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FREE TOOLS FOR PARAPHRASING: TO USE OR NOT TO USE

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ABSTRACT

Paraphrasing is generally considered a challenging skill to acquire but it is a necessity in academic writing. With the advent of technology, a plethora of applications both free and premium are now available to authors looking for shortcuts. This article reports the findings of a small-scale study to assess a free paraphrasing tool, the QuillBot paraphraser and ChatGPT, the artificial intelligence assistant that can be used to paraphrase texts. A paragraph from Purdue Online Writing Lab was extracted to generate the paraphrases. Results indicate that QuillBot generally failed to paraphrase original texts appropriately as it basically substituted words with synonyms with few to no structural changes. Users of the tool would be considered as patchwriting or plagiarising although the original author was cited. Although ChatGPT was more impressive, it also had limitations such as providing incorrect citations and non-existent sources. Users should be aware of the pitfalls of relying on these free tools and instead write their own paraphrases to avoid the potential risk of committing academic dishonesty.

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1. Introduction

"Publish or perish" is a common maxim among academicians in institutions of higher education. Publishing has become obligatory in academia and the consequences of this system are serious. Academic hiring may depend on the number of published papers in indexed journals. The

number of publications helps academics to obtain promotions, grants and scholarships. Academic publishing is now a key performance indicator in many universities. It is therefore unsurprising that research has found that due the immense pressure on faculty members to increase publication, they may resort to short cuts that result in potential plagiarism (Chandere et al, 2021).

To encourage more publications by the academic staff in the author's institution, several free applications including the QuillBot paraphraser were recommended. Some questions immediately came to mind: Should a paraphraser be used to ease the burden of academic publishing? Is the output generated by paraphrasing tools effective? Does using these tools constitute plagiarism?

It is acknowledged that paraphrasing is a challenging task particularly for those whose mother tongue is not English (Chen et al., 2015; Rogerson & McCarthy, 2017; Shi, 2012). Academic writing guides will state that a good paraphrase retains the meaning of the original text without copying words or structure. To produce a legitimate paraphrase, Massachusetts Institute of Technology (2020) requires a combination of strategies such as:

- Replacing words that are not generic with synonyms.
- Changing sentence structure.
- Changing voice from active to passive and vice versa.
- Changing clauses to phrases and vice versa.
- Changing word form.

Authors who are under constant pressure to publish may turn to the numerous free tools to rephrase their previously published work and submit the paraphrased version without any addition of new content (Roe & Perkins, 2022). In a recent case study using DiffChecker, a plagiarism detection tool, Ansorge et al. (2021) confirmed that an academic researcher from an Indian college had published an article which was created with the help of a paraphrasing tool in a scientific journal. A possible explanation could be due to the minimum requirements for academics in India whereby an assistant professor needs at least two publications, seven papers for an associate professor while for a full professor, a minimum of ten published works (University Grants Commission, 2018). In their analysis of the historical background of academic integrity in the Indian academic system, Shahare and Roberts (2020) posit that dishonesty in academia is a result of the individual's aspirations as well as the pressure from their institution.

Paraphrasers may claim to help users create the best paraphrases, but are these tools really able to produce output that have sufficient morphological as well as structural changes? Do these tools produce high quality paraphrases? Are machine-paraphrased texts legitimate?

To answer the above questions, the author conducted a small-scale study to assess the quality of a widely used paraphrasing tool, QuillBot and the newly released generative artificial intelligence (AI) tool, ChatGPT.

2. Literature Review

Many authors, whether they are using English as a first language (L1), second language (L2) or foreign language (FL) find academic writing a challenging task (Lin & Morrison, 2021). As a result, some may resort to using the numerous writing tools available to make their work less daunting. For this kind of paraphrasing, Fyfe (2022) uses the term AI-powered plagiarism while Roe and Perkins (2022) prefer the term paraphrasing plagiarism. Technology-enabled paraphrasing requires little effort and unfortunately, research has shown that machine-generated plagiarism is often difficult to detect by the present plagiarism detection software (Foltýnek et al., 2020; Prentice & Kinden, 2018; Roe & Perkins, 2022; Rogerson & McCarthy, 2017). Therefore, these paraphrasing tools pose a serious threat to academic integrity.

In a systematic review of academic plagiarism detection, Foltýnek et al. (2019) noted that with the advances in information technology, plagiarism has become much easier. The plethora of paraphrase generators all advertise the ability to rephrase text in such a way that the output cannot be detected by anti-plagiarism detection tools (Brown & Hammond, 2022). In a research using the paraphraser SpinBot, Foltýnek et al. (2020) found that although Turnitin was able to detect completely machine-spun articles, it failed to identify paraphrasing plagiarism in an article if only a few paragraphs were spun. This finding was similar to the findings of Rogerson and McCarthy (2017) who had tested the effectiveness of Turnitin using a paragraph generated by Paraphrasing Tool and Go Paraphrase. They reported that Turnitin was unable to recognise the spun paragraph as plagiarised text.

In a more recent study which expanded on the work of Foltýnek et al. (2020), Wahle et al. (2023) also utilised SpinBot and an extra tool, SpinnerChief to spin texts. The researchers similarly used Turnitin and another tool, PlagScan to test the accuracy of these widely used tools in identifying paraphrased text. They found that although Turnitin performed better than PlagScan, it still failed to identify a large portion of texts plagiarised from theses. Fortunately, the researchers suggested that newer tools such as Longformer has performed better than both Turnitin and PlagScan in detecting machine-paraphrased texts.

Authors are probably resorting to paraphraser to make their writing easier as general consensus among academics is that learning to produce effective paraphrases is challenging especially for non-native speakers of English. This is because paraphrasing is a skill that takes time to develop (Wette, 2017). Walsh Marr (2019) also agrees that paraphrasing is indeed a sophisticated skill that does not develop overnight. To produce successful paraphrases, Keck (2010) concludes that it is an "incredibly complex skill that requires a high level of grammatical competence and lexical knowledge" (p. 216). According to Hirvela and Du (2013), acquiring paraphrasing skill demands the learner to invest a significant amount of time as mastering the paraphrasing strategies require a "host of interconnected subskills" (p. 88) such as being able to convey the exact meaning and positioning/stance of the original author as well as retaining very few words or sentence structures from the source text (Walsh Marr, 2019).

Paraphrases that acknowledge the original author but are only modified superficially such as by deletion or substitution of words or rearrangements of syntactic structures may be flagged for plagiarism (Dong & Shi, 2021). Mori (2019) suggests that when paraphrasing, writers should first attempt to make larger structural and morphological changes before deciding on lexical changes. Structural changes involve changing voice (active to passive and vice versa) and re-ordering of clauses. Writers can also change discourse markers such as subordinating conjunctions (although, despite, if, because), conjunctive adverbs (however, nevertheless, thus, furthermore) and coordinating conjunctions (for, and, nor, but, or, yet, so). As for lexical changes, writers can try to change the parts of speech, for example, beauty (noun) becomes beautify (verb), beautiful (adjective) or beautifully (adjective).

Frequently, inexperienced writers attempting to paraphrase may end up with instances of patchwriting, a term defined by Howard (1993) as "copying from a source text and then deleting some words, altering grammatical structures, or plugging in one-for-one synonym substitutes" (p. 233). In another article, Howard (1995) opines that for writers developing academic writing skills, patchwriting is an important stage that they will go through. In a project led by Howard and Jamieson, the definition of "patchwriting" has been updated as "restating a phrase, clause, or one or more sentences while staying close to the language or syntax of the source" (Citation Project, n.d.). Although patchwriting is considered a necessary developmental stage for student writers, it not an acceptable practice for serious academic writing. According to Goldsmith (2011), patchwriting by academics is deemed an offence similar to plagiarism.

Unfortunately, what is an appropriate or inappropriate paraphrase is not clear-cut (Mori, 2018; Roe & Perkins, 2022; Sun, 2013). Some disciplines may accept two- to four- word strings but some may consider copying strings of three or more words even with citations as inappropriate reformulation of source information (Neumann et al., 2019). Shi (2004) defines acceptable paraphrasing as “no trace of direct text-matching of two or three consecutive words from source texts” (pp. 178–179) while Pecorari (2003) suggests that if there is a 40% text-match with a published work, it “puts the writers at risk of a plagiarism accusation” (p. 325). In their research using iThenticate, an anti-plagiarism software, Higgins et al. (2016) judged a sentence or paragraph plagiarised if 80% of the words were copied verbatim. They found that a majority of the plagiarized manuscripts submitted to an American medical journal were written by authors from countries where English was not an official language.

In a recent research involving Thai undergraduates, Bowen and Nanni (2021) reported that their respondents were confused between the difference between patchwriting and legitimate paraphrasing which could result in paraphrasing plagiarism. To help novice writers decide on the adequacy of their paraphrase, Keck (2006) divided paraphrases into four major types: near copy, minimal revision, moderate revision, and substantial revision. She proposed that a paraphrase that has 50% or more similarity with the original text should be considered plagiarised, 20–49% as minimal revision, and less than 19% an appropriate revision. She found that writers who use English as an L2 or FL produced more near copy paraphrases compared to native English writers. However, non-native English writers can make moderate and substantial revisions if they are taught how to do so. Research has shown that it is important for educators to not only teach paraphrasing strategies but also provide sufficient practices so that their learners can produce paraphrases that are deemed legitimate (Cumming et al., 2016).

The numerous paraphraser tools which are also known as spinners or rewriters claim to help writers struggling with paraphrasing. However, prior research has found these tools wanting. For instance, in their study of six free paraphrasing tools including Paraphrasing Tool, Prentice and Kinden (2018) showed that these free paraphraser tools may produce unidiomatic language as they mostly use word substitution and do not make many structural changes. This finding is in line with those of Rogerson and McCarthy (2017) who also tested the same paraphraser, Paraphrasing Tool and another tool, Go Paraphrase and found that the paraphrased texts were actually patchwriting. When compared with Keck's (2006) four paraphrase types, namely, near copy, minimal revision, moderate revision, and substantial revision, the generated paraphrases would be categorised under minimal revision. They also discovered that these paraphraser tools generated word salad—unintelligible strings of words (p. 9). Roe and Perkins (2022) warn that to make the output text more coherent, users may then proofread and edit it. They view such authors to have committed paraphrasing plagiarism, an academically dishonest act.

Besides depending on traditional paraphraser tools, authors may also turn to the latest AI tool, ChatGPT to perform the challenging task of paraphrasing. Its creator and owner OpenAI offers free access but has announced a new premium version called ChatGPT Plus that is faster and accessible even during peak times of the day and gets priority to feature updates (<https://openai.com/blog/chatgpt-plus/>). As it is widely known, this software is capable of interacting in a conversational way. It boasts its ability to generate texts that are not only coherent but also natural sounding.

Although it was launched only recently, numerous research has been carried out. A worrying finding was that ChatGPT passed US medical licensing exams (Kung et al., 2022). However, in another study, the performance of ChatGPT was lower than that of Korean medical students (Huh, 2023a). A research in the Netherlands reported that the chatbot passed a national, high-stakes exam which tested English reading comprehension (de Winter, 2023).

Other researchers have utilised ChatGPT to publish academic papers. For instance, Zhai (2022) asked ChatGPT to write an academic paper and found that it was able to write a paper that demonstrated characteristics such as coherence and accuracy most of the time. The

generated essay was also found to be systematic and informative. Similarly, a respected academician generated a scholarly paper using ChatGPT and was surprised that although the chatbot was sometimes imperfect and problematic, the text was sophisticated. In ChatGPT's own words: "a well-trained language model like me can produce responses that are coherent, grammatically correct, and reasonably well-structured" (OpenAI's Assistant & Perlman, 2022, p. 13). However, in their research, Kutela et al. (2023) found that ChatGPT could not be used to generate a complete manuscript for peer-reviewed journals.

Recently, several authors included ChatGPT as co-authors in their academic papers such as Andrew Perlman, Dean and Professor of Law, Suffolk University Law School (OpenAI's Assistant & Perlman, 2022). Another law professor at the University of Kentucky College of Law had included ChatGPT as co-author in his submission to a law journal but the forthcoming paper will not list the chatbot as co-author (Frye, 2022). Kitamura (2023) opined that to be considered an author, one must first agree to be accountable for all aspects of the paper which ChatGPT is unable to do. Huh (2023b) concurs, noting that as ChatGPT cannot take legal responsibility for its writing, it cannot be listed as author or co-author.

Similar to the issue concerning the use of paraphraser and academic honesty, several studies have focused on the ethical issue of using ChatGPT to prepare manuscripts for publication. Some researchers who have raised their concern regarding this issue are Gao et al. (2022), Jabotinsky and Sarel (2022), McKee and Noever (2022), and Qadir (2022). In a recent research from the Philippines, Ventayen (2023) prompted ChatGPT to generate three research papers using the same title of previously published work in indexed journals. Running the generated papers through Ouriginal, an anti-plagiarism detector, results showed that the similarity index was between 0 to 10% which was below the reporting threshold of most plagiarism detection software. He then paraphrased the generated texts with the QuillBot paraphraser and the similarity index dropped to zero. This indicates that the present anti-plagiarism detectors are unable to distinguish between human-written and AI-generated text.

In brief, previous research shows that paraphraser do not usually produce effective paraphrases. The machine-generated texts basically contain synonyms with few structural alterations, thus making the paraphrases too close to the original source. Users of such tools end up patchwriting which may result in charges of academic dishonesty. On the other hand, based on the results of recent studies, ChatGPT is capable of producing plagiarised texts that are difficult to be detected by current plagiarism detection tools. Thus, the use of the chatbot for academic writing has raised ethical considerations among the academic community.

This small-scale study aims to test the effectiveness of the free QuillBot paraphraser, a widely used tool. The newly released AI-powered chatbot, ChatGPT, which is currently free, was also tested to compare its ability to generate successful paraphrases.

3. Methodology

A short paragraph from Purdue Online Writing Lab (OWL) (2022) was used as a sample to test the two free tools for paraphrasing, QuillBot (<https://quillbot.com/>) and ChatGPT (<https://chat.openai.com/chat>). The suggested legitimate paraphrase and a plagiarised version provided by OWL were used as comparisons with the output generated by the respective tools. It should be noted that to avoid plagiarism, a citation should be provided for a paraphrase. However, the citation was excluded in the original text used for testing purposes as the author was only interested in evaluating the effectiveness of the generated paraphrases and not the accuracy of citations.

Original Text from Purdue OWL

Students frequently overuse direct quotation in taking notes, and as a result they overuse quotations in the final [research] paper. Probably only about 10% of your final manuscript should appear as directly quoted matter. Therefore, you should strive to limit the amount of exact transcribing of source materials while taking notes.

Suggested Paraphrase by Purdue OWL

In research papers, students often quote excessively, failing to keep quoted material down to a desirable level. Since the problem usually originates during note taking, it is essential to minimize the material recorded verbatim.

Sample Plagiarised text by Purdue OWL

Students often use too many direct quotations when they take notes, resulting in too many of them in the final research paper. In fact, probably only about 10% of the final copy should consist of directly quoted material. So it is important to limit the amount of source material copied while taking notes.

The QuillBot paraphraser was chosen to be tested not just because it was recommended by the author's institution, but because it is a highly recommended tool. QuillBot often appears among the top suggested software via a quick Google search using the term "best free paraphrasing tool".

Users can move the synonym slider to customise the generated text. Fewer changes will produce a more accurate rephrase while more changes will generate a more creative text. As there is also a built-in thesaurus, users can click on any word in the generated text and select the best word from the list of suggested synonyms.

However, the freemium version has a meagre 125-word limit per paraphrase and offers only two modes: standard and fluency. According to its website, paraphrasing using the standard mode means the tool "provides a middle ground between changing the input text and keeping its meaning" while the fluency mode "improves language and fixes grammatical errors." As the paraphraser allows users to generate a new output if necessary, all the various paraphrased versions were carefully copy pasted and checked for appropriateness.

ChatGPT was also chosen because it is touted as a tool that has many capabilities including paraphrasing passages. The author prompted the chatbot to paraphrase the original text in various ways. All paraphrased texts generated by the chatbot were carefully copied and analysed for acceptability.

4. Results

The original text taken from Purdue OWL was paraphrased using the chosen tools, QuillBot and ChatGPT. The machine-generated texts were carefully analysed to ascertain the quality of these tools by comparing them with the suggested paraphrase and the plagiarised version provided by Purdue OWL.

4.1 The QuillBot Paraphraser

Although the free plan only allows users to use two modes, namely, standard and fluent, users can rewrite the original text several times. Therefore, the various versions of the generated texts

are shown in Table 1. The outputs in both modes used the default synonym setting. The changes are indicated in **bold**.

Table 1
Paraphrased Texts by QuillBot Paraphraser

QuillBot: Standard Mode	
Version 1	When taking notes, students frequently overuse direct quoting, which causes them to overuse quotations in their final [research] paper. Only 10% to 15% of your final essay should contain explicitly quoted passages, ideally. As a result, while taking notes, you should try to restrict the quantity of precise transcription of the sources.
Version 2	When taking notes, students frequently overuse direct quotation, and as a result, their final [research] work has excessive quotations. Only around 10% of your finished manuscript should contain directly quoted material. As a result, you should make an effort to reduce the quantity of precise transcription of sources while taking notes.
Version 3	In their final [research] paper, students often misuse direct quotations because they usually overuse them when taking notes. Directly quoted material should probably only make up roughly 10% of your final manuscript. As a result, while taking notes, try to avoid doing too much precise transcription of the sources.
Version 4	Students usually overuse direct quotation when taking notes, and as a result, they overdo quotations in the final [research] paper. Only approximately 10% of your final essay should contain explicitly quoted material. As a result, while taking notes, you should try to minimise the quantity of precise transcription of the sources.
QuillBot: Fluency Mode	
Version 1	Students frequently overuse direct quotation when taking notes, which leads to an overuse of quotations in the final [research] paper. Only about 10% of your final manuscript should contain directly quoted material. As a result, you should try to limit the amount of exact transcription of source materials you do while taking notes.
Version 2	Students frequently overuse direct quotation when taking notes, and as a result, they overuse quotations in the final [research] paper. Only about 10% of your final manuscript should be directly quoted. As a result, you should try to limit the amount of exact transcribing of source materials while taking notes.
Version 3	Students frequently overuse direct quotation when taking notes, resulting in an overuse of quotations in the final [research] paper. Approximately 10% of your final manuscript should be directly quoted. As a result, while taking notes, you should try to limit the amount of exact transcription of source materials.

A detailed analysis of Table 1 shows that although QuillBot replaces more words with synonyms in the standard mode than in the fluency mode, the output is still too similar to the original passage. In all the four versions in the standard mode, the phrase “exact transcribing” in the last sentence was replaced with **precise transcription** which sounded odd. The fluency mode, however, suggested **exact transcription** which was more natural sounding in versions 1 and 3.

Furthermore, in the standard mode versions 1 and 2, QuillBot altered the sentence structure of the first and the last sentence of the original version. The phrase “in taking notes” which was in the middle of the original first sentence was moved to the beginning of the paraphrased sentence and the preposition *in* was replaced with **when**, a conjunction:

When taking notes, students frequently overuse ...

The phrase “while taking notes”, originally placed at the end of the last sentence, was moved to the front in standard mode versions 1, 3 and 4 with no lexical change.

As a result, **while taking notes** ...

It is important to note that version 1 of the standard mode had included additional information not found in the original text, a practice which is not allowed in paraphrasing.

Original sentence:

Probably only about 10% of your final manuscript should appear ...

Paraphrased sentence:

Only 10% **to 15%** of your final essay should contain

When compared with the standard mode, the fluency mode made minimal changes. It generated output that contained very minor word substitutions especially in version 2. Moreover, no syntactic change was made in versions 1 and 2. In version 3, the phrase “while taking notes” originally located at the end of the last sentence was moved to the beginning of the last sentence in the paraphrase:

As a result, **while taking notes**, ...

In short, these machine-generated paraphrases merely substituted synonyms with few to no changes in syntactic structures. The paraphrases in fluency mode in particular were clear examples of poor paraphrasing.

4.2 ChatGPT

The author prompted ChatGPT to paraphrase the original paragraph in several ways. The responses to each prompt are presented in Table 2. Any original words or phrases that were not altered are in **italics**. A close analysis of the paraphrases found that this chatbot had the ability to generate fluent, natural sounding texts and according to the context requested.

Table 2

Texts generated by ChatGPT in Response to Author's Prompts

Prompt 1:	Response:
Paraphrase the text.	<i>Many students often rely too heavily on direct quotations when taking</i>

notes, leading to excessive use of quotes in their final research paper. It's recommended that only around 10% of the final document should consist of direct quotes. To avoid this, it's important to minimize the amount of verbatim copying from source materials while making notes.

Prompt 2:

Paraphrase the text into academic English.

Response:

The frequent overreliance on **direct quotations in** note-taking by **students** is a prevalent issue that can **result** in an overrepresentation of such quotes in the **final research paper**. It is advised **to limit** the use of direct quotes in the **final manuscript** to approximately **10% of** the total content. Thus, it is imperative for students to **strive** towards minimizing **the** extent of verbatim transcription of **source materials** during the note-taking process.

Prompt 3:

Paraphrase for the text a journal publication.

Response:

The overutilization of **direct quotations** in note-taking by **students** is a common phenomenon that can **result** in an overabundance of such quotes in the **final research paper**. It is advisable **to** restrict the usage of direct quotes in the **final manuscript** to around **10% of** the total content. In order to meet this objective, it is important for students **to** minimize **the** extent of verbatim transcription of **source materials** during the note-taking phase.

Prompt 4:

Paraphrase the text for academic purpose.

Response: Version 1

It is commonly observed that **students** have a tendency to excessively utilize **direct quotations** when **taking notes** (Smith, 2020). This overreliance on direct quotes can **result** in a disproportionate representation of such quotes **in the final research paper**, where it is advised to restrict their usage to approximately **10% of** the total **manuscript** (Jones, 2021). To overcome this challenge, students **should** make an effort to minimize **the** extent of verbatim transcription from **source materials** during the note-taking process (Brown, 2019).

References:

Brown, J. (2019). Effective note-taking for academic success. New York: Academic Press.

Jones, A. (2021). The impact of note-taking on academic performance. Journal of Education, 44(2), 123-131. <https://doi.org/10.1177/0013164420970219>

Smith, S. (2020). Overcoming the challenges of research writing. Journal of Research, 33(1), 56-63. <https://doi.org/10.1177/0013164420970219>

Response : Version 2

The excessive use of **direct quotations** in note-taking is a common

problem among **students**, which ultimately leads to an overabundance of **quotations in** their **final research papers**. To address this issue, it is suggested that **only about 10% of** the **final manuscript should** consist of direct quotes. As a result, students are encouraged **to minimize the amount of** verbatim transcription **of source materials** when **taking notes**.

Prompt 5:

Paraphrase the text for journal publication and include APA 7th edition citation.

Response: Version 1

The frequent overreliance on **direct quotations** in note-taking by **students** is a prevalent issue (Smith, 2020). This practice often leads to an excessive representation of such quotes **in the final research paper**, where it is suggested to limit the use of direct quotes to roughly **10% of** the total content (Jones, 2021). To address this issue, students **should strive to** reduce **the** extent of verbatim transcription of **source materials while taking notes** (Brown, 2019).

References:

Brown, J. (2019). Effective note-taking for academic success. New York: Academic Press.

Jones, A. (2021). The impact of note-taking on academic performance. Journal of Education, 44(2), 123-131.
<https://doi.org/10.1177/0013164420970219>

Smith, S. (2020). Overcoming the challenges of research writing. Journal of Research, 33(1), 56-63. <https://doi.org/10.1177/0013164420970219>

Response : Version 2

According to research, **students** often rely too heavily on **direct quotations** when **taking notes**, leading to an **overuse** of **quotations in** their **final research papers**. In fact, it is suggested that **only about 10% of** the **final manuscript should** consist of direct quotations. To avoid this issue, it is recommended that students **limit** their **exact** transcription of **source materials while** note-taking.

APA 7th edition citation:

Hacker, D. (2011). Research and Documentation in the Electronic Age (5th ed.). Boston, MA: Bedford/St. Martin's.

Prompt 1: Paraphrase the text.

ChatGPT generated a paraphrase using natural language that was easy to understand. It even used a contraction, "it's" to make the response sound conversational. However, this would make the paraphrase unsuitable for academic purposes. There was evidence of word substitution but no changes in sentence structures.

Prompt 2: Paraphrase the text into academic English.

In response to the above prompt, ChatGPT generated a text that had a formal tone with more nominalisations and the use of passive voice.

An example of nominalisation is found in the first paraphrased sentence:

The frequent **overreliance** on direct quotations in note-taking by students is a prevalent issue that can result in an **overrepresentation** of such quotes in the final research paper.

The original compound sentence was transformed into a more complex sentence:

The frequent overreliance on direct quotations in note-taking by students is a prevalent issue that can result in an overrepresentation of such quotes in the final research paper.

The last sentence was altered to make it sound more academic by using advanced vocabulary. It also avoided using the second-person pronoun "you." The original sentence (17 words) was expanded to become much longer (22 words):

Thus, it is **imperative** for students to strive towards **minimizing the extent of verbatim transcription** of source materials during the note-taking process.

Prompt 3: Paraphrase the text for a journal publication.

The above prompt resulted in ChatGPT generating a text that contained nominalisations which is common in academic writing. For example, the first sentence had two instances of nominalisation:

The **overutilization** of direct quotations in note-taking by students is a common phenomenon that can result in an **overabundance** of such quotes in the final research paper.

Similar to the paraphrases for the earlier prompts, very few original words were retained. For the paraphrased middle sentence, the original phrase "Probably only about 10% of your final manuscript" was moved from the front to the back. Although the middle and last sentences of the paraphrase contained few nominalisations, they were still much longer (46 words) than the original (30 words) and were more difficult to read:

It is advisable to restrict the usage of direct quotes in the final manuscript to around 10% of the total content. In order to meet this objective, it is important for students to minimize the extent of verbatim transcription of source materials during the note-taking phase.

Prompt 4: Paraphrase the text for academic purpose.

When prompted to paraphrase the text for academic purpose, the chatbot actually included in-text citations together with matching references for version 1. However, the sources were incorrect as the original text was written by Lester (1976) and not the three cited sources. The sources were made up by ChatGPT as the book by Brown (2019) did not exist and the DOIs provided in version 1 were not found in the DOI system (<https://www.doi.org/>).

However, it is interesting to note that there were no citations in version 2 and it was longer with 66 words whereas the original text contained only 51 words. For example, the first sentence in the original excerpt was a compound sentence (20 words) but was transformed into a more complex one with 27 words:

The excessive use of direct quotations in note-taking is a common problem among students, which ultimately leads to an overabundance of quotations in their final research papers.

ChatGPT also made syntactic changes by breaking up and combining sentences. For instance, in version 1, the first paraphrased sentence was based on the first half of the original first sentence, "Students frequently overuse direct quotation in taking notes, and as a result ...". The transformed sentence is:

It is commonly observed that students have a tendency to excessively utilize direct quotations when taking notes (Smith, 2020).

The second paraphrased sentence in version 1 was a combination of the second half of the original first sentence "and as a result they overuse quotations in the final [research] paper." and the original second sentence, "Probably only about 10% of your final manuscript should appear as directly quoted matter." The paraphrased text is shown below:

This overreliance on direct quotes can result in a disproportionate representation of such quotes in the final research paper, where it is advised to restrict their usage to approximately 10% of the total manuscript (Jones, 2021).

The strategies of breaking up and combining sentences to generate a paraphrase demonstrated the ability of ChatGPT to produce sophisticated text suitable for academic purposes. In comparison, QuillBot did not produce such advanced structures.

Prompt 5: Paraphrase the text for journal publication and include APA 7th edition citation.

In response to the last query, ChatGPT version 1 contained nominalisations (overreliance, excessive representation) and advanced vocabulary (prevalent, verbatim transcription) appropriate for academic publication. There was also evidence of moving phrases and combining sentences, strategies commonly recommended for paraphrasing.

It is surprising to note that ChatGPT added information not found in the original text to make the paraphrase in version 2 sound more academic. The first sentence of the paraphrase has an additional phrase as highlighted in bold below:

According to research, students often rely too heavily ...

As expected, the citations provided were wrong for both versions. For version 2, there were no in-text citations but a real though incorrect source, Hacker (2011) was provided as a reference whereas the original text should be cited as follows:

In-text citation: Lester (1976, pp. 46-47)

Reference:

Lester, J. D. (1976). *Writing research papers: A complete guide* (2nd ed.). Scott, Foresman and Company.

The findings as presented in Table 2 indicate that ChatGPT is capable of generating different paraphrases according to the requested contexts. However, it may add additional information

and provide fake or incorrect citations particularly for paraphrases generated for academic or publication purposes. These results show that ChatGPT can be inaccurate at paraphrasing.

5. Discussion

The aim of the current small-scale study was to assess the quality of two free tools, QuillBot and ChatGPT in generating paraphrases. It was found that the quality of paraphrases generated by QuillBot were unsatisfactory. The paraphrases did not meet the standard expected of effective paraphrases.

Overall, the quality of the QuillBot paraphraser was unimpressive. The paraphrases were too close to the original paragraph. Paraphrases were inadequate with only simple word level modifications – usually by substituting words with synonyms with little alteration of the syntactical structures. These findings echo those of previous research (Roe & Perkins, 2022; Rogerson & McCarthy, 2017; Wahle et al., 2023).

The machine-paraphrased texts by QuillBot is what Keck (2010) calls 'close paraphrasing'. Howard (1995, 1999) used the term 'patchwriting' to describe this form of unacceptable superficial paraphrasing. According to Prentice and Kinden (2018), such paraphrases are "unidiomatic at best, incomprehensible at worst" (p. 6). More worrying is that free paraphraser such as QuillBot generate texts that may even cause users to be accused of plagiarising their sources (Roe & Perkins, 2022; Rogerson & McCarthy, 2017). Therefore, the machine-paraphrased texts should be considered as unsuccessful paraphrases and can be construed as plagiarism even with the inclusion of a citation (Dong & Shi, 2021).

Besides patchwriting, QuillBot actually added extra information in paraphrases. Student writers are taught that when paraphrasing, they should never add extra information or their personal opinion in it. According to Purdue OWL (2022), a paraphrase "accurately expresses all the essential information in a new form." This means that users of paraphraser such as QuillBot should check the output carefully for accuracy and not blindly copy and paste the machine-paraphrased text.

On the other hand, ChatGPT emerged as the better performer with its advanced capabilities to generate natural sounding texts. It is capable of breaking up and combining sentences, which unfortunately are not available in the QuillBot free paraphraser. However, it must be pointed out that ChatGPT is not perfect and had flaws such as providing sources which were incorrect or even non-existent. This finding is not completely unexpected as Jabotinsky and Sarel (2022) reported that the chatbot gave some references that could not be located. Qadir (2022) similarly found that ChatGPT provided a made-up article with a non-functioning URL. This is not unexpected because according to the ChatGPT website, it can sometimes produce responses that sound plausible but are incorrect or make no practical sense (<https://openai.com/blog/chatgpt/>). Therefore, users would be wise to check the paraphrases for accuracy.

As ChatGPT is capable of providing different answers using different wordings to the same question, this will probably make the paraphrases extremely difficult for present text-matching software to detect. However, according to Turnitin, it has successfully developed state-of-the-art technology that can detect AI-assisted writing and paraphrasing by tools such as ChatGPT (<https://www.turnitin.com/solutions/ai-writing>). Even OpenAI, the creator of ChatGPT is working on its own detector, AI Text Classifier, to distinguish between human-written and AI-generated texts (<https://platform.openai.com/ai-text-classifier>).

To summarise, the results of the current study suggest that if academics rely on the available tools to paraphrase, they should be mindful of the shortcomings which may possibly lead to breaching principles of academic integrity. Roe and Perkins (2022) opine that the increasing use of such tools are a threat to academic integrity. If these tools are utilised by academicians, they are considered dishonest because they have produced work which is not

original but generated by a machine. It is a form of plagiarism and unethical even with source attribution.

6. Conclusion

The present small-scale study reviewed two free tools, QuillBot and ChatGPT for their ability to paraphrase texts. Comparing the generated paraphrases by both tools, ChatGPT was more impressive but it had certain limitations such as citing wrong or fictitious sources.

The study highlights the fact that users should be aware of the unsatisfactory quality of the QuillBot paraphraser. Although grammatically correct and meaning was retained, QuillBot failed to generate appropriate paraphrases. The outputs were usually superficial modifications such as replacing content words with synonyms. There were few addition or deletion of words and had hardly any reformation such as structural changes. A successful paraphrase requires more than just some lexical modifications and minimal syntactic changes. Otherwise it will be labelled as plagiarised even with source attribution (Dong & Shi, 2021).

Using ineffective paraphrases generated by tools such as QuillBot is considered patchwriting or facilitated plagiarism (Rogerson & McCarthy, 2017). Instead of relying on paraphraser which may lead to the risk of potential plagiarism, authors should make use of the tools available in Microsoft Word such as the synonym finder, built-in thesaurus, dictionary as well as spelling and grammar checker. In their research, Bailey and Withers (2018) reported that their university students found these tools helpful in completing their paraphrasing task. Authors could also use the tool, *Just The Word* (<http://www.just-the-word.com/>) to help choose the right words and phrases as well as collocations. This free tool is a corpus-based online resource that is capable of correcting unidiomatic phrases. Human-written paraphrases may require more time and effort but at least paraphrasing plagiarism will be minimised if done correctly.

In closing, this study provides evidence that the current free tools for paraphrasing are not dependable. Although academicians are pressured to continually publish, they should not depend on such tools as they are not presenting original work. Authors who resort to unethical practices such as using machine paraphrases would be engaging in academic dishonesty even with the inclusion of a citation. According to Rogerson and McCarthy (2017), "The capacity of students and academics to rephrase, frame and restate the ideas and intentions of original authors themselves with appropriate acknowledgements of sources is fundamental to the principles of academic integrity and personal development" (p.12).

With the advent of AI tools such as ChatGPT, editors and paper reviewers will be more cognisant of the use of machine-generated texts in the manuscripts submitted for publication because research has found that even the leading text-matching software, Turnitin and human detectors are not efficient at detecting paragraphs which had undergone machine-paraphrasing (Foltýnek et al., 2020; Wahle et al., 2023). As ChatGPT or newer tools may be utilised to ease the time-consuming work of writing papers for publication, editorial boards will endeavour to publish papers that are free from machine-generated texts. By using both human and newer AI content detectors, the likelihood of detecting submissions containing machine paraphrases will be much higher, so academicians should publish with integrity or rue the day they perish.

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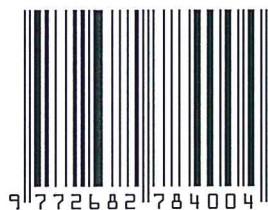
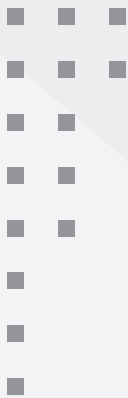
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