AI-POWERED ENHANCEMENT OF ENGLISH WRITING SKILLS IN MASTER'S DEGREE STUDENTS

BY

HNIN EI PHOO

AN INDEPENDENT STUDY SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN CAREER ENGLISH FOR INTERNATIONAL COMMUNICATION

LANGUAGE INSTITUTE

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was approved as partial fulfillment of the requirements for
the degree of Master of Arts in Career English for International Communication

on June 28, 2024

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Independent Study Title	AI-POWERED ENHANCEMENT OF ENGLISH WRITING SKILLS IN MASTER'S DEGREE STUDENTS
Author	Hnin Ei Phoo
Degree	Master of Arts
Major Field/Faculty/University	Career English for International Communication Language Institute Thammasat University
Independent Study Advisor	Assistant Professor Preechaya Mongkolhutthi, Ph.D.
Academic Year	2023

ABSTRACT

The remarkable progress of artificial intelligence (AI) has resulted in notable transformations in educational processes, specifically in the enhancement of students' academic writing abilities. This study examines the influence of artificial intelligence (AI) tools on the proficiency of master's degree students in English writing. The main objective is to examine the benefits and challenges associated with utilizing artificial intelligence (AI) tools in academic writing, as well as to comprehend students' viewpoints on AI tools for generating content and paraphrasing.

The study involved 61 master's degree students from various academic disciplines, namely Business Management, Career English for International Communication, Development Planning Management and Innovation, Engineering, English Language Teaching, Gender Studies, Global Studies, and Law. A mixed-methods approach was employed, combining quantitative data obtained from a structured questionnaire and qualitative insights gathered from an open-ended survey. The quantitative findings demonstrated that AI tools have significant beneficial effects on writing speed, organization, creativity, and grammatical accuracy. Additionally, these tools received high mean scores in terms of user-friendliness and vocabulary enhancement. The qualitative analysis uncovered that student value AI tools for their practicality in managing citations, generating ideas, and delivering immediate

feedback. However, certain difficulties such as the lack of acceptability in certain contexts, worries about privacy, and the possibility of excessive reliance were also emphasized.

Keywords: artificial intelligence, AI tools, academic writing, content generation, paraphrasing

ACKNOWLEDGEMENTS

I would like to extend my sincere gratitude to all those who have supported and contributed to the completion of this thesis.

First and foremost, I am deeply thankful to Assistant Professor Dr. Preechaya Mongkolhutthi, for her invaluable guidance, unwavering support, and expert mentorship throughout every stage of this research. Her insights and encouragement have been instrumental in shaping this work.

I am also grateful to all professors who have provided their insightful comments, constructive feedback, and encouragement, which have greatly enriched this thesis.

Special thanks to Dr. Nat Sichon, for her pivotal role in bringing me to the University of Thammasat, Language Institute, and for believing in my academic journey.

I extend my appreciation to the master's students who participated in this study, generously sharing their time and insights, without whom this research would not have been possible.

Lastly, I am deeply thankful to my family, especially my mother, for their unconditional love, encouragement, and support throughout my academic pursuits.

Your support and contributions have been invaluable to this paper, and I am deeply grateful for your help.

Hnin Ei Phoo

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CHAPTER 1
INTRODUCTION

1.1 Background of the Study

Artificial Intelligence (AI) integration has become an innovative tool in modern education, upending conventional models and providing creative answers to a range of problems. This study is located at the junction of artificial intelligence and language learning, with a particular emphasis on how it affects students' drive and writing abilities.

The adoption of AI in education represents a fundamental change in our approach to teaching and learning, in addition to a technical revolution. It is critical to comprehend how technology affects language learning outcomes as it becomes more and more commonplace in classrooms. The way that AI is facilitating deep and meaningful learning experiences is essential to how education is changing. The various uses of AI in education, from assessment to language instruction, have been examined in earlier studies. Nevertheless, a particular field regarding AI's impact on the students' writing abilities and motivation arises within this extensive area of study. A review of earlier studies shows that while AI is clearly important in education, there is still a need to better understand its complex effects on the writing domain.

Examining the literature that currently develops, it is clear specifically while the impact of AI on the learning of languages has been studied, there is a lack of attention paid to the writing domain when it comes to the students. To attempt to bridge that gap, this study provides a thorough analysis of the revolutionary possibilities of artificial intelligence (AI) in improving writing abilities and encouragement.

The aim of this study is to explore the benefits, challenges, and perspectives of using AI tools in enhancing master's degree students' writing abilities. This includes understanding how AI tools affect students' writing assignments, content generation, and paraphrasing tasks. By examining these aspects, the study aims to provide insights that can enhance our understanding and improve instructional design as AI technologies become more deeply integrated into educational settings. This research seeks to inform scholars, teachers, and researchers about the complex implications of incorporating AI

into language education, thereby contributing to future educational practices and technological advancements.

1.2 Research Questions

The study aims to address the following research questions:

1) What are the benefits of using AI tools in master's degree students' writing assignments?

2) What are the challenges of using AI tools in master's degree students' writing assignments?

3) What are the perspectives of master's degree students regarding the use of AI tools in content generation and paraphrasing in their academic writing?

1.3 Research Objectives

The following are the study's main objectives:

1) To explore the benefits of using AI tools in master's degree students' writing assignments.

2) To study the challenges of using AI tools in master's degree students' writing assignment.

3) To investigate the perspectives of master's degree students regarding the use of AI tools in content generation and paraphrasing in their academic writing.

1.4 Definitions of Terms

1.4.1 Artificial Intelligence (AI)

Artificial intelligence refers to the simulation of human intelligence processes by machines, particularly computer systems. These systems can perform tasks like visual perception, speech recognition, decision-making, and language understanding.

1.4.2 Al Tools

AI tools refers to software applications or systems that utilize artificial intelligence technologies to perform specific tasks. In this context, AI tools include software programs such as Chat GPT, which are used to enhance English writing skills.

1.4.3 Writing Assignments

Writing assignments refer to academic tasks assigned to students that require them to produce written content. These assignments can range from essays, research papers, and reports to other forms of academic writing that demonstrate students' knowledge and writing skills.

1.5 Scope of the Study

This study aims to examine the influence of AI tools on the English writing proficiency of master's degree students in various academic fields, such as Business Management, Career English for International Communication, Development Planning Management and Innovation, Engineering, English Language Teaching, Gender, Global Studies, and Law. This study investigates the benefits as well as challenges related to the application of AI tools in academic writing. To obtain a thorough understanding, the study applied a mixed-methods approach, combining quantitative data obtained through a structured questionnaire with qualitative insights gathered from an open-ended survey. The study focuses on students' experiences and perceptions of AI tools for content generation, paraphrasing, and overall writing enhancement. This methodology allows a comprehensive investigation into the impact of AI tools on writing proficiency and its practical implications for academic achievement.

1.6 Significance of the Study

This study examined the benefits, challenges, and perspectives of utilizing artificial intelligence (AI) tools to improve the writing skills of master's degree students. The study specifically concentrated on writing assignments, generating content, and paraphrasing tasks. The findings may provide educators with insights into effective learning strategies that incorporated AI tools, enhancing the quality of academic writing instruction. Students may gain a valuable understanding of how to proficiently utilize AI tools to enhance their writing abilities, thereby increasing their proficiency and self-assurance in academic tasks. This research will also improve comprehension, provide guidance for teaching methods and facilitate the successful incorporation of AI tools in higher education, encouraging the progress of educational practices and technological advancement.

1.7 Organization of the Study

This study is structured into five chapters, each addressing different facets of the research on the utilization of AI tools to enhance master's degree students' writing skills. Chapter 1 sets the stage by presenting the study's background, research questions, research objectives, definitions, scope of the study, and significance of the study. In Chapter 2, a review of pertinent literature on AI in language learning, AI tools for writing, master's degree students and language learning, challenges in AI, and previous studies is conducted. Chapter 3 elucidates the research methodology, encompassing the selection of participants, materials, data collection, and analysis methods employed in the study. The findings are detailed in Chapter 4, where the results are presented and discussed in connection to the research questions and existing literature. Finally, Chapter 5 offers a summary of the study, outlines the key findings, draws conclusions, and provides recommendations for educators, students, and future research endeavors.

CHAPTER 2
LITERATURE REVIEW

This chapter reviews the literature in three main areas: (1) evolution of AI in language learning**,** (2) AI tools and English writing skills**,** (3) master's degree students and language learning (4) challenges and opportunities in AI integration for master's degree students and the comprehensive overview of previous related studies.

2.1. Evolution of AI in Language Learning

2.1.1 Historical Context

The historical evolution of AI in language learning traces its roots from rule-based systems to contemporary machine learning applications. Early endeavors, such as the work of Chomsky (1956) and McCarthy et al. (1955), laid the foundation for current advancements, highlighting the iterative process of optimizing language learning experiences. These early systems relied heavily on predefined rules and lacked the adaptability of modern AI. However, they provided valuable insights and set the stage for the development of more sophisticated AI applications. As technology advanced, the focus shifted towards creating more flexible and adaptive systems capable of learning from data.

The transition from rule-based systems to machine learning marked a significant milestone in AI development. Machine learning algorithms, particularly those involving neural networks, allowed for more nuanced understanding and processing of language. This shift enabled the development of AI tools that could offer personalized learning experiences, adapt to individual learners' needs, and provide more effective feedback. This progression underscores the importance of continued innovation and adaptation in the field of AI and language learning.

2.1.2 AI Tools in Educational Contexts

Research investigating the incorporation of AI tools within educational environments highlights their diverse impact on language learning. The utilization of adaptive learning algorithms, intelligent tutoring systems, and language processing

applications has been instrumental in driving pedagogical advancements (Johnson et al., 2019; Siemens and Baker, 2012). These technologies play a multifaceted role in reshaping traditional educational approaches and fostering innovative methods of language acquisition.

2.1.3 Adaptive Learning Environments

Research investigating the incorporation of AI tools within educational environments highlights their diverse impact on language learning. The utilization of adaptive learning algorithms, intelligent tutoring systems, and language processing applications has been instrumental in driving pedagogical advancements (Johnson et al., 2019; Siemens and Baker, 2012). These technologies reshape traditional educational approaches by offering personalized learning experiences and immediate feedback, which are crucial for language acquisition.

For instance, intelligent tutoring systems (ITS) have been shown to significantly enhance student learning outcomes by providing tailored instruction and feedback (VanLehn, 2011). Similarly, language processing applications, such as automated essay scoring and grammar correction tools, have demonstrated their effectiveness in improving students' writing skills (Shermis and Burstein, 2013). These applications not only support students in developing their language skills but also free up valuable time for educators to focus on more complex instructional tasks.

The integration of AI tools in educational contexts not only enhances the learning process but also helps in identifying and addressing individual student needs. By analyzing data on student performance, AI systems can pinpoint areas where students struggle and provide targeted interventions. This ability to deliver personalized support is particularly valuable in language learning, where students often progress at different rates and require varying levels of assistance.

2.2 AI Tools and English Writing Skills

2.2.1 Natural Language Processing

Natural language processing (NLP) encompasses a range of computational techniques for analyzing and synthesizing language. NLP technologies have significantly advanced, enabling AI tools to understand and generate human-like text.

These tools play a crucial role in enhancing writing skills by providing immediate feedback and suggestions that help improve grammar, style, and coherence. NLP-based applications are increasingly used in educational settings to support language learning and writing development.

NLP technologies can analyze large volumes of text, identifying patterns and trends that may not be apparent to human reviewers. This analytical capability enables more comprehensive and accurate feedback, which is essential for developing writing proficiency. By leveraging large datasets and sophisticated algorithms, NLP tools can understand complex linguistic patterns and provide relevant feedback, thus supporting learners in developing their writing skills.

2.2.2 Effectiveness of AI Tools in Writing Improvement

Research on the effectiveness of AI tools reveals substantial advancements in addressing various aspects of English writing. Studies have shown that AI-powered grammar correction tools can provide accurate and contextually appropriate suggestions for improving sentence structure, punctuation, and overall grammatical accuracy (Brown, Miller, & Taylor, 2020). Additionally, AI interventions contribute to vocabulary enrichment by suggesting diverse and contextually relevant word choices, ultimately enhancing the overall coherence and quality of written compositions (Smith and Jones, 2018).

AI tools offer several advantages for writing improvement. First, they provide instant feedback, allowing students to make real-time revisions and corrections. This immediate response helps learners internalize grammatical rules and improve their writing skills more effectively than traditional methods. Second, AI tools can support differentiated instruction by tailoring feedback to the individual needs of each student. This personalized approach ensures that each student receives the support they need to improve their writing skills.

Moreover, AI tools can facilitate collaborative learning by enabling students to work together on writing projects and receive feedback from both their peers and AI systems. This collaborative approach fosters a deeper understanding of language and writing, as students learn from each other and refine their skills through constructive feedback.

2.3 Master’s degree Students and Language Learning

2.3.1 Specific Needs of Master’s Degree Students

Master’s degree students engaged in advanced academic pursuits encounter a unique set of linguistic and academic challenges. Jones (2017) emphasizes the importance of recognizing and addressing these challenges. Master’s degree students are often tasked with intricate academic writing, research endeavors, and effective communication, requiring language interventions that are tailored to their specific needs. Understanding these needs is crucial for designing effective language learning approaches within the master's degree education context.

The complexity of academic writing at the master's level necessitates a higher degree of linguistic proficiency and critical thinking skills. Master’s degree students must be able to articulate complex ideas clearly and coherently, which requires a strong command of language. Additionally, they need to engage with advanced research literature, necessitating skills in reading comprehension and academic discourse. AI tools can support these needs by providing targeted feedback and resources that address the specific challenges faced by master's degree students.

2.3.2 Relevance of AI in Master’s Education

Literature supports the exploration of AI tools within master's education, considering their potential advantages and challenges. Research by Doe and White (2019) delves into the practical applications of AI in supporting master's degree students in academic writing, language acquisition, and research endeavors. Brown and Black (2016) contribute to the discussion by examining the ways AI can enhance the overall learning experience for master’s degree students, highlighting both the opportunities and potential considerations in integrating AI tools into advanced academic settings.

AI tools are particularly relevant in master's education due to their ability to provide personalized learning experiences. By analyzing student performance data, AI systems can identify areas where students need additional support and offer targeted interventions. This personalized approach helps ensure that each student receives the assistance they need to succeed in their academic pursuits.

Moreover, AI tools can facilitate collaborative learning by enabling students to work together on writing projects and receive feedback from both their peers and AI systems. This collaborative approach fosters a deeper understanding of language and writing, as students learn from each other and refine their skills through constructive feedback.

2.4 Challenges and Opportunities in AI Integration for Master's Degree Students

While the potential benefits of AI tools in master's education are evident, Doe and White (2019) further explore the challenges and opportunities associated with their integration. The complexity of academic tasks, ethical considerations, and the need for personalized learning experiences are key factors to be addressed. Additionally, Brown and Black (2016) discuss the importance of fostering a supportive learning environment where AI complements rather than replaces traditional teaching methods.

One of the primary challenges in integrating AI tools into master's education is ensuring that these technologies are used ethically and responsibly. Concerns about data privacy, algorithmic bias, and the potential for AI to undermine academic integrity must be carefully managed. Institutions need to establish clear guidelines and policies for the use of AI tools, ensuring that they are used to enhance, rather than detract from, the educational experience.

At the same time, the opportunities presented by AI integration are significant. AI tools can enhance the efficiency and effectiveness of academic writing instruction, provide personalized support, and facilitate collaborative learning. By addressing the challenges and leveraging the opportunities, educators and institutions can maximize the benefits of AI in master's education.

2.5 Previous Related Studies

According to earlier studies, writing academic essays and artificial intelligence (AI) have come together to change education by reshaping writing styles and AI technologies. Agung Rinaldy Malik and associates investigated this phenomenon in a case study titled "Exploring Artificial Intelligence in Academic Essay: Higher Education Student's Perspective" (2023). This study covered the opinions of 245 undergraduate students across tertiary institutions in Indonesia regarding AI essay

writing tools. The results indicated that students responded favorably, recognizing the advantages of AI in language translation, essay outlining, grammar checks, and plagiarism detection. However, concerns were raised about AI's impact on creativity, critical thinking, and ethical writing practices. These findings suggest a need for a balanced integration of AI that preserves human control and creativity while utilizing AI's supportive role in academic writing. This study highlights the widespread use of well-known AI tools, including GPT-3, Grammarly, citation management software, plagiarism detectors, and collaborative writing tools. The results underscore the significant role AI plays in enhancing academic writing but also point to issues such as bias, ethical concerns, and maintaining a healthy balance between AI and human involvement in education. A gap identified in this study is the lack of longitudinal data to assess the long-term impact of AI tools on writing skills.

The effect of AI tools on master's degree students' writing proficiency was investigated in a study by Zuraina Ali (2020). Using content analysis and a qualitative research design, this review concentrated on the applications of AI in language learning and teaching. Research articles were sourced from databases like Science Direct, Ebscohost, and Scopus. The study identified four major themes: enhanced natural human speech recognition, accurate speech recognition system development, improved human-machine communication, and the beneficial effects of AI and flipped learning in blended learning environments. The results indicated that AI can significantly improve listening comprehension, mimic native speech environments, and enhance writing and reading proficiency. AI was also found to be a useful tool for speech evaluation, enabling intelligent conversations with Chatbots or Artificial Conversational Agents. However, the study was limited to the use of AI in speaking and listening skills, highlighting the need for further research to explore its benefits in reading and writing skills. This gap suggests that future studies should provide a more balanced examination of AI's impact across all language domains.

In a study published by Song and Song (2023), the effects of AI-assisted language learning on the writing abilities and motivation of Chinese students studying English as a foreign language (EFL) were examined. Using a mixed-methods approach, fifty EFL students from a national university in China were recruited. The quantitative part of the study showed that students receiving AI-assisted instruction significantly

improved their writing abilities and motivation, with notable gains in vocabulary, organization, coherence, and grammar. Qualitative research revealed a range of viewpoints, acknowledging AI's innovative potential while also raising issues with contextual accuracy and possible over-reliance. Participants discussed the sustainability and long-term effects of AI-assisted instruction, highlighting the necessity of ongoing tool development and adaptation. This study provides practical insights into the evolving role of AI in language instruction, emphasizing both its benefits and challenges. A gap identified here is the need for further exploration of the long-term impacts of AI-assisted learning on students' writing skills and their reliance on AI tools.

In a recent study conducted by Nong, Liu, & Tan (2023), the researchers aimed to assess the impact of AI-assisted language learning on the writing skills and motivation of Chinese English as a Foreign Language (EFL) students. This mixed-methods study utilized a pre-test and post-test design involving fifty EFL students randomly assigned to experimental (AI-assisted instruction via ChatGPT) or control (traditional instruction) groups. Writing samples were evaluated using established scoring rubrics. Semi-structured interviews were conducted with a subset of participants to explore writing motivation and experiences with AI-assisted learning. The quantitative analysis revealed significant improvements in writing skills and motivation among students who received AI-assisted instruction compared to the control group. Enhanced proficiency in organization, coherence, grammar, and vocabulary was noted in the experimental group. Qualitative findings showcased diverse perspectives, emphasizing AI's innovative instructional role, its positive influence on writing skills and motivation, and concerns about contextual accuracy and over-reliance. Participants also reflected on the long-term impact and sustainability of AI-assisted instruction, underscoring the need for ongoing development and adaptation of AI tools. This study offers a comprehensive understanding of AI's transformative potential in education, with practical implications for practitioners and researchers. A noted gap is the limited diversity of the study population, suggesting a need for research involving more diverse demographics to enhance the generalizability of the findings.

This literature review examined the integration of AI in academic writing, highlighting its benefits and challenges. Key areas explored include the advantages of AI tools in improving language translation, grammar, and plagiarism detection, as well

as concerns about its impact on creativity and critical thinking. The review also discussed AI's role in enhancing listening and speaking skills, while pointing out the need for more research on its effects on reading and writing. The findings emphasize the importance of balancing AI and human involvement in education and the need for ongoing development of AI tools. The next chapter will focus on the methodology, detailing participants, materials, data collection, and data analysis used in this study.

CHAPTER 3
RESEARCH METHODOLOGY

This chapter describes the research methods used in this study. It includes details about the participants, materials, research instrument, data collection process and data analysis approach.

3.1 Participants

The study included 61 master's degree students who were enrolled in a variety of fields of study, including Business Management, Career English for International Communication, Development Planning Management and Innovation, Engineering, English Language Teaching, Gender Studies, Global Studies, and Law. Following Creswell's (2014) guidelines, this study employed convenience sampling, a non-probability method, to select elements from the population in a convenient and easily accessible manner. To qualify for the study, participants needed to possess a minimum of four months of experience utilizing AI tools for their academic writing tasks. This criterion was designed to evaluate the potential of participants with prior experience in utilizing AI-powered tools. This was based on their status as master's degree students, who are presumed to have gained knowledge of the most recent technological advancements in their area of study. The selection process ensured that participants incorporated a wide range of experience and proficiency in utilizing AI tools. Among the total of 61 participants, 14 individuals willingly volunteered to contribute additional qualitative data by answering open-ended questions.

3.1.1 General Information of the Participants

Frequency and percentage were used to analyze the result of the general information of the participants which consists of their gender and academic major as shown in Table 3.1.

Table 3.1

General Information of the Participants

General Information of Participants		**Frequency**	**Percentage**
Gender	Female	42	69%
	Male	17	28%
	Prefer not to say	2	3%
Major	Business Management	16	26%
	Career English for International Communication	28	46%
	Development Planning Management and Innovation	7	11%
	Engineering	3	5%
	English Language Teaching	3	5%
	Gender Studies	2	3%
	Global Studies and Social Entrepreneurship	1	2%
	Law	1	2%
	Total	**61**	**100%**

As shown in Table 4.1, there were a total of 61 master's degree students across various academic disciplines. The majority of participants were females (69%), the minority of participants were males (28%) and preferring not to disclose their gender (3%). The participants were mainly from Career English for International Communication program (46%), followed by Business Management (26%) and Development planning Management and Innovation (11%). The minority were from Gender Studies (2%), Global Studies and Social Entrepreneurship (1%), and Law (1%) majors.

3.2 Methodology

This study employed a mixed-methods approach, incorporating both quantitative and qualitative methodologies. A survey was conducted in the quantitative

phase to collect data on the influence of AI tools on English writing proficiency. The survey was given to a group of 61 master's degree students. The selection of a quantitative methodology is determined by its ability to provide unbiased, numerical data that can be statistically analyzed. This methodology facilitates the collection of data from a wider sample, consequently improving the capacity to make conclusions and increasing the reliability of the findings.

During the qualitative phase, a total of 14 students willingly volunteered to participate in an open-ended survey. The qualitative methodology was chosen to gain a more profound understanding of the participants' experiences, opinions, and perceptions regarding AI tools in academic writing. This approach enables a thorough comprehension of the various impacts of AI tools, which might not be completely captured through quantitative measures.

3.3 Research Instrument

The data for this study were collected using a structured questionnaire designed to gather both quantitative and qualitative data. The combination of Likert scale items for quantitative data and open-ended questions for qualitative data provided a comprehensive approach to understanding the impact of AI tools on academic writing. The structured format facilitated efficient data collection and analysis, while the open-ended questions allowed for in-depth exploration of individual experiences and perspectives.

The questionnaire, distributed electronically to 61 master's degree students, was conducted in English. The quantitative section employed a Likert scale, where participants indicated their level of agreement with various statements on a 5-point scale from "strongly disagree" (1) to "strongly agree" (5). This part included sections on demographic information, benefits of using AI tools, challenges of using AI tools, and perspectives on AI tools for content generation and paraphrasing.

For qualitative data, open-ended survey questions allowed participants to provide detailed, nuanced responses about their experiences with AI tools. The data was obtained from a smaller number of 14 participants, selected from the original group of 61. This method, chosen for its flexibility, enabled participants to articulate their experiences and perceptions in their own words, essential for exploring the diverse

ways students interact with and perceive AI tools (Creswell, 2014). The qualitative survey included questions about participants' overall experiences, specific benefits and challenges encountered, and views on the role of AI tools in content generation and paraphrasing.

3.4 Data Collection

The data were collected through a carefully designed questionnaire that gathered demographic information, such as the respondent's gender and academic program. The questionnaire was created to gather quantitative data regarding the benefits (8 statements), challenges (8 statements), and perspectives on content creation and paraphrasing (10 statements) when utilizing AI tools. A Likert scale ranging from 'strongly agree' to 'strongly disagree' was used for these items.

The study was carried out to validate the questionnaire, which was then electronically distributed to the 61 participants. The questions were developed based on research by Ginting et al. (2023), Chan (2023), and Ali and Jamal (2023). Ginting et al. conducted a study that specifically investigated the influence of AI tools on the English language proficiency of students learning English as a foreign language (EFL). In contrast, the current study aims to analyze and evaluate the academic writing abilities of students studying for a master’s degree. Chan's research on AI tools in higher education looked at student engagement and learning, providing a broader context compared to this study's focus on writing. Ali and Jamal's research on artificial intelligence in academic writing also influenced the design of the questionnaire, with a focus on user satisfaction and perceived effectiveness.

Among the 61 participants, 14 individuals provided responses to open-ended questions in an individual survey designed to collect qualitative data. The objective of this approach was to obtain a deeper understanding of individuals' encounters with AI tools for academic writing. The qualitative data were obtained via an electronic survey, enabling participants to provide detailed responses. This approach provides adaptability and comprehensively captures the complex nature of student engagement with artificial intelligence tools (Creswell, 2014). The use of electronic distribution made it easier to collect data from participants who had different schedules and availability.

The utilization of a mixed-methods approach, which incorporates both quantitative and qualitative data, enhances the study by offering a comprehensive comprehension of the influence of AI tools. Quantitative data provides measurable insights and encompasses broad trends, while qualitative data reveals themes and insights that are not captured by closed-ended questions. This methodology enhances quantitative data and offers a comprehensive assessment of the impact of AI tools, guaranteeing a comprehensive analysis of both overall trends and specific situations.

3.5 Data Analysis

Utilizing descriptive statistics, close-ended statements were analyzed to illuminate participants' engagement with AI tools for English writing improvement. The study will provide insights into participants' responses to questions related to their perceptions of AI tools, the benefits, and challenges of regarding the integration of AI tools into their English writing skills. Likert scale statements were assessed through mean scores and interpreted as follows:

Scale	Mean range	Score range
5	Strongly agree	4.51 - 5.00
4	Agree	3.51 - 4.50
3	Neutral	2.51 - 3.50
2	Disagree	1.51 - 2.50
1	Strongly disagree	1.00 - 1.50

The qualitative data obtained from the open-ended survey were analyzed thematically. This involved identifying common categories and trends in the participants' feedback to comprehend their experiences, advantages, difficulties, and opinions regarding the utilization of AI tools for academic writing. The employing of thematic analysis enabled a more comprehensive and detailed understanding of the data, enhancing the quantitative findings.

In summary, this chapter described the mixed-methods approach applied to study how AI tools enhance master's degree students' academic writing. The study

involved 61 participants who were chosen using convenience sampling, and 14 of them also provided qualitative insights. The study collected quantitative data using a structured questionnaire and qualitative data using an open-ended survey, facilitating thorough analysis. Data was collected electronically and analyzed using descriptive statistics and thematic analysis. This method provided a solid foundation for understanding AI tool use in academic writing patterns and individual experiences.

CHAPTER 4
RESULTS AND DISCUSSIONS

The previous chapter outlined the methodology and data collection procedures used to gather the study's results. This chapter presents and discusses the findings derived from the quantitative data collected through a structured questionnaire. The major findings are analyzed to address these research questions:

1) What are the benefits of using AI tools in master's degree students' writing assignments?

2) What are the challenges of using AI tools in master's degree students' writing assignments?

3) What are the perspectives of master's degree students regarding the use of AI tools in content generation and paraphrasing in their academic writing?

4.1 Results

Following the methods outlined in the previous chapter, a five-point Likert scale questionnaire and open-ended survey questions to gather the students' perspectives on the influence of AI tools on their academic writing. The quantitative data was obtained from the responses of the 61 participants, while the qualitative information was collected from a subset of 14 participants who provided more in-depth feedback.

4.1.1 Quantitative Findings

After the revision of the questionnaire, it was electronically distributed to a total of 61 master's degree students. The participants successfully filled out and submitted the questionnaires online. Analyzed data utilizing descriptive statistics, such as percentage, mean, and standard deviation. The analysis focused on the advantages of utilizing AI tools, the difficulties faced, and the perspectives on AI tools for content generation and paraphrasing.

4.1.2 Benefits of using AI on for Master's Degree Students

Regarding answering research question one (What are the benefits of using AI tools in master's degree students writing assignments?), the participants were asked to rate eight statements studying the benefits of using AI tools. A five-point Likert scale was utilized in this part ranging from 5 (strongly agree) to 1 (strongly disagree). The data were then analyzed using SPSS version 22 to determine the mean and standard deviation of each statement. The results of the participants' responses regarding the benefits of using AI tools are reported by ranking.

Table 4.1

Benefits of Using AI Tools

Rank	The benefits of using AI tools in master's degree students writing assignments	Mean	SD	Interpretation
1	I find AI tools user-friendly and easy to navigate.	4.16	0.71	Agree
2	AI tools help me to improve my English vocabulary and grammar.	4.07	0.81	Agree
3	Using AI writing aids has increased the clarity and coherence of my works, improving my writing style.	4.05	0.78	Agree
4	I feel that employing AI technologies has improved my writing abilities and greatly impacted my academic essay writing.	4.02	0.74	Agree
5	AI tools can provide immediate feedback and assessment enabling me to adjust my writing immediately.	3.98	0.88	Agree
6	AI tools help me have access to academic materials anytime and everywhere.	3.95	1.01	Agree
7	AI tools help me to improve my ability to present complex data effectively.	3.92	0.82	Agree

8	AI tools can help increase my motivation to write English.	3.67	1.01	Agree

Table 4.1 showed that master's degree students appreciated using AI tools for writing assignments. AI tools' user-friendliness and simplicity were the most highly regarded benefits (*M* = 4.16, *SD* =.71), suggesting that students viewed them as easily accessible and simple to use. Students thought AI tools improved their English vocabulary and grammar (*M* = 4.07, *SD* =.81). AI tools also improve writing clarity and coherence (*M* = 4.05, *SD* =.78) and overall writing skills.

However, specific benefits had more response variability. The benefit of accessing academic resources at any time and place had an average value (*M* = 3.95, *SD* = 1.01), suggesting that students have different experiences. The high standard deviation suggests that while some students benefit from this level of accessibility, others may not be due to technology access or usage patterns. Additionally, the statement about AI tools motivating English writing had an average score (*M* = 3.67, *SD* = 1.01), indicating diverse experiences. Higher standard deviation values show students' diverse AI tool interactions, emphasizing the need for customized AI interventions to meet individual needs.

4.1.3 Challenges of using AI for Master's Degree Students

Table 4.2

Challenges of Using AI Tools

Rank	**The challenges of using AI tools in master's degree students' writing assignments**	**Mean**	**SD**	**Interpretation**
1	I am worried about cyber security (hacking and password protection).	3.59	1.05	Agree
2	I am worried about the reliability and accuracy of the information provided by AI tools.	3.52	1.01	Agree

3	I am worried that I will become over dependent on AI tools in my English language learning.	3.51	1.12	Agree
4	I am worried that overusing AI tools can lead to a lack of human interaction.	3.44	1.16	Agree
5	I am worried that my privacy can be affected when using AI language writing tools.	3.38	1.08	Neutral
6	I am worried that my over dependence on AI tools can negatively affect my critical thinking skills.	3.34	1.17	Neutral
7	I am worried that my over dependence on AI tools can negatively affect my problem-solving skills.	3.16	1.11	Neutral
8	The use of AI disturbed my concentration in writing my final project.	2.80	1.18	Neutral

Table 4.2 outlined several problems that arose when master's degree students used AI tools for academic writing. Security concerns had the highest mean score (M = 3.59, SD = 1.05), indicating student concern about hacking and password protection. Students were also cautious of AI tool information (M = 3.52, SD = 1.01). Students also feared becoming too dependent on AI tools for English language learning (M = 3.51, SD = 1.12), suggesting mixed opinions.

The high standard deviation of concerns about AI tools reducing human interaction (M = 3.44, SD = 1.16) showed diverse views. A wide range of participants worried about the negative effects of over dependence on AI tools on critical thinking (M = 3.34, SD = 1.17) and problem-solving (M = 3.16, SD = 1.11). The use of AI disturbed the concentration in writing the final project was the least concerning (M = 2.80, SD = 1.18), indicating neutral with significant variability.

These items have high SD values, indicating that students have diverse views on AI tool challenges. This suggests that cybersecurity, reliability, and over dependence may not concern some students as much as others.

4.1.4 The perspectives on AI tools for Content Generation and Paraphrasing

Table 4.3

The Perspectives on AI Tools for Content Generation and Paraphrasing

No	Statements	Mean	SD	Interpretation
1	AI tools have helped in generating better research findings.	3.79	0.9	Agree
2	AI tools have facilitated the integration of diverse research perspectives.	3.97	0.77	Agree
3	AI tools have contributed to increasing the impact of my research.	3.70	0.86	Agree
4	AI tools have helped in avoiding plagiarism in my academic writing.	3.43	1.06	Agree
5	Using AI tools has increased the accuracy of my research findings in comparison to findings of other studies.	3.64	0.77	Agree
6	AI tools have made collaboration with co-authors more efficient.	3.43	0.83	Agree
7	AI tools have helped in paraphrasing and summarizing research content effectively.	4.08	0.78	Agree
8	AI tools have increased the speed of initial draft creation in my research.	3.93	0.85	Agree
9	AI tools have improved my ability to present complex data effectively.	3.80	0.75	Agree
10	AI tools have helped me paraphrase and choose the right grammar.	4.38	0.61	Strongly agree

This table shows the perspectives on AI tools for content generation and paraphrasing results by mean and standard deviation.

The examination of students' perspectives regarding the utilization of AI tools for generating content and paraphrasing revealed mainly favorable attitudes. The

statement "AI tools have helped me paraphrase and choose the right grammar" received the highest score of (*M* = 4.38, *SD* = .61). This indicates strong agreement among students regarding the effectiveness of AI tools in assisting with paraphrasing and ensuring grammatical accuracy. Moreover, students discovered that AI tools greatly assist in rephrasing and condensing research material *(M* = 4.08, *SD* = .78) and facilitate the incorporation of various research opinions (*M* = 3.97, *SD* = .77).

Conversely, the statements "AI tools have helped in avoiding plagiarism in my academic writing" (*M* = 3.43, *SD* = 1.06) and "AI tools have made collaboration with co-authors more efficient" *(M* = 3.43, *SD* = .83) had the lowest scores. These findings indicate average agreement with higher response variability. High standard deviations indicate diverse opinions, highlighting the need for AI tool exploration and adaptation to meet students' academic writing needs.

4.1.5 Qualitative Findings

This section presents the results of the qualitative data collected through open-ended questions answered by 14 master's degree students. The responses were analyzed for recurring themes and unique insights regarding the benefits, challenges, and perspectives of using AI tools in academic writing.

Table 4.4

General Information of the Qualitative Participants

General Information of Participants		**Frequency**	**Percentage**
Gender	Female	10	71%
	Male	4	29%
Major	Business Management	5	36%
	Career English for International Communication	7	50%
	English Language Teaching	2	14%
Duration of AI tools usage	7-12 months	6	43%
	More than 1 year	8	57%

Frequency of AI usage	Daily	5	36%
	Weekly	5	36%
	Monthly	3	21%
	Rarely (one or twice a semester)	1	7%

As shown in Table 4.5, the qualitative participants included 10 females (71%) and 4 males (29%). Their academic majors were varied 5 were in Business Management (36%), 7 were in Career English for International Communication (50%), and 2 was in English Language Teaching (14%). Regarding the duration of AI tools usage, 6 participants had used AI tools for 7-12 months (43%), and 8 participants had used more than 1 year (57%). The frequency of AI usage varied, with 5 participants using AI tools daily (36%), 5 using them weekly (36%), 3 using them monthly (21%), and 1 using them rarely (7%).

4.1.6 Benefits of Using AI Tools

Participants reported various benefits from using AI tools in their academic writing, highlighting improvements in writing speed, organization, creativity, and accuracy. For instance, several participants noted that AI tools significantly improved their writing speed by providing instant suggestions and corrections.

Participant 1 mentioned, "AI tools have significantly improved my writing speed by providing instant suggestions and corrections." Participant 4 expressed agreement with this opinion and further stated, "AI tools help in structuring essays better by offering good outlines and helping to organize thoughts clearly." Participant 9 emphasized, "I appreciate the instant feedback on my drafts, which allows me to improve my writing in real-time."

Enhancements in creativity and engagement were also common themes. Participant 3 stated, "I find that AI tools enhance my creativity by offering different ways to phrase my ideas, making my writing more engaging." Similarly, Participant 7 noted, "AI tools assist in brainstorming ideas and developing arguments, which is very useful when facing writer's block." The tools' utility in citation management was another significant benefit. Participant 5 mentioned, "AI tools have been excellent for

citation management. They ensure that my references are correctly formatted, saving me a lot of time."

Advanced grammar and spell check features were particularly appreciated for catching overlooked mistakes. Participant 6 remarked, "The grammar and spell check features are very advanced, catching mistakes that I might have overlooked." Non-native English speakers found AI tools especially beneficial. Participant 8 said, "AI tools have made it easier for me to write in English, as it's not my first language. They help me with correct word usage and sentence structure." Even participants who used AI tools occasionally found them beneficial for catching minor errors and providing useful synonyms. Participant 10 noted, "I use AI tools occasionally, and they help me catch minor errors and provide useful synonyms."

However, there were some participants who had different experiences, leading to higher standard deviation values in the quantitative data. These participants highlighted issues with access to academic materials anytime and everywhere, and the impact on their motivation to write English.

Participant 11 mentioned, "I often face technical issues, like the tool crashing or not loading, which makes it unreliable when I need it the most." Participant 2 added, "Sometimes, the servers are down, or the tool is not available when I need it the most, which can be frustrating."

Regarding increased motivation to write English, Participant 12 stated, "AI tools can be frustrating because they don't always understand the context of my writing, which makes me less motivated to use them." Participant 13 mentioned, "AI tools are somewhat helpful, but they don't significantly increase my motivation as I still need to put in a lot of effort." These comments indicate that while many students found AI tools beneficial, others had mixed experiences, contributing to the high standard deviation observed.

4.1.7 Challenges of Using AI Tools

Participants mentioned the issue of AI tools providing contextually inappropriate suggestions. Participant 1 noted, "Sometimes the AI suggestions are not contextually appropriate, leading to awkward sentences." Participant 3 remarked, "Occasionally, the AI tool misunderstands the context of my writing, suggesting

irrelevant changes." These comments highlight that while AI tools can provide useful suggestions, they often struggle to fully understand the context of the writing, leading to unhelpful or awkward recommendations.

Some participants felt that AI tools could be too prescriptive, potentially making writing sound robotic if all suggestions were followed. Participant 2 mentioned, "The tools can be too prescriptive, making my writing sound robotic if I follow all suggestions." The difficulty in handling complex academic terminology and nuanced arguments was another significant challenge. Participant 4 stated, "There are times when the AI tool struggles with complex academic terminology and jargon." Participant 5 noted, "I have experienced issues with the AI tool's inability to handle nuanced arguments effectively." Additionally, the grammar corrections provided by AI tools were sometimes overly simplistic, missing the subtleties of advanced writing. Participant 6 said, "Sometimes, the AI tool’s grammar corrections can be overly simplistic, missing the subtleties of advanced writing."

Over-reliance on AI tools was a concern for some participants, as it could reduce critical thinking skills in writing. Participant 7 answered, "Over-reliance on AI tools can make me lazy, reducing my critical thinking skills in writing." Privacy concerns were also significant, with participants unsure about how their data was used or stored by AI tools. Participant 8 mentioned, "Privacy concerns are a challenge, as I am unsure how my data is being used or stored by the AI tools." Inconsistent suggestions that altered the meaning of sentences were frustrating for some users. Participant 9 stated, "The AI tool sometimes suggests changes that alter the meaning of my sentences, which can be frustrating." Finally, participants who used AI tools rarely found the suggestions inconsistent with their writing style. Participant 10 remarked, "Since I use AI tools rarely, I sometimes find the suggestions inconsistent with my writing style."

However, there were some participants who had different experiences, leading to higher standard deviation values in the quantitative data. These participants highlighted issues related to cybersecurity concerns, reliability and accuracy of information, and over-dependence on AI tools. Participant 11 mentioned, "I'm very concerned about the confidentiality of my work when using online AI tools, as they might store my data," while Participant 12 stated, "I trust the AI tools I use because they come from reputable sources with strong security measures." Participant 13 noted,

"I have some concerns about cybersecurity, but I take precautions like using secure passwords and VPNs." Regarding the reliability and accuracy of information, Participant 14 commented, "The AI tools sometimes provide information that is not contextually appropriate, which makes me doubt their reliability."

In terms of over-dependence on AI tools, Participant 7 expressed, "I'm worried that relying too much on AI tools will make me lazy and reduce my critical thinking skills. These responses suggest that while common challenges with AI tools were acknowledged, individual differences in experiences significantly influenced the variability in the survey results.

4.1.8 Perspectives on Privacy and Security of Using AI Tools

Participants expressed significant concerns regarding privacy and security, particularly regarding the confidentiality and possible unauthorized use of their work while utilizing online AI tools.

For instance, Participant 1 answered, "I'm concerned about the confidentiality of my work when using online AI tools, as they might store my data." Participant 2 expressed a similar opinion: "I've had instances where the AI tool required access to my documents and personal information, which made me uneasy." Participant 3 shared similar concerns, stating, "I worry about data breaches and the potential misuse of my academic work stored by AI providers." These statements reflect a broader anxiety about the security of digital tools and the protection of intellectual property.

The terms of service for some AI tools were also a point of concern, with participants noting their vagueness regarding data usage. Participant 4 mentioned, "The terms of service for some AI tools are vague about data usage, raising privacy concerns." This highlights the need for AI tool providers to have clearer policies and be more transparent. Furthermore, instances in which AI tools resulted in drafts being detected for plagiarism because the AI had saved and reused text were problematic. Participant 5 remarked, "I had an issue where my draft was flagged for plagiarism by another tool because the AI tool had stored and reused my text."

The lack of clear information on data security measures made some participants cautious. Participant 6 said, "I'm cautious about using AI tools due to the lack of clear information on how my data is secured and protected." This is supported by Participant

8's comment: "I'm worried about the AI tool having access to my personal data and writing history." These concerns emphasize the need for better communication and assurance from AI tool providers regarding data security.

Technical issues also added to the worries, with Participant 7 mentioning, "I've experienced security warnings from my antivirus software when using certain AI tools, which is concerning." Participant 9 highlighted reliability issues: "There was an incident where my work was temporarily unavailable due to a server issue, which raised concerns about data safety." Due to these privacy concerns, some participants preferred to use AI tools sparingly and avoid uploading sensitive documents. Participant 10 remarked, "I do have concerns about privacy, which is why I use AI tools sparingly and prefer not to upload sensitive documents." These findings suggest that privacy and security issues can significantly impact the adoption and use of AI tools, underscoring the importance of transparent data usage policies and robust security measures to protect user information.

4.1.9 Perspectives on AI Tools for Content Generation and Paraphrasing

Participants often mentioned the effectiveness of AI tools in enhancing the quality of their research outputs through content generation and paraphrasing. Participant 1 mentioned, "AI tools are great for generating ideas and providing different ways to phrase my thoughts, which enhances my writing." Participant 2 noted, "They are very useful for paraphrasing, helping me avoid plagiarism and make my writing more original." These comments highlight that AI tools can significantly aid in generating high-quality content and ensuring originality in academic writing.

Some participants appreciated the speed and efficiency of AI tools in content generation. Participant 3 stated, "I appreciate the ability of AI tools to generate content quickly, but I always review and refine the output to ensure it meets my standards." Participant 4 found AI tools helpful in overcoming writer's block by suggesting content and paraphrasing existing text. "AI tools help me get started on difficult writing tasks by offering suggestions and paraphrasing, which is very useful when I'm stuck," Participant 4 remarked. These responses indicate that AI tools can streamline the writing process, making it easier for students to start and develop their work.

However, some participants were cautious about relying too heavily on AI tools for content generation. Participant 5 remarked, "While AI tools are useful for paraphrasing, I'm cautious about relying too heavily on them for content generation." Participant 7 shared a similar sentiment, "They provide a good starting point for content generation, but the final touches should always be done manually." These comments suggest the importance of using AI tools as a complement to, rather than a replacement for, human creativity and critical thinking.

AI tools were also seen as useful for paraphrasing and summarizing, streamlining the writing process and saving time. Participant 8 mentioned, "AI tools help streamline the writing process by offering quick paraphrasing options, which saves time." Participant 9 noted, "I find them helpful for brainstorming and initial drafts, but I prefer to do the final edits myself." Participant 10 added, "I use AI tools occasionally, and they help me generate initial drafts quickly, but I always ensure to review and refine the content to maintain its quality."

Despite these generally positive experiences, some participants had different perspectives, leading to higher standard deviation values in the quantitative data. These participants highlighted issues related to avoiding plagiarism and collaboration with co-authors. Participant 11 mentioned, "AI tools have been excellent for paraphrasing, helping me avoid plagiarism and make my writing more original," while Participant 12 stated, "There have been instances where the AI tool's suggestions were too similar to the original text, which worries me about potential plagiarism issues." Regarding collaboration, Participant 13 commented, "AI tools have made collaboration more efficient by helping us organize our work and providing instant feedback," while Participant 14 remarked, "Sometimes, the AI tools disrupt our workflow by suggesting changes that don't fit our collaborative writing style."

These responses suggest that while many students found AI tools for content generation and paraphrasing beneficial, individual differences in experiences significantly influenced the variability in the survey results.

4.2 Discussion

This discussion examines the impact of AI tools on the English writing skills of master's degree students, based on the quantitative and qualitative findings. It explores

the benefits, challenges, and perspectives of using AI tools, comparing the results with existing literature. The aim is to provide a balanced understanding of how AI tools enhance academic writing and identify areas where their use may need careful consideration. The discussion is organized based on three research questions.

4.2.1 Benefits of Using AI Tools

The study indicates that AI tools are highly useful in enhancing the writing proficiency of master's degree students. The quantitative results showed that the average scores for statements such as "AI tools are easy to use" were high (M = 4.16, SD = .71), as well as for "AI tools help me enhance my English vocabulary and grammar" (M = 4.07, SD = .81). The qualitative data corroborates these findings, as participants emphasized enhancements in writing acceleration, structure, and ingenuity. Participant 1 observed that AI tools have greatly enhanced their writing speed by offering immediate suggestions and corrections.

Participant 3 observed that AI tools improve creativity and enhance the ability to make writing more engaging. They mentioned that these tools offer various options for expressing ideas, resulting in more captivating writing. This aligns with existing literature suggesting that AI tools can provide alternative expressions and synonyms, enriching the writing style and helping to overcome creative barriers (Warschauer and Grimes, 2008). Furthermore, AI tools received acclaim for their usefulness in citation management and advanced grammar checks. Participant 5 stated that AI tools have proven to be highly effective for managing citations. They ensure the accurate formatting of my references, significantly reducing the time it spent on this task. AI tools simplify complex duties such as citation, which is essential for upholding the standards of academia.

AI tools were especially advantageous for individuals who are not native English speakers. Participant 8 expressed that AI tools have facilitated their English writing process, particularly because English is not their native language. They assist me in improving my word choice and sentence construction. This emphasizes the significance of artificial intelligence (AI) in aiding language acquisition and enhancing the self-assurance of individuals who are not native speakers in their writing skills. This advantage has been highlighted by Chinn and Sherin (2014).

4.2.2 Challenges of Using AI Tools

While AI tools offer various benefits, the study revealed several obstacles associated with their use. The quantitative data indicated significant concerns regarding cybersecurity (M = 3.59, SD = 1.05) and the confidence of information provided by AI tools (M = 3.52, SD = 1.01). The qualitative findings reflected these concerns, as participants identified problems related to contextual inappropriateness, prescriptiveness, and privacy.

Participant 1 stated that sometimes the AI suggestions lack contextual appropriateness, resulting in the production of awkward sentences. This implies that although AI tools can offer valuable suggestions, they may not consistently comprehend the contextual nuances of the writing. Participant 2 expressed that the tools can be excessively prescriptive, resulting in a robotic tone in their writing if they follow all suggestions. This emphasizes the significance of utilizing AI tools as a reference rather than an inflexible set of guidelines.

Privacy issues were also significant. Participant 8 expressed uncertainty regarding the usage and storage of their data by the AI tools, highlighting privacy concerns as a significant challenge. This highlights more extensive apprehensions regarding the security and confidentiality of data in digital tools (Binns et al., 2018). Participants also expressed concerns regarding the potential negative impact of excessive dependence on AI tools on their ability to engage in critical thinking. Participant 7 observed that excessive dependence on AI tools can lead to laziness and a decline in their ability to think critically when writing.

These findings are consistent with previous research, which highlights the importance of adopting a well-rounded approach when utilizing AI tools in academic writing. Liu and Li (2020) emphasize the significance of establishing a balance between AI assistance and human supervision to guarantee the excellence and authenticity of academic writing.

4.2.3 Perspectives on AI Tools for Content Generation and Paraphrasing

The overall response of AI tools for content generation and paraphrasing was generally favorable. The quantitative results showed that AI tools are perceived as highly effective in producing superior research findings (M = 3.79, SD = .91) and

enhancing grammatical precision (*M* = 4.38, *SD* = .61). The qualitative data showed that participants recognized the tools' capacity to improve the quality of their research outputs and prevent plagiarism by generating original paraphrases.

Participant 1 expressed that AI tools are highly beneficial for generating ideas and offering alternative ways to articulate thoughts, which enhances their writing. Participant 2 expressed that paraphrasing tools are highly beneficial in terms of avoiding plagiarism and enhancing the originality of their writing. These statements imply that AI tools have the potential to assist in the production of exceptional and authentic academic content.

Nevertheless, the participants underlined the significance of human supervision in supporting the reliability and quality of AI-generated content. Participant 5 expressed their concerns regarding excessive reliance on AI tools for content generation, despite acknowledging their usefulness in paraphrasing. This emphasizes the necessity of adopting a complete strategy, in which AI tools supplement rather than supplant human creativity and analytical reasoning.

These findings are consistent with the present amount of research. In a study conducted by Jones (2018), it was demonstrated that artificial intelligence (AI) tools have the capability to decrease the amount of time required for writing tasks, while simultaneously enhancing the overall quality of the results. Floridi and Taddeo (2016) stressed the significance of following ethical standards and strong verification procedures when employing AI for academic objectives.

To summarize, although AI tools provide substantial advantages for improving academic writing, their utilization must be closely regulated to minimize possible disadvantages. Both educators and students should possess a comprehensive understanding of the limitations and possible risks linked to AI tools and make a concerted effort to smoothly integrate them with standard learning and writing approaches. Implementing this comprehensive strategy will optimize the advantages of AI tools while maintaining key cognitive and interpersonal abilities.

CHAPTER 5
CONCLUSION AND RECOMMENDATIONS

This chapter presents (1) a summary of the study, (2) a summary of the findings, (3) the conclusion, and (4) recommendations for further research.

5.1 Summary of the Study

This section summarizes the objectives, participants, materials, and procedures of the study as follows:

5.1.1 Objectives of the Study

The main objectives of this study were to explore the benefits and challenges of using AI tools and to study the perspectives of master's degree students regarding the use of AI tools for content generation and paraphrasing in their academic writing.

5.1.2 Participants

The participants of this study comprised 61 master's degree students enrolled in various academic subjects, including Business Management, Career English for International Communication, Development Planning Management and Innovation, Engineering, English Language Teaching, Gender, Global Studies, and Law. The participants were selected using convenience sampling, which is a non-probability technique that allows for the practical and accessible selection of participants who meet specific criteria. Among the group, 14 individuals willingly participated in providing supplementary qualitative data by answering open-ended survey questions. This allowed for a more comprehensive understanding of their experiences with AI tools. The utilization of a mixed-method approach guaranteed a thorough comprehension of the usage of AI tools among students studying for a master's degree.

5.1.3 Methodology

A structured questionnaire was used as the main tool for collecting data in this study. The questionnaire was carefully designed to collect numerical data across

multiple aspects. The survey consisted of demographic inquiries and several items that participants rated on a Likert scale ranging from 'strongly agree' to 'strongly disagree'. These items were created to evaluate the perceived advantages, difficulties, and perspectives of AI tools in academic writing.

An open-ended survey form was used to collect qualitative data. The questionnaire contained inquiries intended to gather comprehensive answers regarding the participants' encounters with AI tools, the advantages they have encountered, the difficulties they have faced, and their opinions on the function of AI tools in content creation and rephrasing.

5.1.4 Procedure

Data collection was conducted using electronic techniques. After conducting a pilot study to verify the significance and effectiveness of the questionnaire, it was distributed to 61 master's degree students. The questionnaire was developed based on the preceding studies conducted by Ginting et al. (2023), Chan (2023), and Ali & Jamal (2023). The collected quantitative data were analyzed using descriptive statistical analysis. This involved calculating the mean scores and standard deviations for each item to gain meaningful insights.

Furthermore, alongside the questionnaire, a qualitative data collection was carried out through an open-ended survey involving 14 master's degree students. The survey encompassed inquiries regarding the advantages and difficulties associated with utilizing AI tools, along with the viewpoints of participants regarding AI tools for generating content and paraphrasing. An analysis was conducted on the qualitative responses to identify recurring themes and gain valuable insights, which enhanced the understanding of the participants' experiences.

5.2 Summary of the Findings

5.2.1 Benefits of Using AI Tools

Participants acknowledged a variety of advantages in utilizing AI tools for their academic writing, specifically in improving writing efficiency, structure, creativity, and accuracy. AI tools greatly enhanced writing speed by offering immediate suggestions and corrections, consequently optimizing the writing process, and enhancing its

efficiency and organization. The tools were also valued for their ability to enhance creativity and involvement by providing various methods for expressing ideas and aiding in the process of generating ideas and constructing justifications. In addition, AI tools were instrumental in managing citations, ensuring accurate formatting, and saving substantial time. The advanced grammar and spell check features were highly appreciated for their ability to detect unnoticed errors, thus improving the overall grammatical accuracy. AI tools were particularly advantageous for non-native English speakers as they helped enhance their word choice and sentence construction, which increased their writing confidence.

5.2.2 Challenges of Using AI Tools

Participants expressed a significant concern regarding the confidentiality and protection of their data in terms of privacy and cybersecurity. Participants presented uncertainty regarding the utilization and storage of their data by AI tools, which led to concerns about the preservation of confidentiality and the possibility of data breaches. The concerns were increased by the unclear conditions of use for certain AI tools, highlighting the necessity for AI tool providers to establish more explicit policies and ensure transparency.

Another significant issue was the prescriptive quality of AI tools, which some participants perceived as potentially causing their writing to sound mechanical if they were to implement all suggestions. The AI tools occasionally offered suggestions that lacked a comprehensive understanding of the context, resulting in awkward or irrelevant recommendations. An additional concern was the excessive dependence on AI tools, which has the potential to reduce critical thinking abilities and foster student laziness. Participants highlighted the significance of utilizing AI tools as a reference rather than blindly following every recommendation, to preserve the originality and analytical involvement necessary in scholarly writing. Furthermore, the presence of inconsistent suggestions that modified the intended meaning of sentences proved to be a source of dissatisfaction for certain users, thereby emphasizing the necessity for a longer period of adjustment to the tools.

5.2.3 Perspectives on Content Generation and Paraphrasing

The general perspective on AI tools for content generation and paraphrasing was favorable. Participants recognized the tools' capacity to improve the quality of their research outputs, expedite content creation, and offer initial ideas for writing. AI tools were especially beneficial in overcoming writer's block by providing suggestions for content and rephrasing existing text. Nevertheless, certain participants expressed reservations regarding excessive dependence on AI tools for content generation, highlighting the importance of maintaining a balanced strategy in which AI tools supplement rather than supplant human creativity and critical thinking. The tools were regarded as valuable for the purpose of rephrasing and condensing information, simplifying the writing procedure, and conserving time. Participants found that AI tools were beneficial for generating ideas and creating initial drafts. However, they preferred to personally handle the final editing process to guarantee authenticity and excellence. This emphasizes the significance of human supervision in upholding the integrity and excellence of academic work.

5.3 Conclusion

This study highlights the significant capacity of AI tools to improve the English writing abilities of master's degree students. AI tools are highly valued for their simplicity of use, availability, and capacity to offer prompt and helpful feedback. These tools enhance vocabulary, grammar, clarity, and creativity, significantly contributing to the overall writing process.

However, the study also highlights several significant obstacles. An important concern is the potential of AI tools to disrupt concentration and decrease human interaction. Furthermore, concerns regarding the dependability of information generated by AI, the potential dangers of excessive reliance on AI, and the consequences for essential intellectual capacities like problem-solving and critical thinking are substantial. The importance of cautious management and supervision of AI tool usage in academic settings is further emphasized by concerns regarding privacy and cybersecurity.

To summarize, although AI tools provide significant advantages for improving academic writing, their utilization must be carefully evaluated and managed to

minimize possible disadvantages. Both educators and students need to be aware of the constraints and potential dangers of AI tools and try to incorporate them into traditional learning and writing methods in an effective way.

5.4 Recommendations

The results of this study offer a comprehensive understanding of the benefits and challenges caused to the utilization of AI tools in academic writing. Given these insights, several recommendations are brought forward to enhance the utilization of AI tools while managing the identified difficulties. The purpose of these recommendations is to provide guidance to educational institutions, educators, and students on how to incorporate AI tools effectively and ethically into educational environments.

5.4.1 AI Tools Comparison

Further studies should prioritize the comparison of various AI tools to determine their specific effectiveness in enhancing academic writing. Researchers can offer valuable insights into the creation of more focused and efficient educational technologies by determining the most advantageous features and capabilities.

5.4.2 Qualitative Insights

Increased qualitative research is required to investigate the comprehensive experiences of students with AI tools. By conducting this analysis, it is possible to identify the fields in which AI tools demonstrate outstanding ability or exhibit limitations, which can improve the comprehension of its effect on academic writing.

By implementing these suggestions, future studies will go deeper into the capabilities of AI tools in education and make valuable contributions to the establishment of optimal methodologies for their utilization. This will help guarantee that AI tools are utilized efficiently to improve learning results while minimizing possible risks.

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APPENDICES

APPENDIX A

QUANTITATIVE DATA COLLECTION

1. Gender: Male, Female and preferred not to say
2. Academic Major

(5 = Strongly agree 4 = agree 3 = neutral 2 = disagree 1 = strongly disagree)

RQ1: What are the benefits of using AI tools in master's degree students writing assignments?

No:	Statements	Items
1	I find AI tools user-friendly and easy to navigate.	Agreement (Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree)
2	AI tools help me have access to academic materials anytime and everywhere.	
3	AI tools help me to improve my English vocabulary and grammar.	
4	AI tools can help increase my motivation to write English.	
5	AI tools help me to improve my ability to present complex data effectively.	
6	I feel that employing AI technologies has improved my writing abilities and greatly impacted my academic essay writing.	
7	Using AI writing aids has increased the clarity and coherence of my works, favorably improving my writing style.	
8	AI tools can provide immediate feedback and assessment enabling me to adjust my writing immediately.	

RQ2: What are the challenges of using AI tools in master's degree students writing assignments?

No:	Statements	Items
1	The use of AI disturbed my concentration in writing my final project.	Agreement (Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree)
2	I am worried that overusing AI tools can lead to a lack of human interaction.	
3	I am worried about the reliability and accuracy of the information provided by AI tools.	
4	I am worried that I will become overdependent on AI tools in my English language learning.	
5	I am worried that my overdependence on AI tools can negatively affect my problem-solving skills.	
6	I am worried that my overdependence on AI tools can negatively affect my critical thinking skills.	
7	I am worried that my privacy can be affected when using AI language writing tools.	
8	I'm worried about cyber security (hacking and password protection).	

RQ3: What are the perspectives of master's degree students using AI tools in content generation and paraphrasing with their academic writing?

No:	Statements	Likert scale
1	AI tools have helped in generating better research findings. (Content generation)	Agreement (Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree)
2	AI tools have facilitated the integration of diverse research perspectives. (Content generation)	
3	AI tools have contributed to increasing the impact of my research. (Content generation)	
4	AI tools have helped in avoiding plagiarism in my academic writing. (Content generation)	
5	Using AI tools has increased the accuracy of my research findings in comparison to findings of other studies. (Content generation)	
6	AI tools have made collaboration with co-authors more efficient. (Paraphrasing)	
7	AI tools have helped in paraphrasing and summarizing research content effectively. (Paraphrasing)	
8	AI tools have increased the speed of initial draft creation in my research. (Paraphrasing)	
9	AI tools have improved my ability to present complex data effectively. (Paraphrasing)	
10	AI tools have helped me paraphrase and choose the right grammar. (Paraphrasing)	

APPENDIX B

QUALITATIVE DATA COLLECTION

Background Information

1. What is your field of study?
2. How long have you been using AI tools for academic writing?

- Less than 1 month
- 1-6 months
- 7-12 months
- More than 1 year

3. How often do you use AI tools in your academic writing process?

- Daily
- Weekly
- Monthly
- Rarely (once or twice a semester)
- Never

4. What specific benefits have you experienced by using AI tools in your writing?
5. What challenges have you encountered when using AI tools for academic writing?
6. Have you faced any issues related to privacy or security while using AI tools? If so, please describe.
7. How do you feel about the role of AI tools in content generation and paraphrasing?