that it is not always necessary that the underlined words in these tools have some kind of grammar errors. There are chances that the users may accept the underlined words as they are. These tools have the acceptance option. This option also suggests that humans should be in the driving seat of these tools and they should make the decision if the underlined words, phrases, or expressions should be retained as they are or should they be replaced with the suggested correct option.

Figure 11

Grammar Errors in Student's Paraphrase Checked through QuillBot

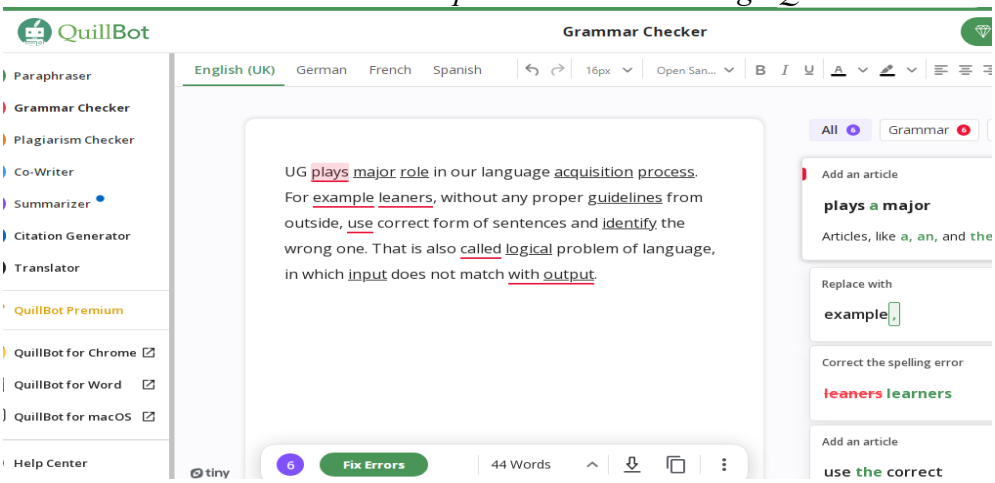


Figure 11 shows six suggestions given by the QuillBot AI tool. The underlined words don't need to be grammatically incorrect such as the word underlined word *use* as can be seen in figure eleven. The *r* letter is missing from the underlined word *leaner*. The word *output* needs an article before it as the figure suggests.

Figure 12

Grammar Errors in Student's Paraphrase Checked through Grammarly

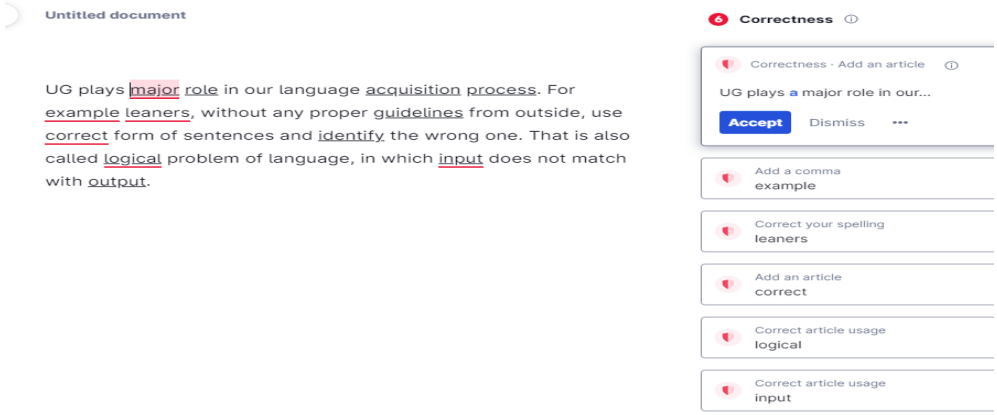


Figure 12 also shows six suggestions. However, one of the interesting observations is that this figure underlines a few different words as compared to Figure 11. Figure 11 underlined *plays* whereas Figure 12 underlines the word *major*. In the same way, other words are underlined differently. Figure 12 shows the *input* as an underlined word. The word *output* in Figure 11 suggests the use of the article before it. However, there is no suggestion in Figure 12.

5. Discussion and Conclusion

This study compared the paraphrases done by students and paraphrases done through AI tools. The participants were selected randomly and AI tools were selected through purposive sampling. This study shows differences in paraphrases of both groups. The independent samples test shows statistically significant results for three variables, i.e., grammar, cohesion, and organisation. Based on the results, the researchers argue that there are considerable differences between the two types of paraphrases at three levels, i.e., grammar, coherence and organisation. However, the results of the fourth variable, i.e., academic vocabulary, were not much different in the two groups. This could be due to the chance of students' overreliance on the original texts when paraphrasing. The results support the claim by Fitria (2021) who claimed that the use of AI tools like QuillBot can benefit students in paraphrasing, provided they have a strong grasp of vocabulary and grammar. The grammar (gr) variable of this study supports this claim and it

can be seen that students' grammar skills are less accurate than QuillBot, Grammarly and other AI tools used in this study. The findings of the academic vocabulary variable in this study also supports Fitria's study. The findings of the current study also backs the claim by Syahnaz and Fithriani (2023). Their study revealed that the use of AI tools such as QuillBot can help students in aspects: contents, grammar and language use. This research also shows that students can also improve their grammar and language use through the judicious use of the AI tools. However, the overreliance and taking the output of these tools for granted may cause serious problems in their paraphrases. Based on the findings of the t-test, it can be concluded that there are differences between the paraphrases of both groups. However, students can benefit from careful use of these AI tools.

The results of the independent samples t-test were triangulated through a corpus-based approach. The corpus analysis shows that there are considerable differences and variations in the paraphrases done through the AI tools and by the students. The findings of both approaches complemented each other for the fourth variable which is vocabulary. The results for the academic vocabulary were not significantly different. The findings supported the results of the independent sample tests conducted to show the quantitative analysis. Based on the findings, one of the interesting aspects of the study was also noticeable in students' paraphrases. The students' paraphrases, of the majority, were less than the number of words present in the original texts. Even their paraphrases were not of the same length as compared to paraphrases done through AI tools. The findings also suggest that the AI tools are less helpful in coherence and organisation but more helpful in grammar. These paraphrases done through AI tools and students' paraphrases were similar in the results concerning the use of academic vocabulary. The paraphrases done for the sake of academic writing have a satisfactory number of academic words used in both types of paraphrases. However, coherence, organisation, and grammar are also important aspects of academic writing. Therefore, the proper use of these aspects of writing should also be given enough attention. This study shows that there are many differences in these variables and these differences should be considered seriously. Based on the findings of the study through quantitative and qualitative approaches, it can

be suggested that students must be careful when paraphrasing academic texts. They must be the controllers and organisers of the texts, and they must decide the relevance and irrelevance of the texts. It can also be suggested that more participants may be involved in conducting more rigorous studies for better results in the future.

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