PARAPHRASING STRATEGIES IN AI AND HUMAN WRITING: A COMPARATIVE ANALYSIS

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Annotation: *This study explores the differences in paraphrasing strategies employed by AI-based tools and human writers, focusing on syntax, vocabulary diversity, and meaning retention. With the growing integration of AI in education, understanding how AI paraphrasing tools compare to human capabilities is essential. While AI tools offer speed and convenience in academic writing, concerns regarding linguistic accuracy and contextual comprehension remain. The research analyzes the effectiveness of AI-powered paraphrasing tools, examining their strengths and limitations in relation to human paraphrasing techniques. Through comparative analysis, this study aims to highlight the advantages and potential drawbacks of AI paraphrasing, emphasizing the need for critical engagement with these tools in academic contexts.*

Keywords: *AI paraphrasing, human paraphrasing, meaning retention, academic writing, linguistic accuracy*

INTRODUCTION

It is obvious that academic writing is one of the most challenging skills for EFL students. Na and Mai (2017) stated that in order to gain this skill, it is important to go through the process of structuring a paragraph and essay, which also considered the foundations of it, overall to understand how to write in English. Likewise, paraphrasing plays one of the key roles in academic writing, which helps a writer to link the sentences logically and to write effectively, that also helps to avoid plagiarism in EFL students's work (Fitria, 2022; Rakhmanina & Serasi, 2022). According to The University of Wolverhampton, paraphrasing is divided into three sections: syntactic paraphrase (changing grammar structure), semantic paraphrase (paraphrasing the words), and changing organization and structure of ideas (Fitria, 2022; Hieu, Huy, & Hang, 2022; Na & Mai, 2017). In addition, paraphrasing can be done by technology that is rapidly developed. While the usage of AI is getting popular, it is also making it easy to solve certain academic problems for both students and educators. The purpose of this study, titled "Paraphrasing Strategies in AI and Human Writing," is to compare and examine the differences in paraphrasing strategies between AI-based system tools and human writers in terms of syntax, the diversity of vocabulary, and their accuracy in meaning.

This study area is selected because AI language tools are quickly developing and have already started to be used in many various fields, such as education and journalism, depending on how strong writing skills are included. Additionally, in certain areas,

paraphrasing is not only focused on rephrasing ideas but here how to keep original meaning is the most essential part. By comparing these two different paraphrasing approaches, this research can reveal the strengths and weaknesses of both by leading people to understand the best and most effective way to use AI tools in both professional and academic works.

AI Usage in Language Education: First usage and two sides

The event Dartmouth Summer Research Project on Artificial Intelligence was recognized as the birth of AI in the field of study; this moment is stamped in history as the time when the concept of artificial intelligence (AI) was coined in 1955 by John McCarthy along with explorers such as Marvin Minsky, Allen Newell, and Herbert A. Simon. The early stages of AI research focused on symbolic AI, which involved algorithms that could mimic human cognitive processes through rule-based approaches (McCarthy, 2006; Newell & Simon, 1976). Likewise, until now there have been expended researches over AI across different fields, which led to the contribution for the body of literature (Burleson & Lewis, 2016; Kaplan & Haenlein, 2019).

According to Nilsson (2011), AI refers to creating intelligent machines that are designed to behave and think by copying the process of humans' information and coming up with final decisions. Similarly, Wartman & Combs (2018) explain that AI is a machine that is capable of stimulating the function of human cognition and behave in a way similarly to a human being by focusing on imitation. There are different suggestions that AI has the potential to imitate the role of a teacher within the language teaching setting (Bailin, 1987; Matthews, 1993). AI's involvement in a context of education began in the 1960s and 1970s, particularly through the introduction of Intelligent Tutoring Systems (ITS), which were focused on personalizing learning by monitoring student performance and adjusting the content based on students's needs. (Sleeman & Brown, 1982). Additionally, by the 1990s, AI started to expand in the education field by introducing tools such as automated essay scoring and adaptive learning systems, which provided enhanced individualized educational opportunities for the learners (Pea, 1993).

However, there are different opinions from various teachers' perspectives about utilizing AI in their classroom. While some teachers have not embraced the technology due to having hesitations about its effectiveness (Prensky, 2008; Kaban & Ergul, 2020; Istenic et al., 2021), those who have already used it find that it can help to improve students' grammar and provide useful immediate feedback (Bailin, 1987). More recent research has shown that usage of AI tools in foreign language education promotes flexibility with an integrative student-centered learning environment, which leads to the improvement of reading skills (Bailey et al., 2021). Furthermore, a study by Yin et al. (2021) found that integrating chatbot-based micro-learning systems already helped to boost learners' motivation.

Salaberry (1996) noted that many teachers experienced disappointment with technology before, and it let them have a more skeptical opinion about AI's benefits in the classroom. Gallacher et al. (2018) analyzed students' responses to the chatbots used in language learning environments and discovered that they accept them in a more fun way

rather than considering them as an important educational tool. They recommended that educators have to be critical while integrating artificial intelligence into the classroom.

AI-Based Paraphrasing Tools: Impact on Academic Writing and Plagiarism Prevention

Strong academic writing is the reflection of the ability of the writer in paraphrasing a source by showing how well and deep understanding of the paragraph and how appropriately ensuring indirect quotations through their own words (Keck, 2006, 2014; Shi, 2012). There is a broad range of tools, both free and paid versions, for paraphrasing and summarizing, but their value in education is always debated. However, there are concerns regarding the quality and accuracy of AI-based paraphrased works. Although these tools are able to offer various generated versions of the original text, they are sometimes criticized for their too formal style and not fully capturing the depth (Rogerson & McCarthy, 2017). Since these tools are considered just machine learning models, which might not match the features of academic writing, risking the quality of academic works (Shrestha & Avirup, 2021).

According to Joubert and Givon, the increase in adoption of summarizing and paraphrasing tools in academic writing is influencing the writing process of students. These AI-powered tools enable enhancing clarity and stating originality by suggesting synonyms and even checking for grammatical correctness (Joubert, 2021; Givon, 2022). Despite these drawbacks, paraphrasing AI tools can be one of the best aids to prevent plagiarism. Joubert (2021) states that, in terms of generating alternative versions of texts, these tools are able to encourage the writers into deep understanding of materials. This plays a very crucial role in an academic environment where plagiarism has serious consequences

Popular tools such as QuillBot Grammarly and ChatGPT are widely used in education for their ability to rephrase complex sentences and simplify them (Karaoglan, 2020). They recommend diverse ways to stay with the same concept, which leads writers to a comprehensive understanding of the content (Karaoglan, 2020). Moreover, having good paraphrasing tools encourages learners to be able to engage with more deep materials, as they are required to have good understanding before starting paraphrasing (Ryu & Lee, 2021). This engagement is for the students who are not native in English, as they assist in enhancing language skills and offer alternative phrases and a range of grammars. Moreover, these offers keep originality and help to avoid plagiarism (Zhang & Li, 2020). Overall, AI-based paraphrasing tools are effectively able to facilitate academic writing but still require critical understanding to fully comprehend the content.

Syntax Variability in AI vs. Human Paraphrasing

The incorporation of paraphrasing tools powered by Artificial Intelligence (AI), such as Grammarly, QuillBot, and ChatGPT, has significantly reshaped academic writing style by offering learners the ability to easily change the text through using alternative expressions and vocabulary while at the same time keeping the original context (Karaoglan, 2020). Paraphrasing is certainly about expressing nearly the same meaning or fully the same by changing sentences, and it heavily depends on understanding of context. Humans paraphrase based on how words are used in a sentence, whereas AI tools are often unable to. According to the As Connor and Roth (2007) explanation, "the meaning of the word always

depends on the context in which it is used." Moreover, paraphrasing can be phrase-level (phrasal), word-level (lexical), or sentence-level (sentential), and here humans are skilled at reshaping sentence syntax, which allows them to keep the originality of the text (Ho et al., 2011). However, studies show that AI always works with surface-level paraphrasing changes; findings of Zhao et al. (2008) state that "more than 50% of AI tools phrasal paraphrases and 70% of sentential paraphrases" have missed variations in syntax. Moreover, AI also has difficulties with context-sensitive changes; for example, "hard" means "difficult" versus "solid" (Connor & Roth, 2007). In fact, AI is a handful in translation and summarizing, but it still cannot be compared to humans in creating nuanced paraphrases (Barzilay & McKeown, 2001; Zhao et al., 2008).

Shrestha and Avirup (2021) point out that, in terms of efficiency in offering paraphrasing options, AI is effective, but they are frequently unable to capture the intricacies of academic language. For example, while ChatGPT is able to handle simple tasks such as substitutions and reordering simple sentences, it struggles with more complex grammar, including subordinate structures (Shrestha & Avirup, 2021). These tools always rely on machined algorithms and techniques, which can lead to unnatural or overly formal phrases that only work well for basic paraphrasing. In comparison, human paraphrasing requires deep understanding of the original material, which guarantees both contextual accuracy and relevance (Joubert, 2021). While AI tools help to prevent plagiarism by offering diverse paraphrasing alternatives, they might not encourage a deep understanding of the material or improve their writing skills (Zhang & Li, 2020). According to Bailey et al. (2021), AI can enhance the usage of grammar and vocabulary but reduce critical thinking, as students might rely only on technology rather than applying their own cognitive processing.

Despite having such benefits from these tools, many scholars have debated academic integrity while using them. Some believe that the integrity of AI might result in a poor sense of personal responsibility for the writing. (Shrestha & Avirup, 2021; Gallacher et al., 2018). The ongoing debate is focused on finding the balance between utilizing AI for improving productivity and preserving academic standards. Moreover, their involvement hinders unintentional plagiarism and increases writing fluency. However, it is crucial to ensure that the use of AI will not damage the development of critical academic competencies (Gallacher et al., 2018). Thus, the improvement of technology is improving; educators have to find out the ways to effectively integrate it into academic settings without compromising students's cognitive skills. Maintaining such balance will be a key for successful AI usage and ensure that it is positive and beneficial to the learning process. The study highlights that AI tools, in order to match human paraphrasing, must develop adaptability and syntactic diversity while addressing complex structures (Gallacher et al., 2018). Additionally, Shen et al. (2006) study highlights the way grammar features, such as sentence structure and parts of speech, can significantly show the improvement of paraphrasing. The method describes the traditional Levenshtein Edit Distance throughout, involving scores of syntactic similarities, where they found "support in avoiding mistakes like ungrammatical structures caused by

simple matching in words." The result of this methodology is grammatically improved for 19.9% and 22.8% raise in meaning retention compared to the approach that only relied on word matchings. Research authors emphasize that grammar-based paraphrasing is helpful while creating "more natural and varied structure content," which leads to having ideal summarizing and translation tasks. Focusing on such sentence structure offers an effective way to improve the quality while paraphrasing.

Challenges in Meaning Retention During AI Paraphrasing

AI tools face significant difficulties while preserving meaning during paraphrasing due to a lack of ability to fully understand nuanced language. Natural paraphrasing requires changes in styles, grammar, and content, which might result in the loss of originality and stylistic clarity mainly in text that involves precise language use (Marx-Larre, 2021). Moreover, in the list that was provided by OpenAI (2023), GPT is considered popular with the users from all over the world, and it has a wide range of functions, including question answering, text generation, machine translation, paraphrasing, and so on. Likewise, the latest GPT-4 is also effectively skilled, this model enables you to pass the Uniform Bar Examination professional law exam in the USA (Katz et al., 2023) which makes this tool one step ahead of the rest. Even though AI tools are specialized to handle large volumes of written works, it is quite likely that such robotics will provide different literary concepts that can be apart from the given work (Huang, Tan, 2023). This kind of mistake by AI could lead to the mixture of different works into someone else's work into a research paper, resulting in damage to reputation for both publisher and author. Additionally, Techwire Asia's Zulhusni raises this issue by stating that "considering the way these tools are just algorithms and might produce text similar to the given date while even the users may not be aware of it. This issue is not directly answered yet but refers to how people understand and accept plagiarism within AI text generation.

According to Alkaissi and McFarlane (2023), "ChatGPT can provide incredible scientific essays, but the data generated is a mixture of true works with fully fabricated ones." They straightforwardly advocate for utilizing the AI detector to tackle this issue. Similarly, as sentence-by-sentence paraphrasing techniques are commonly used by AI, one example can be GPT-3, which often fails to handle the wider context of a passage, leading to the misinterpretation of the intended meaning. This issue also represents a major weakness of artificial intelligence while applying to the academic setting for professional material (Marx-Larre, 2021). There are many cases where AI failed in an important setting, and it created even debates among notable figures. For instance, in a PubCon event discussion, Fabienne Michaud, Product Manager at Crossref, said that "every time when it refers to artificial intelligence, there are threats in its lack of creativity, keeping originality, and insights. Writing tools powered by AI were not created to be correct always; instead, they are created to deliver answers that seem believable." Furthermore, recent research by Else (2023) shows that one of the significant problems with ChatGPT is how it is capable of providing strong convincing fabricated abstracts for academic research papers. Even this AI tool openly says, "ChrGPT any time can make mistakes, make sure to check important

information". This all focuses how even popular AI that is getting updated again and again cannot be considered perfect and for writers it is important to make sure to check AI generated responses.

The usage of AI in high education and future directions

The integration of artificial intelligence is making noticeable changes and having a large role in education. Moreover, there are plenty of concerns that even cause debates over its usage. One primary issue with AI is handling biased data. In fact, AI reflects the data that they are given; any historical biases can affect its decision-making process. (Binns, 2018). As a result, in education settings, AI resources may unequally contribute access to educational sources (Binns, 2018; Luan et al., 2020). Besides, such large models have become the focus even in higher education due to its range of updated applications (Rudolph et al., 2023b). It is very important to consider both sides of a coin while utilizing them. According to previous studies, there were large covered language models both from student and academic perspectives (Farrokhnia et al., 2023, Pérez et al., 2020). Additionally, such large models can help students' learning process. One example can be when researchers used them to produce interactive educational resources with the aim to increase student involvement (Dijkstra et al., 2022; Gabajiwala et al., 2022). Furthermore, recent findings emphasized that GPT-3 is capable of stimulating curiosity, improving student's question-taking skills, and generating deep explanation codes (Abdelghani et al., 2022; MacNeil et al., 2022). On the other hand, later it has been reported that learners gained sufficient digital skills but low skills related to usage of AI. Some scholars' states that integrating AI into education is critical (Fadel et al., 2019; Polak et al., 2022). In addition, recent studies have shown that large language models might be useful for students's pedagogical abilities, and they require much less effort for grading (Bernius et al., 2022; Moore et al., 2022). Furthermore, since ChatGPT was introduced by OpenAI in 2022, it started to be involved in many areas, including education settings. This era started to have deep learning techniques and trained its algorithms to contain huge amounts of online written data (Kung et al., 2023; OpenAI, 2022; Taecharungroj, 2023). GPT stands for generative pretrained transformer, which means this tool is able to provide texts with high quality even alight with human written works, besides making it difficult to distinguish between AI-generated and human text (Flanagin et al., 2023; Kung et al., 2023; Thorp, 2023). Similarly, right after a year, OpenAI introduced ChatGPT-4, which gained popularity among worldwide universities as a supportive tool for teaching and supporting the learning environment of students (Kasneci et al., 2023; Nautiyal et al., 2023). However, some academics expressed their concerns regarding its effect on learning environments, such as reduction of human interaction and data privacy (Flanagin et al., 2023; Thorp, 2023). Moreover, Research studies suggest that integration of AI in many different fields can pave the way for more opportunities towards inclusive education (Kasneci et al., 2023). Innovations in such deep learnings able to enhance driving natural language processing by making noticeable progress in higher education (Huang & Tan, 2023). The complexity of integration of these tools for sure cannot be neglected, but the benefits towards progress of

the student's equation and creating inclusiveness opportunities are a priority to take into consideration.

CONCLUSION

In conclusion, this research has provided a comparative analysis of paraphrasing strategies employed by AI and human writers, focusing on syntax, vocabulary, and meaning retention. The findings highlight the strengths and limitations of each approach, demonstrating that while AI-generated paraphrasing excels in structural variation and vocabulary diversity, human writing retains a deeper understanding of context and nuance. These insights underscore the importance of balancing AI tools with human expertise in academic and professional settings. Further research could explore hybrid approaches that integrate AI efficiency with human intuition to achieve optimal paraphrasing outcomes.

REFERENCES:

Xuyen, N. T. (2023, June). Using the online paraphrasing tool Quillbot to assist students in paraphrasing the Source Information: English-majored students' perceptions. In Proceedings of the 5th Conference on Language Teaching and Learning (pp. 21-27).

Dung, T. T. M. (2010). An investigation in paraphrasing experienced by Vietnamese students of English in academic writing (Master's thesis, University of Da Nang). University of Da Nang Repository.

• McCarthy, J., Minsky, M., Rochester, N., & Shannon, C. E. (1955). A proposal for the Dartmouth summer research project on artificial intelligence. Retrieved from https://www-formal.stanford.edu/jmc/history/dartmouth/dartmouth.html

• Nilsson, N. J. (2010). The quest for artificial intelligence: A history of ideas and achievements. Cambridge University Press.

• Pea, R. D. (1993). The role of computer technology in reinventing education. Educational Researcher, 22(4), 3-13. https://doi.org/10.3102/0034654311022004003

• Sleeman, D., & Brown, J. S. (1982). Intelligent tutoring systems. Academic Press.

Givon, T. (2022). AI and academic writing: The rise of paraphrasing tools. Journal of Writing Technologies, 9(2), 125-138.

Joubert, M. (2021). The effectiveness of paraphrasing tools in educational contexts: A review. International Journal of Educational Technology, 18(4), 205-217.

Karaoglan, A. (2020). Paraphrasing for academic success: A case study on AI-based tools. Journal of Academic Writing, 6(1), 58-70.