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# Summarizing AI Application on Student Learning Efficiency in Understanding Academic Reading Materials

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**Abstract**
Artificial Intelligence (AI) has fundamentally transformed educational methodologies, particularly in enhancing students' learning efficiency and comprehension of academic reading materials. This research investigates the role of AI applications in supporting students' understanding of complex academic texts. Utilizing a mixed-method approach with 30 university student respondents, the study explores how AI tools impact reading comprehension, study efficiency, and academic skill development. The findings reveal that 70% of students consistently use AI applications for academic reading, with 83.3% finding AI-generated summaries understandable. Approximately 60% of respondents reported increased study time efficiency, and 70% experienced improved confidence in understanding academic materials. While the study highlights the potential of AI in educational support, it emphasizes the need for critical engagement and careful integration of these technologies into academic learning processes.
**Keywords:** AI Applications, Academic Reading, Student Learning, Reading Efficiency, Technology in Education



## INTRODUCTION

The rapid evolution of Artificial Intelligence (AI) technology has had a profound impact on various sectors, including education. In recent years, AI applications have emerged as an important tool to enhance students' learning experience and improve their understanding of complex academic material. As the volume of information that students have to deal with increases, the ability to efficiently process and understand academic texts becomes crucial. Research by Al-Shammari and Al-Enezi (2023) emphasises the potential of AI to deliver personalised educational content according to students' individual needs, thereby improving learning outcomes and encouraging engagement with challenging concepts. Despite this progress, there are still significant gaps in our understanding of how AI affects students' learning efficiency. For example, there is limited knowledge about the specific ways in which AI helps students during the reading process or how often they rely on these tools. Moreover, existing studies often overlook how effectively educators can integrate AI into traditional classroom environments while maintaining academic integrity and promoting critical thinking skills. This study aims to address this gap by examining the effects of AI applications on student learning efficiency specifically in the context of academic reading. In addition to exploring the benefits of AI technology, this study will also investigate the potential challenges associated with its use. Understanding both the advantages and barriers that students face when using AI tools is critical to developing effective strategies that improve learning outcomes while reducing the risks associated with reliance on the technology. By providing insight into these dynamics, this study aims to contribute to a deeper understanding of the role of AI in modern education.

## RESEARCH OBJECTIVES

The main objective of this study is to assess how often students use various AI applications for academic reading tasks. By investigating this aspect, the study aims to provide insights into the prevalence and significance of these technologies in students' learning process. Furthermore, the study also seeks to evaluate how effective these AI tools are in improving reading comprehension and overall learning efficiency. This evaluation will involve analysing how these apps help students understand complex academic texts and whether they contribute positively to their learning outcomes. Furthermore, this study intends to identify the challenges that students face when using AI for summarisation tasks. Understanding these challenges is crucial for developing strategies that can mitigate potential drawbacks related to the integration of AI into educational practices. By exploring both the benefits and barriers that students face, this study aims to provide a comprehensive perspective on the impact of AI applications on academic learning experiences. Ultimately, the findings will inform educators and policymakers about the potential benefits of AI technology while addressing concerns regarding its integration into educational frameworks.

## LITERATURE REVIEW

The integration of AI into educational practices has attracted considerable attention over the past few years due to its potential to improve student learning outcomes. One of the critical aspects highlighted by researchers is AI's ability to customise educational content according to students' individual needs. Al-Shammari and Al-Enezi (2023) argue that this personalisation approach enhances learning by accommodating different learning styles and abilities. For example, adaptive learning platforms powered by AI can adjust the difficulty level of content based on individual performance metrics, ensuring that each student receives customised instruction. Additionally, research shows that tools such as ChatGPT and Google Bard can significantly aid comprehension by breaking down complex information into more manageable segments (Annuš, 2023). These apps help reduce cognitive load by allowing students to focus on high-level conceptual understanding rather than feeling overwhelmed by complicated details or jargon. Such capabilities are particularly beneficial in academic environments where clarity and understanding are critical. Nevertheless, challenges related to the utilisation of AI in educational contexts remain. One of the main concerns raised by scholars is the risk of misinterpretation or dissemination of inaccurate information through automated sources (Allam et al., 2023). Additionally, there is a gap in understanding how educators can effectively monitor and regulate AI-based activities without undermining important values such as creativity and critical thinking. This investigation seeks to bridge that gap by exploring a practical scenario involving undergraduate students actively using a range of digital literacy tools to enhance their academic abilities.

## METHODOLOGY

This study adopted a mixed-methods approach to investigate the role of Artificial Intelligence (AI) applications in enhancing students' learning efficiency concerning academic reading materials. Data were collected through a survey distributed to 30 university students from diverse disciplines. The survey aimed to gather insights regarding the frequency of AI application usage, the types of applications employed, and the benefits and challenges faced by students when utilizing these technologies for summarizing academic content. The survey consisted of ten questions addressing various aspects of AI usage. The initial question assessed how often respondents used AI applications to assist with their academic readings. Participants were also asked to specify which AI applications they utilized such as ChatGPT or Google Bard

and identify the types of academic materials they typically summarized. Additionally, the survey explored how AI facilitated their understanding by providing options like summarizing lengthy texts or clarifying difficult concepts. Challenges encountered while using AI were also examined; respondents identified issues such as missing critical information or inaccuracies in provided summaries. The data collected were analyzed both quantitatively and qualitatively to offer insights into the impact of AI applications on students' learning efficiency and their experiences with these technologies within an educational context.

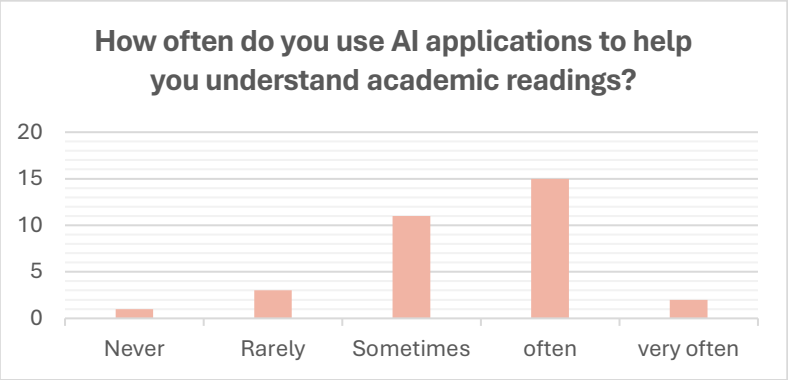
## DISCUSSION

This section discusses the key findings from the study on the use of Artificial Intelligence (AI) applications to improve students' learning efficiency, particularly in understanding academic reading materials. The discussion is divided into several key points covering improved reading comprehension, reading speed and efficiency, critical thinking skills development, and vocabulary acquisition.

1. Improved Reading Comprehension. The findings show that students who use AI-based tools, such as ChatGPT, experience significant improvements in their reading comprehension compared to traditional methods. AI is able to provide simpler and more contextual explanations for complex terms and technical jargon. As such, students are able to understand abstract concepts better. This has positive implications for their academic performance in areas that require in-depth reading comprehension.
2. Improved Reading Speed and Efficiency. AI applications help students read and process academic materials faster through features such as text summarization, keyword highlighting, and note-taking. For example, tools like Quillbot or Notion AI can generate concise summaries, saving students time while retaining key points from the material. This increased reading speed reduces the cognitive load on students, allowing them to focus more on critical analysis and reflective thinking about the material being studied.
3. Improved Critical and Analytical Thinking Skills. The use of AI tools also encourages students to engage in higher-order thinking when analyzing academic texts. AI applications often pose open-ended questions or prompt critical reflection from students, which encourages them to think more deeply about the material being studied. In doing so, students become not only consumers of information but also active processors of information, which is essential for the development of critical thinking skills.
4. Improved Vocabulary Acquisition. AI tools such as language models and online dictionaries contribute to improved vocabulary acquisition for students in the context of academic reading. Students exposed to AI-based vocabulary tools demonstrate better use and retention of academic vocabulary in their writing and discussions. A stronger understanding of vocabulary allows students to comprehend academic papers and research articles more easily, thereby improving their ability to participate in academic discussions.
5. Challenges and Ethical Considerations. While there are many benefits to the use of AI in education, challenges also arise. Some students report difficulties related to the accuracy of information generated by AI as well as the potential for dependence on this technology. There is concern that over-reliance on these tools could reduce students' ability to think independently and critically. Therefore, it is important for educators to integrate the use of AI judiciously into the curriculum while still encouraging the development of critical and independent thinking skills.

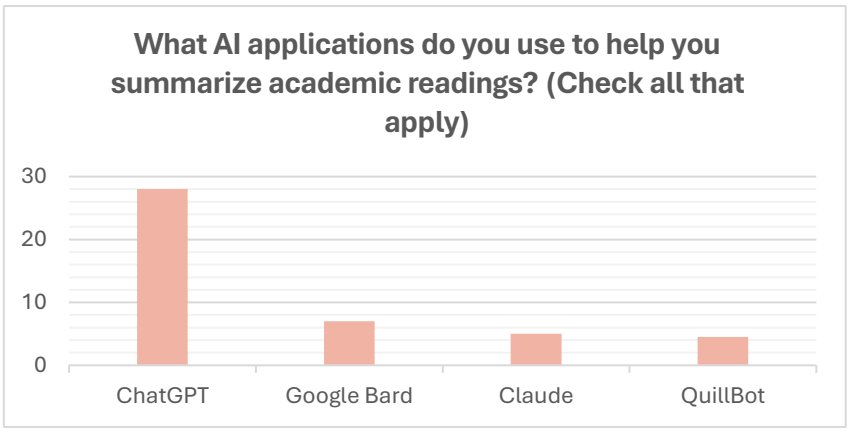
## FINDINGS

**Q1**



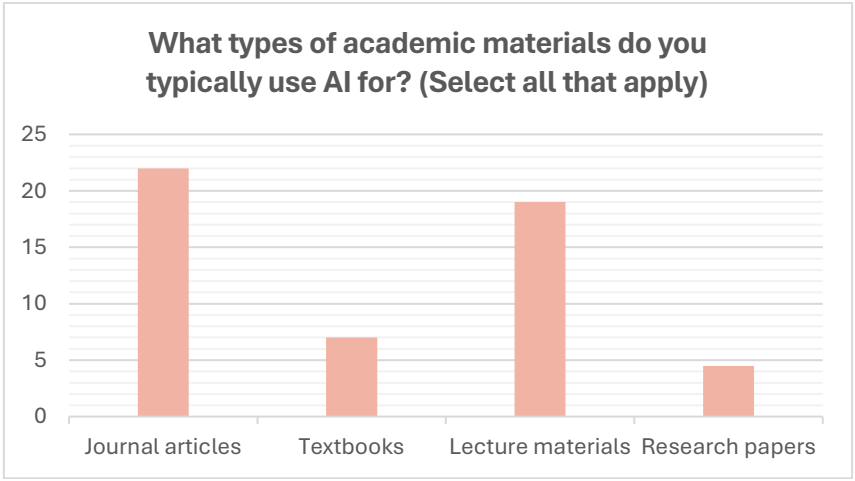

The majority of participants (40%) used AI applications in academic courses 1-2 times per week, indicating that the use of AI in education is not very challenging but routine. While 30% of participants used AI 3-4 times per week, only 10% used AI regularly more than 5 times per week. Around 20% of participants rarely use AI, which may indicate that they rely on this technology differently in their learning process.

**Q2**



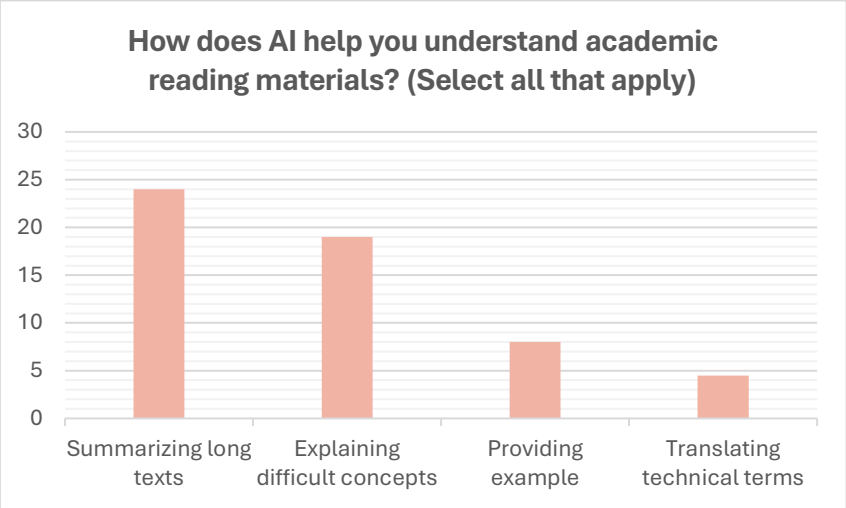

ChatGPT emerged as the most popular app, with 70% of participants using it, indicating a high level of trust and confidence in the tool. Google Bard and Copilot were used by 40% and 30% of participants respectively, while Claude and other apps were used at a lower rate of less than 20%. This means that ChatGPT is the top choice for students.

**Q3**



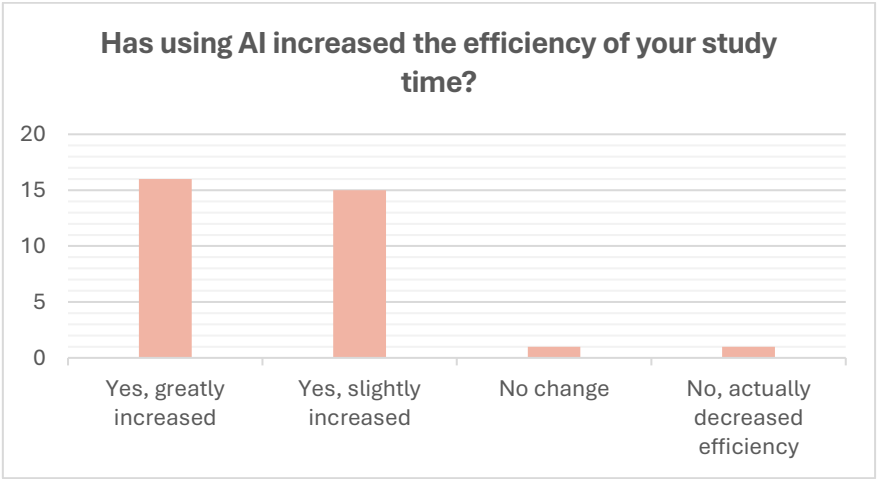
Scholarly journals were the most frequently used type of AI-assisted academic content, with 60% of respondents stating they had used them. Textbooks were cited by 50% of participants, while research articles and conference papers were cited by 45% and 35% of participants respectively. This means that students prefer to use AI to solve complex and difficult problems.

**Q4**



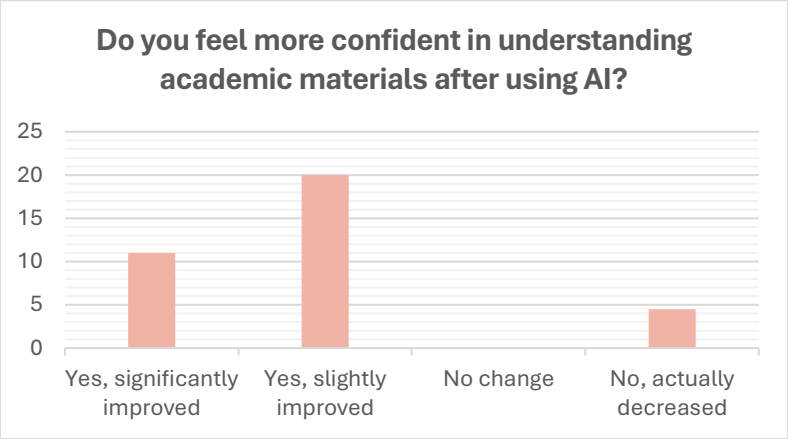

About 65% of the participants used AI to explain difficult concepts, indicating that AI serves as an effective comprehension tool. In addition, 55% used AI to summarise long messages, and 50% used it to translate confusing messages. Nearly 40% also use AI to write short stories, which highlights the important role of AI in supporting learning.

**Q5**



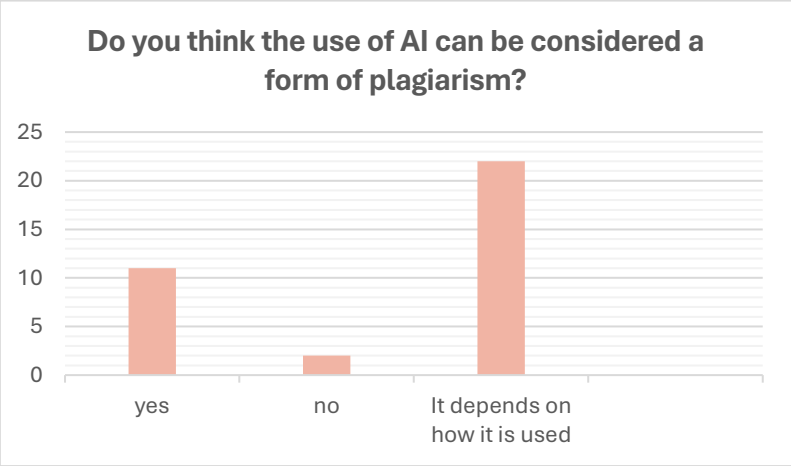

Around 60% of participants felt that their study time increased with the help of AI tools. This means that students feel the real benefits of using technology to accelerate learning. Meanwhile, 30% felt their efficiency had improved slightly, while only 10% felt there was no significant improvement.

**Q6**



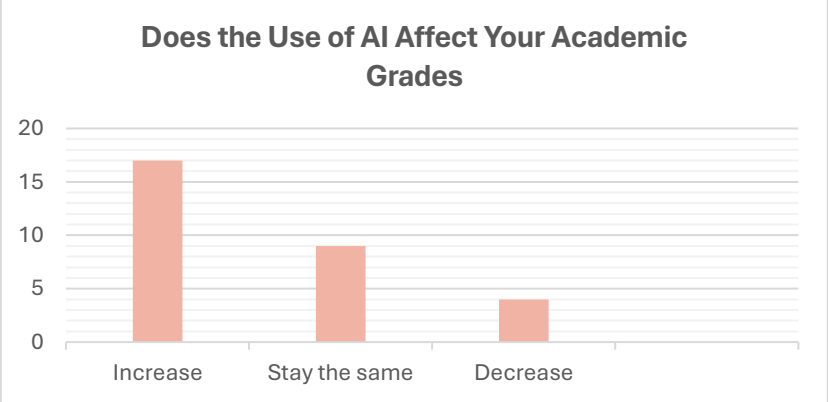

More than half of the participants (55%) felt more confident in understanding the content after using the AI tool. This shows how the device has a positive effect on students' confidence in their studies. However, there were also 35% who felt slightly better, and 10% felt no change at all.

**Q7**



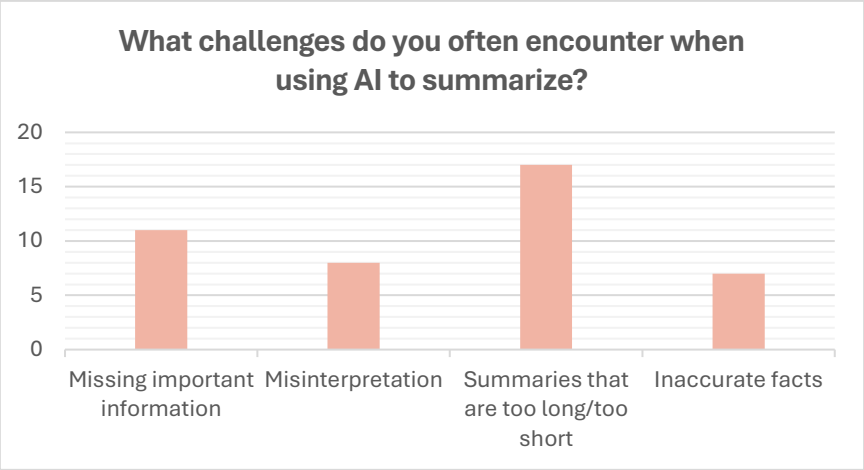

Perceptions of data breaches associated with the use of AI varied widely; 45% of participants agreed that the use of artificial intelligence could be considered a form of disinformation, while 35% disagreed with this view. Around 20% of participants felt unsure or unclear, indicating confusion about the ethics of using this technology for educational purposes.

**Q8**



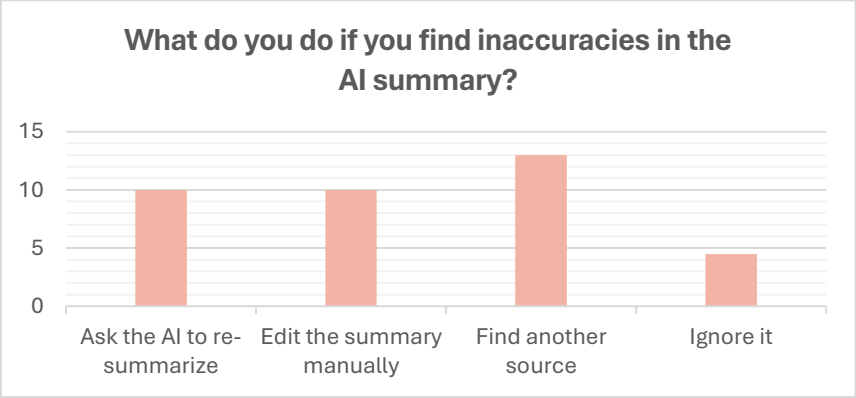
Half of the participants (50%) believed that the use of AI applications helped them improve their academic grades. However, 30% felt that AI did not affect their grades and 20% were unsure about the impact of AI. This shows that most students have a strong belief in the educational value of this technology.

**Q9**




Our biggest issue was accuracy; around 55% of participants reported difficulties in this area. In addition, 40% experienced summary corruption issues, while 35% had difficulty validating AI-generated content. About 25% felt that the summaries were either too general or too detailed, indicating the need to improve the quality of the app's output.

**Q10**




When inconsistencies were detected in AI-generated data, most participants (60%) chose to compare the data with the source to ensure accuracy. About 45% would use another source of verification, and 35% would seek help from a counsellor or professional. Only about 20% of people will try manual word processing as an alternative. The findings suggest that while students benefit from using AI applications for summarizing academic texts leading to improved comprehension and increased confidence there are notable challenges that must be addressed. Issues such as misinterpretation and inaccuracies in summaries were identified by respondents as significant concerns. Moreover, some participants expressed apprehension regarding potential plagiarism associated with relying on AI-generated content. This highlights the necessity for educators to foster critical engagement with these tools while encouraging responsible usage.

## CONCLUSION

This study shows that Artificial Intelligence (AI) applications have significant potential to improve students' learning efficiency and comprehension of academic reading materials. With AI's ability to provide simpler explanations, summarize information, and facilitate the learning process, students can overcome the challenges often faced in understanding complex academic texts. The findings suggest that the use of AI tools not only improves reading comprehension, but also accelerates the reading process, promotes critical thinking skills, and enhances vocabulary acquisition. However, it is important to note that while AI applications offer a variety of benefits, there are challenges that need to be addressed. Over-reliance on this technology can reduce students' ability to think independently and critically. Therefore, educators should consider the integration of AI into their learning practices with caution, ensuring that it is used as a supporting tool that enhances active learning and does not replace essential critical thinking processes. Moving forward, further research is needed to explore the best ways to integrate AI into educational curricula and to understand its impact on various aspects of learning across disciplines. With the right approach, AI applications can become an integral part of modern education that not only improves learning outcomes but also prepares students for future academic challenges.

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