



The Impact of Quillbot Tools on Critical Thinking Skills Among University Students in Tanzania

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Abstract

This paper investigates the impact of QuillBot on critical thinking among university students at Teofilo Kisanji University (TEKU), Tanzania. The study employed a qualitative research approach within the interpretivist paradigm. Data were collected through semi-structured open-ended interviews and documentary analysis. Content analysis was used to analyze the data and identify key themes. A sample of fifteen participants, including lecturers, university administrators, and students, was selected for the study. The findings indicate that QuillBot has both positive and negative effects on critical thinking among university students. The negative impacts include overdependence on technology, reduced original thought, academic integrity concerns, decreased discussion and debate, potential plagiarism, while the positive impacts include enhanced language proficiency, increased research efficiency, improved self-confidence, learning, and writing skills. The study found that while QuillBot, as an artificial intelligence tool, has supported the development of critical thinking, some students have become overly reliant on it, neglecting to engage their own thinking effectively. It is recommended that the government, through media outlets, provide education on the benefits and drawbacks of using QuillBot in teaching and learning.

Keywords: Artificial Intelligence, Creativity in Teaching, Critical Thinking, QuillBot, University Students.

1. INTRODUCTION

QuillBot is an artificial intelligence tool designed to enhance productivity, content writing, writing quality, and writing efficiency. The co-founders of QuillBot-Rahan Gupta, Anil Jason, and David Silin-established it in 2017 in Chicago and Jaipur. QuillBot is built on the principles of technology and aims to empower education professionals, including researchers, educators, and writers (Raheem, Anjum, and Ghafar, 2023). This AI tool includes several components, such as a paraphraser, grammar checker, translator, summarizer, and plagiarism checker. QuillBot fosters a positive attitude toward writing and aids in language development (Kurniati and Fitriani, 2022). Additionally, QuillBot improves paraphrasing skills and teaches effective grammar usage (Mohammad, Alzubi, Nazim, and Khan, 2024).

There is a close relationship between QuillBot and critical thinking, as QuillBot is based on writing, and writing requires critical thinking. Critical thinking is essential in developing strong writing skills



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and constructing effective arguments. Creating good writing requires not only proficiency in language but also the ability to think critically. Writing can strengthen critical thinking, and vice versa. When we write, we engage in thinking to generate ideas, maintain a coherent flow, and organize our thoughts effectively (Davarpanah, Izadpanah, and Fassih, 2021). QuillBot supports the development of critical thinking skills among students and promotes language creativity (Khatami, Lai, He, and Haji-Othman, 2023). As such, QuillBot aids in improving writing skills for students, bloggers, educators, writers, and researchers.

The central argument of this paper is that while QuillBot, as a digital tool, has been valuable in empowering university students academically, some students have become overly reliant on it to format their academic work, neglecting to engage their own critical thinking skills. Furthermore, some students have been using QuillBot to generate entire assignments, resulting in work that is largely unoriginal (Fithriani, 2021). The situation at Teofilo Kisanji University (TEKU), where students are required to write assignments on academic skills and English language proficiency, raises important questions: Why do students fail to apply their academic skills and language proficiency when responding to quizzes and exams? In our observations at TEKU, including a review of academic documents such as past exam papers and quizzes, many students struggle to answer exam questions correctly and exhibit poor English language skills, which appear to be influenced by the negative effects of QuillBot. Most students at TEKU acknowledge that QuillBot, as an artificial intelligence tool, reduces their critical thinking abilities, particularly because it can perform tasks like paraphrasing and summarizing on their behalf. It is clear that QuillBot has contributed to a lack of engagement and thoughtful effort in completing academic tasks at TEKU.

To address the complex relationship between QuillBot and critical thinking, the study aims to achieve two objectives: first, to assess the negative impacts of QuillBot on critical thinking among university students, and second, to investigate the positive impacts of QuillBot on critical thinking. By doing so, the study will provide a comprehensive understanding of the advantages and disadvantages of using QuillBot in fostering critical thinking among university students.

This study is guided by Metacognition Theory, which focuses on "thinking about thinking" and was developed by John H. Flavell in the 1970s. The theory consists of two components: first, knowledge cognition, which addresses how, when, and why to use strategies; and second, regulation cognition, which involves planning, monitoring, and evaluating. Essentially, Metacognition Theory plays a vital role in enhancing effective learning by enabling students to plan, monitor, and evaluate their understanding and performance (Geçirilmesi and Ozturk, 2024). It also emphasizes how individuals reflect on their thinking processes. As such, Metacognitive Theory contributes to improved academic performance, greater motivation, and the facilitation of self-regulation among students.

Moreover, Metacognition Theory has gained significant attention in the age of modern technology. There is a strong connection between artificial intelligence tools, including QuillBot, and Metacognitive Theory, as both are concerned with an individual's thinking abilities. However, one of the main criticisms of Metacognition Theory is the lack of a precise and widely recognized definition. Despite this limitation, the term "metacognition" encompasses a broad range of activities, including self-awareness, self-regulation, monitoring, and cognitive control. Therefore, QuillBot and Metacognitive Theory are closely linked because both involve the cognitive processes of individuals.

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2. METHODS

After discussing the theoretical perspective, this section outlines the methodological approach used to investigate the impact of QuillBot tools on critical thinking skills among university students at TEKU in the Mbeya region. The study employed three research methods: interviews, observation, and documentary analysis. It utilized a qualitative research strategy and interpretivism as the underlying paradigm. Semi-structured open-ended interview questions were developed and used to interview various education stakeholders, including lecturers, education administrators, and university students. The study's sample consisted of fifteen participants: five university administrators, five university students (three females and two males), and five lecturers. Participants were selected based on their experience, education, and competence.

In order to obtain accurate and productive data on the impacts of Quillbot on critical thinking among university students, the study used one data analysis techniques including content analysis. In addition, content analysis technique was based on systematic examinations and interpretation of the content of textual, visual, or audio data to identify patterns, themes, and meanings. However, the study employed six stages in analyzing data including defining the goal, collecting relevant data from various sources, cleaning data which involved identifying and correcting issues, analyzing data, interpreting the results obtained, and communicating findings. Teofilo Kisanji University granted research approval for the study, which was conducted under its auspices. Participants provided oral consent before data collection commenced and were assured that their information would be kept confidential, with their identities anonymized through the use of letters instead of real names. This approach ensured that the data were obtained authentically.

3. RESULTS AND DISCUSSION

This section presents and discusses the themes derived from the study. Everything in the world has two sides: positive and negative. Similarly, the impact of QuillBot on the critical thinking of university students also has dual contributions. Subsection below presents the negative impacts of QuillBot on the critical thinking of university students at Teofilo Kisanji University, based on the study's findings.

The Negative Impact of QuillBot Tools on Critical Thinking Skills Among University Students

This subsection presents and discusses the themes derived from the study, highlighting the negative impacts of QuillBot on the critical thinking skills of university students at Teofilo Kisanji University, as outlined in the study's findings

Overdependence on Technology

In an interview conducted with respondent D (Personal Communication, March 14, 2025) he said that "anything in excess creates a problem". He added that the advent of Quillbot tool technologies is very good although it brings a sense of dependency to users and without its presence students fail to use their individual minds to solve the challenges they face in their academic activities. Overdependence on technology creates a thinking disability for students who rely on Quillbot technology tools to do the work for them. Respondent D's argument has been found to be valid and supported by some scholars including Fitria (2021) who argue that QuillBot makes writing effortless for writers, researchers, and educators who rely on it for all their tasks. This reliance blocks students' ability to generate new ideas and thoughts, as QuillBot works on their behalf. Additionally, students become ineffective in developing new vocabulary and maintaining the flow of ideas due to QuillBot's components (such as paraphrasing and language translation) which diminish their cognitive engagement. Krullaars et al. (2023) also argue that "over-reliance on AI dialogue systems might diminish students' drive and commitment to learning, as they might lean too heavily on these systems for answers instead of actively participating in the learning experience." The thoughts and views of respondent D, Fitria and Krullaars et al. prove that Quillbot as an AI tool reduces the thinking ability of the student who relies on it to work on his behalf. Basically, many students lack creativity and the ability to use their minds to do their academic work. In fact, we align with scholars such as Fitria (2021) and Krullaars et al. (2023) who suggest that over-reliance on QuillBot can reduce a university student's self-reliance in thinking. This happens because students focus on using QuillBot instead of engaging in deep argumentation and evidence gathering. Moreover, this over-reliance erodes the critical thinking process, as students prefer outsourcing their thinking and ideas rather than developing their own knowledge and skills.

In an interview at Teofilo Kisanji University in Mbeya where respondent B (Personal Communication, 2nd March 2025) stated that "the presence of QuillBot led to over-dependence on technology for lazy students." However, this point has been contested by some scholars (Marzuki et al., 2023 in Zhai, Wibowo & Li, 2024) who state that "other studies revealed that regular utilization of dialogue systems is linked to a decline in cognitive abilities, a diminished capacity for information retention, and an increased reliance on these systems for information."

Respondent A (Personal Communication, March 13, 2025) stated that a student who relies on QuillBot for everything diminishes and even eliminates their ability to think critically. This is because such a student fails to take the time to solve problems independently, as QuillBot simplifies tasks on their behalf. Furthermore, over-reliance on QuillBot can erode a student's self-confidence due to a lack of competence in certain areas. Extensive reliance on QuillBot's paraphrasing tool may make students too dependent on it. This could lead students to lose self-confidence in their own paraphrasing skills and hinder their ability to develop them." We agree with this perspective, asserting that university students who overly depend on QuillBot lack the personal knowledge and critical thinking skills necessary for independent thought. Some students struggle to solve complex problems due to this lack of critical thinking, which is further exacerbated by QuillBot's interference, as it prevents students from engaging their cognitive abilities.

Dependence on tools like QuillBot can lead to a decline in students' metacognitive awareness. If students do not practice evaluating their own understanding or reflecting on their thought processes while using these tools, they may become less capable of regulating their learning strategies. Although QuillBot's accessible and visually appealing interface has been beneficial, its user-friendly layout makes it easy for students to navigate and interact with the tool (El-Garawany, 2024).

Reduction of Original Thought and Impact on Academic Integrity

In a conversation with Respondent D (Personal Communication, 27th February 2025) he stated, “If QuillBot paraphrases various academic materials without proper citation, it can lead to academic dishonesty, which harms their academic integrity and puts them at great academic risk. Moreover, while a tool like QuillBot can be convenient, it can also sever the connection between the student and the learning process. The focus shifts from genuine comprehension to merely completing tasks. A university student who is overly dependent on QuillBot may find themselves lacking the space for deep, critical thinking. The argument that students who rely on Quillbot technological tools contribute to reducing real-world thinking and have an impact on academic integrity is supported by Nurmayanti and Suryadi (2023) argued, “In today's period of rapid technological development, the practice of writing has given way to that of copying and modifying the work of others. Rather than expressing their own views in their own words, students often simply copy and paste statements from other sources. We agree with the views and thoughts of respondent D and the scholars above that students who rely on Quillbot as an artificial intelligence tool to perform tasks lose their voice in their academic paper work and their real thoughts fail to be seen in writing activities. However, the nature of lazy students relies on Quillbot to think for them.

Respondent E (Personal Communication, March 20, 2025) also shared that Humans are created with a high desire to think and discern the various things that befall this world. However, due to the multitude of experiences humans encounter, their ability to think critically can diminish. The presence of artificial intelligence tools like QuillBot reduces the inherent thinking ability that students are born with. Traditional writing, without the assistance of QuillBot, forces students to think deeply about how to apply their writing skills and allows their voices to be heard.” Therefore, minimizing original thought occurs when students rely too heavily on AI tools for content creation. While metacognition encourages independent thought and self-assessment, using QuillBot solely for paraphrasing others' work rather than generating new ideas undermines academic honesty. Students may end up producing non-unique content, which is undesirable in the academic community. We agree with respondent E's thinking that actions build competence in anyone to do something fluently and accurately. Even students who are willing to learn believe and build foundations in doing their academic work in practice. The presence of Quillbot makes students unable to build their own arguments and instead lack the ability to think and present their original ideas.

Decrease in Discussion and Debate

Among students who are heavily dependent on QuillBot for all their academic tasks, an interview with Respondent G (Personal Communication, March 13, 2025) revealed that “When a university student relies on QuillBot to express their ideas, there is little opportunity to participate in discussions, debates, or collaborative critical thinking experiences, all of which are vital for intellectual growth.” In a study by Mohammad, Alzubi, Nazim, and Khan (2024), it was found that QuillBot does not facilitate pair and group work for students. Furthermore, Fithrian and Kurniati (2022) cited a university student who stated, Lack of Wi-Fi frustrates me and makes me lazy when trying to write an academic paper, as I miss the opportunity to exchange and collaborate with others.” We agree with Fithrian and Kurniati's argument that excessive reliance on any tool can create habits that lead to difficulties when the tool is unavailable. QuillBot, in this case, eliminates face-to-face discussions and debates between the user and the author, depriving students of opportunities to ask probing questions for further understanding. Moreover, metacognitive strategies, which promote active learning through discussion and questioning, are compromised when students use QuillBot as a shortcut instead of engaging with their peers or instructors. Therefore, it is suggested that QuillBot should integrate tools that foster discussions and enhance students' critical thinking.

Potential for Plagiarism

In an interview conducted with Respondent H (Personal Communication, March 14, 2025) she stated “Most university students do not use their minds properly to think deeply because they rely on QuillBot to do the work for them. Some students submit assignments pretending that the ideas are their own. Although they may have a good flow of ideas in their individual assignments, they lack the ability to make arguments and reason during presentations in front of their classmates, which raises the question: is it possible they didn’t write the assignments themselves and instead copied and pasted from QuillBot? To plagiarize is to copy another person’s ideas, words, or work and pretend that they are your own. While QuillBot can paraphrase and summarize, it fails to provide the accurate original source of an idea and often generates responses that are similar to each other, which can be considered plagiarism by academics

It is well-established that academic writing involves critical thinking to build arguments and present a coherent flow of ideas. However, Nguyen (2023) conducted a survey among various academics, including teachers, administrators, and policymakers, to determine the relationship between artificial intelligence and plagiarism. He found that “Teachers, administrators, and policymakers themselves have divergent views on whether the use of AI applications in academic writing constitutes plagiarism.” Furthermore, Nguyen (2023) found that “In response to questions about whether AI applications are acceptable in academic writing, only 3 out of 68 participants believed that AI applications should be banned in academic writing.” Hence, we agree with Nguyen that the use of artificial intelligence, including QuillBot, should be carefully examined and thoroughly researched to assess whether university students accept it as a legitimate tool for academic work.

Positive Impacts of QuillBot on Critical Thinking among University Students

Although beauty and ugliness are subjective and depend on an individual's perception, certain things are universally considered beautiful based on factors like culture, environment, and experience. Similarly, Artificial Intelligence, including QuillBot, has sparked a complex debate among users, as opinions and perspectives vary. Below are the positive impacts of QuillBot as an artificial intelligence tool.

Enhancement of Language Proficiency

In an interview with respondent C (Personal Communication, May 23, 2025) she stated that “there is a strong correlation between critical thinking and language writing”. As a result, the language structure that university students employ to express their thoughts can be used to assess their capacity for thought. Nonetheless, QuillBot improves language proficiency by removing grammatical errors, improving paraphrasing abilities, and learning new vocabulary (Mohammad, Alzubi, Nazim, and Khan, 2024). In my opinion, Raheem, Anjum, and Ghafar (2023) and Mohammad, Alzubi, Nazim, and Khan (2024) are right when they say that language is a reflection of human thought. I concur that a university student's critical thinking can be examined by looking at the language he or she uses in writing and speech. However, QuillBot just summarizes and paraphrases what a university researcher has written; it is unable to intervene beyond the writer's, researchers, and student's ideas.

QuillBot's paraphraser offers vocabulary enrichment by providing users with synonym suggestions, which deepens their linguistic diversity in writing and helps them expand their word choices. In other words, QuillBot is very useful as it helps students incorporate new vocabulary into their writing. Pupils lack knowledge from birth, particularly when it comes to vocabulary; hence QuillBot assists students in expanding their vocabulary for academic assignments. A person is forced to think more about everything that comes into their life. When new terminology is available, a university student must carefully examine how to use and incorporate it into their writing and study.

When I asked Respondent F a question, he said, "I used to deploy repeated jargon in my academic writing before I discovered QuillBot" (Personal Communication, 13 February 2025). I currently use QuillBot, which pushes me to think of other ways to improve my language abilities and aids in my writing vocabulary expansion. In my opinion, students think faster when they are exposed to new vocabulary and terms. For indolent students who are not motivated to learn, this might not be the case. As a result, this study advocates for metacognitive theory, which holds that rather than accepting the Quillbot's conclusions at face value, students should actively consider what they learn from it.

Efficiency in Research

Respondent C stated that "QuillBot has been very useful in my academic path because it offers me with many instances of scientific paper writing including research" in an interview I did with him at TEKU (Personal Communication, January 20, 2025). Nonetheless, I concur with the student that QuillBot can assist him in fixing his spelling, grammar, and pronunciation mistakes as well as in producing coherent, academic phrases. According to a study on the value of QuillBot for undergraduate students by Asmara (2024) stated that undergraduate students enjoy using QuillBot since it ensures that their writing is ethical by checking for plagiarism. One of the participant's real statements during the interview was, "I typically utilize plagiarism checks like Turnitin to check the plagiarism. For instance, I paraphrase from QuillBot and I still check to see if it still contains plagiarism". Personally, I agree with respondent C and Asmara that upholding ethics in the writing process is one of the things that show how effective and high-quality research is. In addition, small mistakes like misspellings, improper grammar, and tenses show that the author and researcher are not paying attention to their work, which can result in academic credits being lost because the work lacks a coherent flow of thought that makes sense to the reader. However, evaluating the reliability of sources and successfully synthesizing information require metacognitive expertise. Students should evaluate critically if the summaries they have written align with their material and meet their research needs. QuillBot is therefore very helpful in encouraging critical thinking in kids who utilize it as a learning tool rather than a tool to do their work for them.

Using artificial intelligence tools like QuillBot allows university students to focus on a thorough evaluation rather than only gathering data and rapidly find information on a certain subject. The QuillBot tool teaches the learner how to use scholarly materials to create productive and persuasive arguments. Additionally, QuillBot helps students with their articulation, which increases their confidence in expressing their thoughts and fosters critical thinking (Nurmayanti & Suryadi, 2023). Additionally, QuillBot's features, which include grammar checking, paraphrasing, summarizing, plagiarism checking, and citation styles, assist students in writing scientific academic papers, according to Muhamad et al. (2024). In essence, quillbot components are necessary for any quality research in order to satisfy writing criteria. QuillBot can assist students in learning because research has a unique style of presentation and writing.

However, metacognitive knowledge is essential for judging the validity of sources and synthesizing information effectively. Students should critically assess whether the summaries produced by QuillBot align with their information and contribute meaningful value to their research. Therefore, QuillBot is a valuable tool for stimulating critical thinking among students, provided they use it as a learning tool rather than a substitute for their own efforts.

Self-confidence and Learning

Respondent D stated in an interview I had with him (Personal Communication, March 18, 2025) that "Quillbot's assistance in creating scientific papers that adhere to writing rules provides me the courage to defend my work in front of academics." Rather than seeking an academic to assist me with grammar correction and plagiarism detection, QuillBot has made the task easier for me. I concur that QuillBot

can allow students the flexibility to learn and fix their academic errors while writing, as stated by Gürbüz, El-Garawany, and responder D. By allowing children the flexibility to study, they have been able to demonstrate the benefits of QuillBot; but kids who struggle to comprehend and identify errors may suffer as a result. In that situation, QuillBot ought to emphasize how it encourages critical thinking in students of all backgrounds, including those with disabilities.

According to Moradiyousefabadi and Ghafournia (2023) explained that "Self-confidence is considered a crucial factor because it is related to learners' motivation, persistence, and willingness to take risks in language learning. Learners who have high levels of self-confidence in their English language abilities are more likely to engage in communicative activities, seek opportunities to practice their language skills, and persevere through difficulties and setbacks in language learning." I agree with Moradiyousefabadi and Ghafournia that a confident university student can do better since people's perceptions of themselves determine whether they succeed or fail. Self-assurance carries a person's life quality and inspires them to perform better. Furthermore, Akbari (2020) asserted that "each student and his or her teachers, partners, temporary adviser, and workplace supervisors might alter students' sense of self-confidence." In my regular contact with respondent I (Personal Communication, March 12, 2025), she clarified that every attempt a student undertakes in life is fraught with challenges. Hence, metacognitive theory aligns with the findings of this study. When students reflect on their progress and recognize that their writing skills are improving as a result of continuous practice-and not merely through dependence on a tool like QuillBot-it fosters genuine self-assurance and deeper learning.

Increases Writing Skills

In an interview with Respondents X (Personal Communication, March 23 ,2025) agreed that Quillbot helps them further increase their writing skills. In addition, respondents said that writing involves the ability to think critically. Good writers think deeply and are able to analyze and explain their ideas clearly and reasonably. Quillbot helps you evaluate and analyze the weaknesses and strengths of both others and personal arguments. Through quillbot, you can organize your thoughts by correcting grammar, eliminating plagiarism, using correct language, and paraphrasing. Basically, Quillbot deals with writing, and writing is the presentation of ideas through writing. A person can express their thoughts on a certain topic through writing, and anyone can be judged on their ability to think through what they have written. "...critical thinking is one of the important aspects used for creating a background for studying in research. Students admitted that critical thinking skills are needed to connect ideas and facts rationally." (Khairuddin et.al, 2021). In an interview I conducted with respondent J (Personal Communication), he said that quillbot has a great impact on developing critical thinking through acquiring various writing skills available in the quillbot tool components.

In addition, quillbot can make the student think more about the methods used in writing something productive and logical. Moreover, Critical thinking should be instilled in students so that they can succeed in their lives. Writing tools like quillbot enable students to acquire skills such as paraphrasing skills, summarizing skills, and essay writing ensures that students can think critically about how to present their ideas in a specific order (Nor and Sihes, 2021). It improves writing skill in sense that there is potential for an improvement in writing skill, as long as students use QuillBot cautiously. By using it as a vehicle to play with different expressions or sharpen arguments and still being engaged in the writing process, students can enhance their abilities significantly. Hence, doing that requires metacognitive plans of preparation (prior to tool usage), checking (usage of the tool), and re-checking (after usage to complete assignments)

4. CONCLUSION

The study focused on investigating the impact of QuillBot on critical thinking among TEKU university students in Mbeya Municipality. It was found that QuillBot has both positive and negative effects on students' critical thinking. Specifically, the negative impacts include overdependence on technology, a reduction in original thought, challenges to academic integrity, a decrease in discussion and debate, and an increased potential for plagiarism. On the other hand, the positive impacts include enhancement of language proficiency, increased efficiency in research, improvement in self-confidence and learning, and the development of writing skills.

Based on these findings, we argue that although QuillBot, as an artificial intelligence tool, has been widely used to empower university students academically, some have increasingly relied on it at the expense of independent thinking. Therefore, the government should provide comprehensive education on the responsible and effective use of artificial intelligence tools like QuillBot in teaching and learning. If proper guidance is provided to both students and academic staff, the use of QuillBot can significantly simplify and enhance the educational process while preserving critical thinking and academic integrity.

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