

QuillBot in Academic Writing: Students' Perceptions, Usage Patterns, and Academic Impact

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ABSTRACT

The increasing prevalence of AI-powered writing tools in the higher education landscape has been propounded to put students on a successful academic trajectory by revolutionising their approaches to academic writing tasks. Among these tools, QuillBot has surged in popularity given its ability to facilitate users in paraphrasing, improving language quality, and enhancing writing efficiency. Despite its growing reliance, concerns regarding academic integrity, learner dependency, and the impact of AI-assisted writing tools on students' writing development remain under scrutiny. This study aims to address these gaps by exploring (1) students' perceptions and attitudes towards QuillBot, (2) its perceived benefits and challenges, (3) factors influencing its usage, and (4) the relationship between QuillBot usage frequency and academic performance. A quantitative survey design was employed involving 266 undergraduate students enrolled in the English for Professional Communication course at Universiti Teknologi MARA (UiTM) Shah Alam. Data were collected through a structured questionnaire adapted from previous research and analysed using descriptive statistics and Pearson correlation analysis. The results showed that students' perceptions towards Quillbot ranged from neutral to slightly positive, alongside their recognition of its usefulness as a writing support tool. Among the primary advantages were vocabulary enhancement, improved paraphrasing skills, higher adaptability in applying cohesive devices, and reduced anxiety in accomplishing writing tasks. Students also expressed their concerns regarding overdependency and cognitive engagement inhibitions in accomplishing paraphrasing activities. Accessibility, affordability, perceived usefulness, and perceived ease of use were identified as imperative contributing factors of students' adoption of QuillBot. Additionally, a moderate positive correlation was found between QuillBot usage frequency and academic performance ($r = .35, p < .01$). These findings provide valuable insights into AI-assisted writing technologies by providing empirical evidence in the context of Malaysian higher education. It underscores the importance of fostering responsibility and ethical practices in the use of AI-powered writing tools while supporting students' development in academic writing.

Keywords: QuillBot, academic writing, artificial intelligence, paraphrasing tools, academic performance

INTRODUCTION

Background of Study

Technological advancements have profoundly transformed global educational practices, particularly academic writing. The use of digital writing support tools has become increasingly common among students, facilitating

them across various means such as grammar checking, editing, paraphrasing, and text generation. According to Strobl et al. (2019), technological innovations have broadened the selection of digital tools available to support academic writing and enhance writing efficiency. Specifically, paraphrasing tools have gained significant attention given their usefulness in assisting students with text rephrasing without compromising the original meanings. Junaidi et al. (2022) assert that paraphrasing tools are commonly applied to inhibit plagiarism, increase textual clarity, and assist students in producing academic writing. Ariyanti and Anam (2021) further reported that AI-powered paraphrasing tools employ advanced algorithms in generating alternative versions of texts while retaining the intended message.

The rise of artificial intelligence (AI) technologies has resulted in the increased popularity of paraphrasing tools such as QuillBot among university students. Fitria (2021) found that QuillBot is often utilised by students to support their writing activities, specifically concerning paraphrasing academic content and enhancing language proficiency. Amid the consistent implementation of digital technologies into teaching and learning at higher education institutions, students have become increasingly dependent on such tools as a means of having their academic tasks accomplished more efficiently. Recent research has also shed light on QuillBot's surge in popularity among English as a Foreign Language (EFL) learners, owing to its usefulness in assisting paraphrasing, grammar checks, summaries, and improving overall writing quality (Niswa & Amsari, 2025).

In Malaysia, the use of digital learning technologies has become immensely widespread, driven by the digitalisation of higher education and the growing emphasis on technology-improved learning. University students are actively employing a wide array of AI-based applications to support their academic work, including academic writing tasks. Despite the increased application of QuillBot and paraphrasing tools among local university students, limited research has investigated how they perceive such applications, their usage frequency, and how these technologies may affect their academic writing experience and performance. Hence, examining students' perceptions, usage patterns, and academic impacts of QuillBot is imperative to understand the role of AI-assisted writing tools in modern-day tertiary education, while providing insights into impactful pedagogical practices.

Problem Statement

An ideal academic environment requires students to develop excellent academic writing abilities through perseverance in practice, critical thinking, and engagement with the writing process. Digital writing tools have the ability to facilitate such an enhancement by assisting students in improving language accuracy, writing quality, and paraphrasing skills. Previous research has reported positive results regarding the use of QuillBot in the academic context. For instance, Fitria (2021) discovered that QuillBot helps students enhance writing quality and inhibit plagiarism, whereas Aryanti and Anam (2021) reported that paraphrasing tools improve students' writing achievement and motivate them further in tackling writing tasks. These findings demonstrate the high potential of AI-powered writing tools in assisting academic writing and supporting student learning.

Despite such advantages, the growing dependency on AI-based paraphrasing tools has brought about numerous concerns. Overreliance on tools such as QuillBot can inhibit students' chances of developing writing and paraphrasing skills independently. Moreover, problems regarding academic integrity, originality, and ethical utilisation have gained growing attention in AI-assisted writing literature. Ansorge et al. (2021) underscored concerns about the ethical impacts of automated writing support technologies, while Lin and Morrison (2021) noted that both students and educators face challenges in identifying appropriate and responsible applications of such tools in academic settings.

While numerous studies have investigated students' views, advantages, and challenges of QuillBot, many were conducted in non-Malaysian contexts and mainly focused on attitudes towards the tool. Limited research has explored students' perceptions, usage patterns, influencing factors, and academic outcomes within a single framework. There is also a scarcity of empirical evidence on the relationship between QuillBot application and academic performance. Hence, this study attempts to address such gaps by examining the interplay of QuillBot and academic performance among Malaysian university students, with a particular focus on their perceptions, usage patterns, and factors influencing its usage.

Research Objectives

This study investigated the relationships between students' perceptions, benefits, and challenges of using QuillBot in academic writing as well as its academic impact. The research objectives are as follows:

1. To explore students' attitudes and perceptions towards the integration of QuillBot in academic writing.
2. To investigate the perceived benefits and challenges of using QuillBot in academic writing.
3. To examine the factors influencing students' use of QuillBot in academic writing.
4. To uncover the relationship between students' QuillBot usage frequency and their academic performance [measured in Cumulative Grade Point Average (CGPA)].

Research Questions

This study is set to answer the following questions:

1. What are students' perceptions and attitudes towards the integration of QuillBot in academic writing?
2. What are the perceived benefits and challenges of using QuillBot in academic writing?
3. What are the factors that influence the adoption of QuillBot in academic writing among students?
4. Is there a significant relationship between QuillBot usage frequency and students' academic performance [measured in Cumulative Grade Point Average (CGPA)]?

LITERATURE REVIEW

QuillBot and Academic Writing

The advancements of technology have modernised academic writing practices, leading to the increasing adoption of AI-powered writing support tools among students. These tools aid students in multiple writing-related tasks, such as editing, paraphrasing, and grammar checking. QuillBot is one of the widely utilised AI-powered paraphrasing tools that allows students to rephrase any text while maintaining its original meaning. Niswa and Amsari (2025) characterise QuillBot as an AI-powered writing tool that helps students with writing tasks such as paraphrasing, summarising, grammar and plagiarism checking, and citation generation. It is also considered an alternative writing tool by EFL learners who face difficulties in academic writing. This is because QuillBot helps students to enhance their vocabulary selection, sentence structure, and overall writing quality (Fitria, 2021), while minimising similarity and plagiarism (Junaidi et al., 2022).

Paraphrasing is a fundamental skill in academic writing that requires students to comprehend the primary materials and convey the exact ideas using their own words. Excellent critical thinking is needed for effective paraphrasing, which fosters the development of writing proficiency that upholds academic honesty. Nevertheless, many English as a Second Language (ESL) learners find paraphrasing to be difficult due to grammatical challenges, limited vocabulary, and apprehensions over plagiarism. Consequently, AI-powered tools, such as QuillBot, are heavily utilised to help students during the writing process. Although these AI tools offer numerous advantages, their influence in tertiary education has also provoked discussion on originality, student dependency, and their long-term writing development.

Past Studies on Students' Perceptions of QuillBot in Academic Writing

The expanding incorporation of AI technologies in tertiary education has increased academic interest and fostered positive perceptions regarding AI-powered writing tools among students. QuillBot has emerged as a widely utilised paraphrasing tool that can help in rephrasing texts, reducing writing time, and improving the overall language and writing quality. Research has reported that students generally have positive perceptions

about the use of QuillBot in academic writing. A study by Kurniati and Fithriani (2022) found that the majority of postgraduates had favourable perceptions regarding the use of QuillBot in academic writing classes, believing that it offered substitutes for sentence structures and aided in the paraphrasing process, ultimately improving writing efficiency. Syahnaz and Fithriani (2023) reported that AI-powered paraphrasing tools were viewed as useful writing assistants by university students in Indonesia, which helped them to overcome difficulties in academic writing. Specifically, they appreciated the capacity of these tools to reword textual materials quickly while maintaining the originally intended meaning. Niswa and Amsari (2025) also stated that students generally regarded QuillBot as an effective writing aid which offered benefits in elevating their writing quality, correcting grammatical mistakes, and facilitating paraphrasing tasks.

Past research also corroborates the benefits of AI-assisted writing utilities in academic settings. Findings by Fitria (2021) confirmed that students regarded QuillBot as an effective writing aid that improved writing quality and assisted in avoiding plagiarism. They further highlighted that students perceived QuillBot as a practical resource for enhancing vocabulary use and sentence construction. This aligns with Junaidi et al. (2022), who found that both educators and students valued the usefulness of paraphrasing tools in supporting writing activities and enhancing textual clarity. Cao and Lam (2025) also reported that students in tertiary education institutions maintained highly favourable attitudes towards online paraphrasing software, which simultaneously helped their independent paraphrasing skills while teaching them to avoid unintentional plagiarism in academic writing. Similarly, a study by Asmara and Kastuhandani (2024) observed undergraduates' lived experiences in employing QuillBot as an online paraphrasing tool in academic writing tasks and found that they generally perceived it as an effective writing assistant that facilitated grammatical accuracy, vocabulary usage, and writing quality. The students also highlighted the importance of retaining their writing capabilities and avoiding inordinate reliance on these AI-powered tools.

On the other hand, several studies also highlighted apprehensions regarding the growing reliance on AI-assisted writing assistants among students. Kurniati and Fithriani (2022) reported that some students expressed concern that regular use of tools such as QuillBot might diminish their long-term ability to independently paraphrase academic texts. These concerns are further highlighted by Syahnaz and Fithriani (2023), who found that despite appreciating the practicality of these paraphrasing tools, students were wary of being over-dependent on them. These insights suggest that while most students are aware of the usefulness of QuillBot, they are also mindful of its usage and understand the importance of maintaining a balance between digital assistance and independent writing practice.

Collectively, existing evidence suggests that students generally perceive QuillBot as favourable and valued for its utility, accessibility, and practical value in facilitating the writing process. Nonetheless, there are impending issues regarding over-reliance on these AI writing tools and the decline of students' overall independent writing skills. Therefore, further studies are required to explore students' perceptions and practices in diverse institutional settings, specifically within the context of Malaysian higher education institutions, where sufficient empirical documentation remains limited.

Past Studies on the Benefits, Challenges, and Factors Influencing Students' Use of QuillBot

Previous studies have investigated the educational advantages of AI-powered paraphrasing tools and their broader implications on students' academic writing. Existing evidence indicates that QuillBot brings multiple benefits, including refining the standard of writing quality, expanding vocabulary, increasing writing confidence, and lowering writing anxiety among students. However, the integration of these AI-powered tools in education is accompanied by a continuous debate on issues concerning over-reliance on technology, academic dishonesty, and ethical implications.

A primary benefit commonly associated with QuillBot is its capacity to elevate students' overall writing quality. Fitria (2021) stated that students rely on QuillBot to refine sentence structure, discover alternate phrasing or word choices, and produce more coherent written texts. Ariyanti and Anam (2021) also reported that digitally-enhanced paraphrasing aids not only help improve students' writing achievement but also make writing activities more engaging. Collectively, these findings imply that AI-powered writing assistants serve as practical learning aids that facilitate students throughout various stages of the writing process.

Another practical benefit of AI writing tools is linguistic and vocabulary acquisition. Clarin et al. (2023) denote that students with limited vocabulary often face significant difficulties in improving their paraphrasing ability, prompting them to turn to automated paraphrasing tools to identify synonyms and alternative sentence phrasing. This facilitates their language development by exposing them to more diverse grammatical and lexical choices. Furthermore, AI writing tools offer psychological benefits that support students' well-being. This is advocated by Ahmed et al. (2025), who believe that AI-based writing aids can effectively diminish writing anxiety while boosting productivity in academic writing tasks.

The practical design and functionality of QuillBot are also heavily highlighted across the literature. Studies by Asmara and Kastuhandani (2024) and Niswa and Amsari (2025) indicate that students perceive the application as an indispensable tool for correcting grammatical mistakes, enriching vocabulary, and sharpening paraphrasing skills to avoid plagiarism, subsequently elevating the overall quality of academic writing. They also stated that most students appreciate and continuously use QuillBot in the writing process due to its user-friendly interface, accessibility, and free availability.

Despite these benefits, multiple scholars have raised concerns regarding the extensive use of AI writing tools among students. Ansoorge et al. (2021) argued that automated paraphrasing technologies might give rise to ethical issues, especially when students use them mechanically without understanding the source material. Their study revealed that some students utilise these tools superficially to avoid plagiarism detection rather than to cultivate authentic paraphrasing skills. Likewise, Lin and Morrison (2021) noted that heavy reliance on digital aids can stunt the development of critical academic writing skills, particularly for second-language learners who need continuous practice to acquire the skills. Asmara and Kastuhandani (2024) also highlighted concerns about the dependency of AI writing tools and that students are aware of these risks while acknowledging their usefulness, treating them as supplementary tools rather than a substitute for their writing intellect. They also exercise caution and routinely review the output generated by QuillBot to maintain the accuracy and original intent of the source texts.

Overall, past studies have illustrated that QuillBot significantly facilitates academic writing by expanding vocabulary, refining text quality, lowering writing anxiety, and improving writer confidence. However, issues regarding academic honesty, over-dependency, and the possible decline in learners' autonomous writing capacity remain prevalent. These insights suggest that although QuillBot is a highly functional writing tool, its true pedagogical value depends on students' manner when utilising it. Therefore, further investigation is needed to better explore how learners navigate the conflicting advantages and drawbacks of using QuillBot in academic writing settings.

The existing literature also identified specific factors that influence students to adopt QuillBot, which mainly draws from the Technology Acceptance Model (TAM) by Davis (1989). TAM posits that an individual chooses to embrace new technology based on its perceived usefulness and perceived ease of use. In academic settings, students are more likely to adopt QuillBot when they perceive it to improve writing performance and when the interface is easy to navigate. Kurniati and Fithriani (2022) discovered that students valued QuillBot's straightforward layout and real-time feedback features, both of which motivated its continued usage. Beyond these special features, previous studies also reported other factors influencing continuous use of QuillBot, including academic workload, anxieties regarding plagiarism, accessibility, writing confidence, and time-saving benefits. A comparative study by Fitri and Dewi (2024) further revealed that Quillbot is generally preferred as a writing assistant among students due to its time-saving capabilities, superior ease of access, and plagiarism benefits, while Grammarly is widely used for grammatical accuracy.

While prior studies have documented the benefits, challenges, and influencing factors related to QuillBot usage, they mainly focused on students' perceptions or writing results. The relationship between students' usage patterns and their overall academic performance remains largely unexamined, in addition to the scarcity of localised studies within the Malaysian tertiary education context. Therefore, future research must investigate how QuillBot usage may be correlated with broader academic outcomes, such as academic achievement, rather than merely focusing on students' experience of using the tool.

Ultimately, the literature indicates that the adoption of QuillBot among students is driven by a mixture of technological, educational, and individual factors. It validates TAM's (Davis, 1989) perceived usefulness and perceived ease of use as prominent factors of its adoption. Nevertheless, several factors such as accessibility, workload and academic pressure, writing confidence, and anxiety regarding plagiarism are notably influencing students' adoption of AI-powered paraphrasing tools. These findings offer a theoretical basis for the present investigation of the factors influencing students' use of QuillBot.

CONCEPTUAL FRAMEWORK

This study is underpinned by the Technological Acceptance Model (TAM) (Davis, 1989), which has been widely applied in providing insights into users' acceptance and adoption of technology. The model proposes that individuals' intentions in applying technology are mainly affected by two factors: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). Perceived usefulness describes the extent to which users believe that technology improves their performance, whereas perceived ease of use refers to the degree to which users believe that technology can be applied with minimal effort (Davis, 1989; Bandura, 1982). Students may perceive QuillBot as useful for academic writing because it facilitates paraphrasing, improves writing efficiency, and helps reduce concerns about plagiarism. They may also demonstrate an inclination to use QuillBot when they perceive the platform as easy to navigate and use. In accordance with TAM, such perceptions influence users' attitudes towards the technology, which will determine their actual behaviours as users.

The current study employed TAM to explain students' application of QuillBot in academic writing. Their perceptions of its usefulness and ease of use are expected to affect their behaviours towards the tool and the frequency of usage. Subsequently, such usage patterns may generate various academic writing outcomes, including perceived writing improvement, writing confidence, and academic performance. Hence, TAM provides an appropriate framework for understanding the factors that influence students' employment of QuillBot and its potential impact on academic writing.

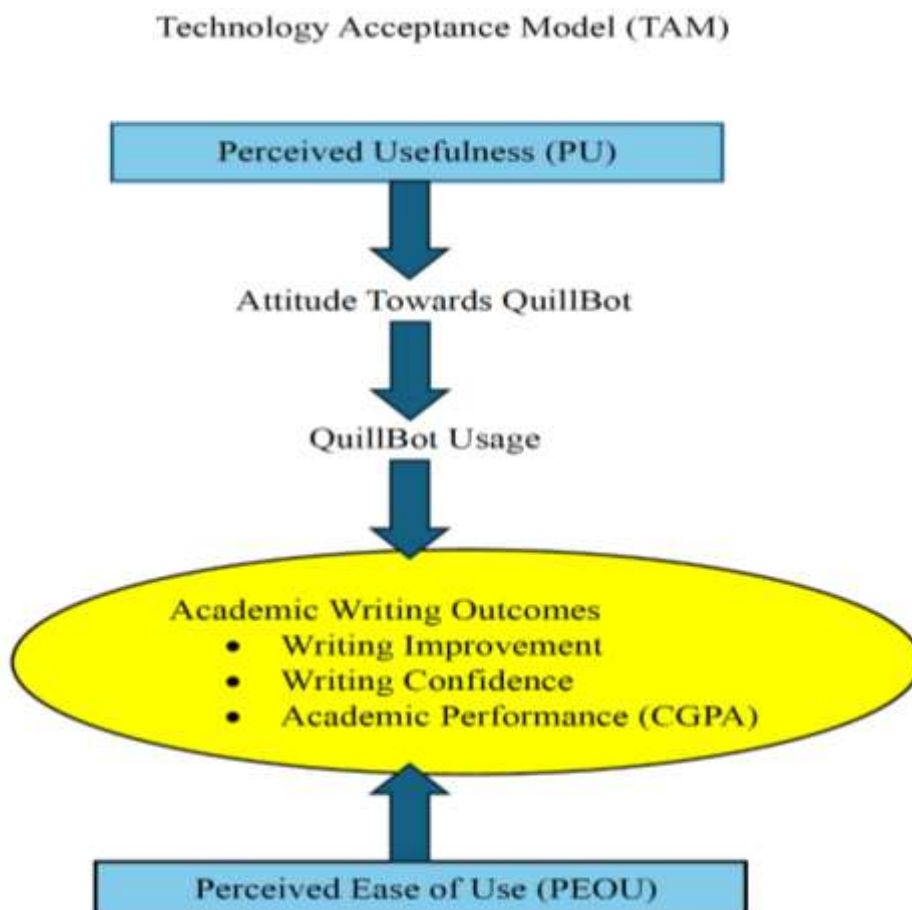


Fig 1. Conceptual Framework of the Current Study

METHODOLOGY

Research Design

This study adopted a quantitative research design to examine students' perceptions, usage patterns, and academic impact of QuillBot in academic writing. A survey method was employed as it allows researchers to conduct data collection efficiently from a considerably large number of respondents, thus facilitating the statistical analysis of trends, relationships, and patterns across variables. The quantitative approach was considered appropriate to investigate students' attitudes towards QuillBot, the factors influencing its application, and the relationship between application frequency and academic performance.

Participants

The target population consisted of 620 students enrolled in the English for Professional Communication course at Universiti Teknologi MARA (UiTM) Shah Alam. Simple random sampling was used to recruit 266 students as the participants for this study. The sample size was deemed sufficient to ensure exemplariness of the population and to provide reliable findings. The participants comprised undergraduates who had the experience of applying QuillBot or were familiar with AI-powered writing tools in the academic writing context.

Research Instrument

The data were collected using a structured questionnaire adapted from Xuyen (2023). It utilised a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The instrument comprised four sections:

- Section A collected the participants' demographic information, including their academic background and current CGPA.
- Section B examined the participants' usage frequency of QuillBot in academic writing.
- Section C investigated the perceived benefits and challenges related to the use of QuillBot in education.
- Section D measured the perceptions, attitudes, and factors influencing the participants' adoption and continued use of QuillBot.

This questionnaire was selected as it allowed the collection of standardised responses that could be evaluated quantitatively and analysed cross-sectionally.

Data Collection Procedures

The questionnaire was distributed online using Google Forms to facilitate accessibility and increase participation. Prior to data collection, participants were briefed on the research purpose and assurance on the anonymity and confidentiality of their responses. They had the option to participate voluntarily and to withdraw at any time without facing any consequences. The questionnaire also gathered the participants' CGPA to investigate the relationship between QuillBot application and academic performance.

Data Analysis

The data were analysed using IBM SPSS Statistics Version 29. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were employed to summarise participants' perceptions, attitudes, application patterns, and experiences with QuillBot. Inferential statistical analysis was conducted to examine the relationship between QuillBot usage frequency and students' academic performance (CGPA). Specifically, Pearson correlation analysis was utilised to identify any significant relationship between the two variables.

Reliability and Validity

Reliability and validity assessments were conducted to ensure the quality of the research instrument. Reliability

was evaluated using Cronbach's alpha coefficient (α), which produced a value of $\alpha = 0.721$, indicating acceptable internal consistency among the questionnaire items. According to Tavakol and Dennick (2011), a Cronbach's alpha value above 0.70 is generally considered acceptable for educational research. Content validity was established through the adaptation of a previously validated instrument developed by Xuyen (2023). This ensured that the questionnaire sufficiently measured the intended constructs related to QuillBot usage, perceptions, and academic writing experiences.

FINDINGS AND DISCUSSION

This section presents the findings in relation to each research question. The analysis integrates the quantitative findings with relevant existing literature to provide a comprehensive overview of students' usage patterns, perceptions, and academic consequences of adopting QuillBot in academic writing.

Figure 2. Frequency of QuillBot Usage Among Participants

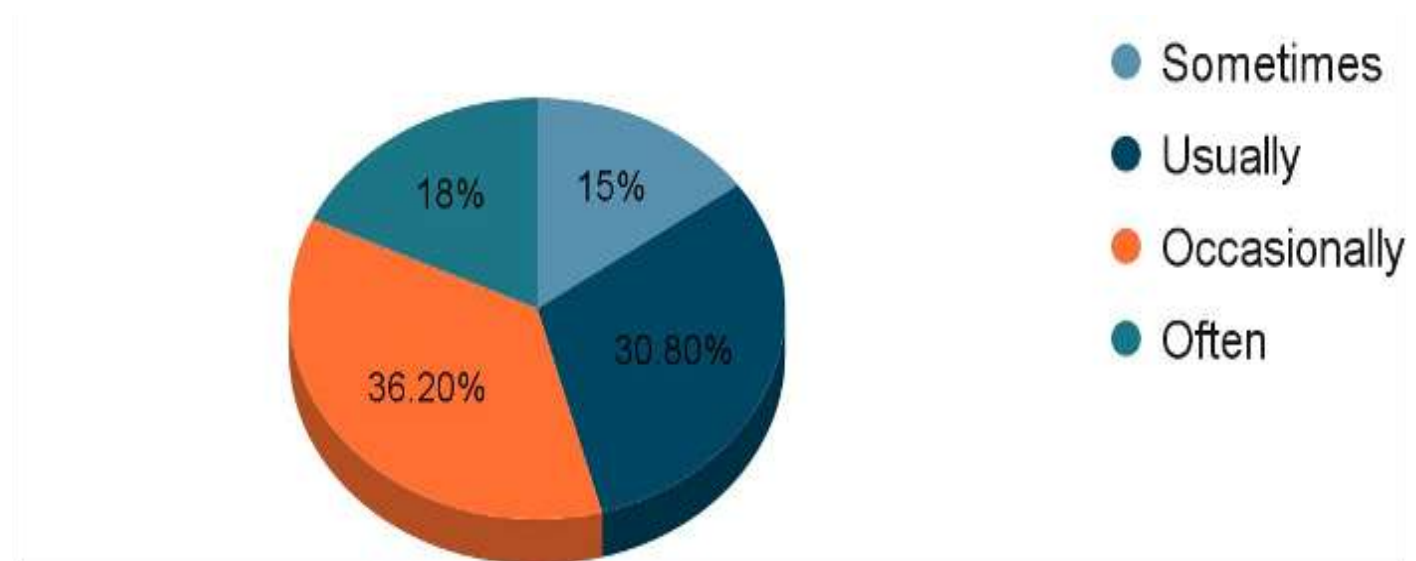


Figure 2 illustrates that the frequency of QuillBot usage varied among participants, with the majority of them utilising the writing assistant on an occasional to frequent basis. These usage habits provide a necessary context for understanding students' qualitative experiences, perceptions, and academic performance discussed in the subsequent sections.

Students' Perceptions and Attitudes Towards QuillBot in Academic Writing

Research Question 1 was addressed by evaluating students' attitudes and perceptions regarding the use of QuillBot in academic writing. The results revealed that students generally exhibited a neutral to slightly positive view of the writing tool with an overall mean score of 3.03 ($SD = 1.237$). The intermediate score across the survey items indicated that participants categorised QuillBot as a practical but optional or secondary writing tool instead of a necessity in academic writing. This implies that while the efficiency of these AI writing tools is appreciated, students still acknowledge the importance of independent writing practices and cognitive skills engaged in completing the writing tasks.

The item regarding QuillBot's cost-free service ("I do not have to pay any fee to use QuillBot") recorded the highest mean score ($M = 3.18$, $SD = 1.300$), implying that the participants highly appreciated its accessibility and affordability. Additionally, while students greatly appreciated the pragmatic value of QuillBot's paraphrasing functionalities and its capability to assist in academic writing practices, they also gave lower ratings to its ease of use ($M = 2.94$) and time-saving benefits ($M = 2.92$). It implies that students do not prioritise the operational efficiency of the AI tool but rather approach it as an educational resource for vocabulary expansion and paraphrasing tasks.

Overall, these results suggest that students have a realistic view of QuillBot as a practical writing assistant while keeping moderate expectations regarding its overall effectiveness. It aligns with Kurniati and Fithriani (2022), who found that students indicated positive perceptions towards and relied on its capability to facilitate academic writing, especially in paraphrasing tasks. Correspondingly, Asmara and Kastuhandani (2024) and Niswa and Amsari (2025) highlighted that students credit QuillBot as a beneficial writing assistant that helps improve vocabulary use, grammar, and writing quality, while Syahnaz and Fithriani (2023) highly advocate its convenience in terms of accessibility and practicality. Therefore, the current findings imply that students acknowledge the value of QuillBot as a secondary writing tool rather than a replacement for independent writing practices. It demonstrates possible awareness that while AI-writing tools can ease the writing processes, meaningful learning still requires active critical thinking and independent effort to develop excellent writing skills.

Perceived Benefits and Challenges of QuillBot Usage

Research Question 2 entailed evaluating students' perceived benefits and challenges of QuillBot usage. The results showed that the participants acknowledged multiple distinct benefits of integrating QuillBot in academic writing, with the highest-rated benefit being vocabulary expansion, where participants concurred that QuillBot helped them broaden their proficiency in synonyms ($M = 3.04$, $SD = 1.258$). They also reported that the tool assisted them in adapting and applying cohesive devices more flexibly ($M = 3.01$, $SD = 1.273$) and lowered their writing anxiety while doing paraphrasing activities ($M = 3.00$, $SD = 1.160$). This suggests that QuillBot plays a crucial role in assisting students to improve various aspects of the writing process.

Regardless of the benefits, this study also identified several challenges related to Quillbot usage. The participants expressed moderate agreement that adopting QuillBot in writing tasks could diminish the active engagement of critical thinking while paraphrasing ($M = 3.05$, $SD = 1.275$). They also acknowledged the risk of being more dependent on QuillBot for paraphrasing tasks ($M = 3.01$, $SD = 1.248$). It demonstrates that while students value the convenience provided by Quillbot, they are fully aware of the potential risks tied to overreliance.

These findings validate the existing evidence regarding the positive and negative impacts of using AI writing assistants. Fitria (2021), Ariyanti and Anam (2021), and Niswa and Amsari (2025) reported that QuillBot is valuable to support writing development, such as paraphrasing, grammar correction, and improving general writing quality. They also suggest that the tool can be a valuable teaching aid if used mindfully. The current study also advocates the findings by Ansorge et al. (2021), whereby excessive dependency on these AI tools can erode students' critical thinking and independent writing skills. It further agrees with Asmara and Kastuhandani (2024), who found that despite acknowledging its practicality, students were generally cautious about using QuillBot sparingly as they regarded it as a secondary or assisting tool instead of a substitute for independent writing effort. They also admitted to constantly refining and reviewing ideas generated by QuillBot before using them in writing tasks. Insights from the current study underscore the necessity of encouraging ethical and responsible usage of AI tools in universities. While vocabulary enrichment is considered a notable benefit of QuillBot, this study also expresses reservations regarding overreliance and cognitive disengagement. This suggests that students perceive QuillBot as both a helpful learning aid and a potential risk for overdependency, reflecting the double-edged nature of these AI writing tools.

Factors Influencing Students' Use of QuillBot

Research Question 3 explored the factors influencing the use of QuillBot among students. The results revealed that participants reported affordability, accessibility, perceived usefulness, and perceived ease of use as among the factors that influenced their adoption of QuillBot in academic writing. Free access to the AI tool recorded the highest mean score ($M = 3.18$, $SD = 1.300$), implying that affordability is the main factor for choosing QuillBot as a writing assistant. Meanwhile, accessibility and paraphrasing features also play crucial roles in encouraging students' continued usage of QuillBot.

These findings can be further conceptualised by the Technology Acceptance Model (Davis, 1989), which postulates that technological adoption is driven by its perceived usefulness and perceived ease of use. The participants demonstrated the likelihood of adopting QuillBot in completing their writing tasks if they perceived

it as a beneficial tool and highly accessible. The significance of affordability and availability implies that students' adoption of AI writing assistants is heavily determined by external facilitating conditions. It is worth mentioning that while TAM primarily highlights perceived usefulness and perceived ease of use, the current findings imply that practical factors, including cost and accessibility, remain vital in the adoption of technological advances in education among university students. The findings support Davis' (1989) claim that individuals are more likely to adopt technological devices that maximise their performance while needing minimal effort. It further aligns with previous evidence, whereby students generally favour QuillBot due to its ability to help with paraphrasing tasks efficiently as well as its user-friendliness, accessibility, and zero-cost access (Fitri & Dewi, 2024; Kurniati & Fithriani, 2022; Asmara & Kastuhandani, 2024). Overall, these findings hold distinct relevance for the Malaysian and global education landscape, where students are observed to be progressively dependent on AI writing tools as a support for completing coursework and academic writing tasks.

Relationship Between QuillBot Usage and Academic Performance

Research Question 4 involved a correlation analysis to examine the relationship between QuillBot usage frequency and students' academic performance (CGPA). The results indicated a moderate positive correlation between both variables ($r = .35$, $p < .01$). Although a moderate positive relationship was observed, the findings should not be interpreted as evidence that QuillBot directly improves academic performance. The association may instead reflect differences in students' academic engagement, language proficiency, motivation, or strategic use of learning technologies. This data however still suggests that participants who used QuillBot more regularly did obtain a higher CGPA or academic success.

Table 1 Correlation Between QuillBot Usage Frequency and Academic Performance (CGPA)

Variables	r	p
QuillBot Usage Frequency and CGPA	.35	< .01

A plausible explanation for these results is that high-performing students are generally more proactive in strategically adopting any AI writing assistants to enrich their learning. They are better equipped to manage complex assignments and produce quality work, owing to their understanding of how to utilise QuillBot's core features, namely paraphrasing guidance, vocabulary enrichment, and overall text improvement. The finding is closely aligned with prior studies, which reported a positive correlation between the integration of QuillBot with students' literacy development and academic writing practices (Fitria, 2021; Asmara & Kastuhandani, 2024; Niswa & Amsari, 2025).

While previous research primarily centred on students' attitudes, experiences, and the perceived benefits and challenges of QuillBot adoption, its relationship with students' academic performance has been scantily addressed. The present study expands such a gap by offering baseline evidence of a positive relationship between the usage frequency of QuillBot and students' CGPA. Given the limited studies available within the Malaysian tertiary education landscape, this finding provides a valuable insight into the role played by AI-powered writing assistants in modern academic environments.

Nevertheless, the current results should be considered with caution. As the analysis is solely correlational, it does not permit definitive causal conclusions regarding the direct interplay of QuillBot adoption with higher academic achievement among students. Other factors, including students' academic engagement, language proficiency, intrinsic motivation, and study habits, could contribute to students' higher CGPA and the growing pattern of adopting AI writing tools.

CONCLUSION AND IMPLICATIONS

This study investigated the perceptions, usage patterns, and academic impact of QuillBot in academic writing among undergraduate students at Universiti Teknologi MARA (UiTM) Shah Alam. The findings demonstrate that students' perceptions towards QuillBot ranged from neutral to slightly positive, and that they recognised its

usefulness as a writing support tool. Participants also unveiled their reception of assistance by QuillBot in terms of vocabulary development, paraphrasing, and improving various aspects of academic writing. Concerns regarding reliance and reduced cognitive engagement during paraphrasing activities were also highlighted, signifying the students' awareness of both the advantages and potential risks of AI-driven writing technologies.

The results further unveiled accessibility, affordability, perceived usefulness, and perceived ease of use as significant factors influencing students' use of QuillBot. It aligns with the assumptions of the Technology Acceptance Model, which suggests that users often have a higher tendency to utilise technologies that they believe to be functional and simple to apply. A moderate positive relationship was also discovered between QuillBot and academic performance, demonstrating that students who applied the tool more often tended to obtain higher CGPA. Although this relationship does not indicate causation, it offers preliminary evidence that AI-driven writing tools can be related to positive academic writing experiences when applied accordingly.

The findings of this study have several consequences for educators and higher education institutions. As AI-driven writing tools become increasingly implemented into learning practices among students, educators must focus on encouraging responsible and ethical application as opposed to discouraging the application altogether. Academic writing courses may benefit from integrating AI literacy components to facilitate students' understanding of the benefits and challenges of tools such as QuillBot. Universities should also develop clear guidelines on the acceptable application of AI-facilitated writing technologies to support academic integrity while promoting significant learning experiences. Although students generally perceived QuillBot positively, AI-powered writing tools should complement rather than replace independent learning and critical thinking. Educators therefore play an important role in guiding students on the ethical use of AI technologies, including appropriate paraphrasing practices, proper citation, academic integrity, and the responsible evaluation of AI-generated suggestions. Developing students' digital literacy alongside AI literacy will help ensure that such technologies are used responsibly to enhance learning while preserving academic integrity.

Despite its contributions, this study has several limitations that should be acknowledged. Firstly, the study relied exclusively on self-reported questionnaire data, which may be influenced by response bias or social desirability and may not fully reflect students' actual writing practices or improvements in academic writing quality. Future studies could complement self-reported data with objective measures such as rubric-based writing assessments, instructor evaluations, or controlled writing tasks to provide a more comprehensive evaluation of QuillBot's educational impact. Secondly, the study was conducted at a single Malaysian public university, which may limit the generalisability of the findings to other higher education institutions, academic disciplines, or cultural contexts. Future research should therefore include participants from multiple universities and diverse educational settings to enhance the external validity of the findings. Finally, the present study employed a correlational research design, which identifies associations between variables but does not establish causal relationships. Longitudinal or experimental studies are recommended to examine whether sustained and responsible use of AI-assisted writing tools contributes to improvements in students' academic writing performance and overall academic achievement.

Ethics Approval and Consent to Participate

This study was conducted by closely adhering to the research ethics outlined by the UiTM Research Ethics Committee. All procedures involving human participants were done according to the ethical standards of the institutional research committee. Informed consent was also collected from all participants.

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Conflict Of Interest

The authors declared no conflicts of interest for this work and no possibilities of conflicts of interest regarding the research, authorship, or publication of this article.

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