

Use of Various Artificial Intelligence Tools for Academic Writing by University Students in Rawalpindi / Islamabad

Dr. Farkhanda Jabeen¹, Syeda Malyika Kazmi ², Farwa Asif ³

¹ Assistant Professor, Fatima Jinnah Women University, Rawalpindi

^{2,3} M.Phil. Scholars, Fatima Jinnah Women University, Rawalpindi

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Abstract

This study explores university students' perceptions of various Artificial Intelligence (AI) tools such as ChatGPT, Grammarly, and Quillbot—used for academic writing. Utilizing a quantitative research design, data were collected from 100 students across male, female, and co-education universities in Rawalpindi and Islamabad through a structured survey. The analysis focuses on frequency of use, purpose of usage, positive perceptions, and negative concerns associated with AI tools. Findings reveal that AI tools are extensively used for grammar checking, idea generation, paraphrasing, and structuring academic work, significantly enhancing productivity and confidence. However, concerns about over-dependence, creativity loss, ethical implications, and potential plagiarism persist among users. The study recommends promoting balanced AI usage, raising awareness of ethical practices, and integrating workshops on academic writing to mitigate the challenges. Future research directions include longitudinal studies and field-specific analysis of AI tool adoption in academic writing.

Keywords: Artificial Intelligence (AI), Academic Writing, Content Generation, AI Academic Writing Tools, Writing Assistant

Introduction

Artificial intelligence is an advanced technological tool that is considered to be the oxygen for humans of the 21st century. As smartphones and other technologies become increasingly popular, artificial intelligence is integral to our daily lives. It is well-known that artificial intelligence is experiencing a revolution. As technology expands and changes it is gradually occupying the academic landscape. The rise of artificial intelligence has also been witnessed in many fields of education. Organizations, especially educational institutions, have adopted and applied AI worldwide in various contexts and environments (Alam, 2021).

Johnathan P. Rowe and others in their paper believed that AI-based education is evidence that students are enhancing their learning experiences. In recent years, academics have extensively used artificial intelligence. AI assisted students in writing more effectively. The recent advancements in AI and AI-powered writing aids have helped students to detect, correct, and provide appropriate citations to grammar and spelling problems. Academics can quickly skim through a wide range of documents using artificial intelligence to summarize them and get to the core of articles and research papers. Recent research shows that AI-based automated tools provide more comprehensive useful feedback than other programs (Briggs, 2018). Academic researchers, educators, and students are constantly looking for tools and resources to improve and promote knowledge acquisition. In the academic world, artificial intelligence has developed several literature search tools, content analysis tools, scientific writing tools, and editing tools. The use of these tools not only streamlines academic

processes but also adds depth and insight to academic research content. This study aims to provide a comprehensive overview of the current state of artificial intelligence in the academic context. This research explores the selection of different AI tools available and being used from the point of view of students.

Through web-based education, the computer age has revolutionized the educational landscape by providing incredible access to knowledge (Sahar et al., 2025). AI-powered chatbots and writing assistants have become indispensable tools for students and educators due to their capacity to offer prompt feedback, enhance writing quality, and support research (Thelma et al., 2025).

Problem Statement

The fast-paced lifestyle of today's society gradually relies on AI-powered tools for different purposes and fields. Education has become the most targeted of these AI-powered tools which students have been using to meet their different educational needs. This generation depends on tools such as ChatGPT, Grammarly, and Quillbot. These tools are helping students for different purposes such as creating and generating ideas and molding their writings more professionally. This study aims to assess students' opinions about the usage of AI-powered tools in academic writing, including both beneficial and adverse perspectives, as well as the frequency and intents behind their use.

Objectives

The objectives of the study were to;

1. Analyze the prevalence and patterns of AI tool usage among university students for academic purposes.
2. Investigate the specific types of academic writing tasks where AI-powered tools are predominantly utilized by university students.
3. Find out the students' perceptions (both positive and negative) regarding the effectiveness, reliability, and ethical implications of using AI-powered tools in academic contexts.

Literature Review

Imagine a world where machines not only follow instructions, but also think, learn and adapt- Welcome to the age of Artificial intelligence. From healthcare and finance to entertainment and education, Artificial Intelligence (AI) is leaving its mark across diverse fields, transforming how we work and live. In education, it's turning classrooms into dynamic, personalized learning hubs where technology adapts to every student's unique needs. Not only classroom and technology is benefiting from AI but also students are getting an immense benefit from Artificial Intelligence tools in their academics. Digital learning contents that are most appreciated by students are all thanks to the invention of AI based tools (Fitria, 2021).

Artificial Intelligence is believed to be able to help students learn better and achieve educational goals more effectively. AI based tools are used for multiple purposes in education but what is the history of AI Tools in Education, their development and rise?

History of AI tools in Education

The past few decades have witnessed the gradual increase of AI technologies in Education and still it's being evolved in the field of education. It is becoming an essential part of our daily lives. AI in Education can be traced back to the 1960s, computer-based instruction (CBI) systems emerged which provided students with interactive learning through programmed instruction. This was just the start and later in the 1970s and 1980s, AI can be found in classrooms where Intelligent Tutoring Systems (ITS) were involved for students to have a more tailored approach to learning (Frank, 2023).

AI in education makes it easy for students to learn in a more efficient way but it still has some challenges. The biggest and notable challenge in the Early Stage of AI was limited resources; computers being expensive and access was limited. Another challenge was that the early stage of AI required high knowledge of programming and also domain-specific knowledge that wasn't for everyone. Despite these challenges, the early stage of AI laid the groundwork for future advancements in the field of education (Karjian, 2023)

Who knew that AI in education will evolve so much that it will become an essential part of our lives? The current use of AI is like the essential need for people that they can only rely on. In recent years, AI technologies in education have gained significant momentum and offer a range of applications that have transformed the teaching and learning process. Not only enhancing teaching and learning pace but AI is also helping in assessments. If we look back to the times of Covid, AI introduced such websites and apps that were used to assess students and score their performances side by side. Furthermore, it also had the feature to identify areas that students need further attention (Copeland, 2024).

In addition to these, AI also has evolved from not only helping teachers to teach and students to learn, but allowing both teachers and students to benefit from it by transforming their natural language drafts to a more professional and advanced language. Furthermore, the excessive use of AI nowadays is to generate content regarding the specific topic or title given by the user. The AI technologies that were used for advanced learning for individual needs and having a grammar check on the drafts transformed totally and are being used for things that are out of reach of humans' mind and thinking (Tim Mucci, 2024).

Artificial Intelligence while rising has introduced so many apps and websites for students to learn in a more efficient way. Commonly used AI tools are ChatGPT, Grammarly and Quillbot. In the upcoming sections, these tools will be discussed in detail along with their origin and emergence with respect to the evolution in the field of education (Frank, 2023).

Grammarly

Grammarly is a software introduced and released by Max Lytvyn, Alex Shevchenko and Dmytro Lider in 2009. The initial version of Grammarly was a subscription-based product that focused on grammar and spelling for students. Later interventions were done on this basic software. It works as a writing assistant that improves the grammar, spelling and tone of written work. Furthermore, it checks for errors, makes suggestions, provides explanations regarding the reason behind any change proposed by it, and identifies plagiarism. It even produces writings through the prompts given to it (Grammarly, 2024).

Grammarly's AI is built on Algorithms created through computer linguistics professionals and deep learning engineers. These algorithms have been analyzing millions of sentences so that they learn the rules and patterns of good writing. The working of Grammarly is that it checks everything entered by the user and provides suitable suggestions regarding it on the right side of the screen. Users need to click accept to automatically apply the suggestions or click dismiss to ignore suggestions. It can even provide explanation behind the suggestion by clicking learn more (Grammarly, 2024).

Grammarly's AI offers number of features to work with;

- Paraphrasing tool: Rephrases data entered by the user.
- Plagiarism Checker: Grammarly can help ensure that the writing is original.
- Grammar, Spelling and Punctuation Checker: It can identify and correct errors in grammar, spelling and punctuation.
- Coherence Checks: It helps ensure the user's writing flows smoothly and builds connection in every sentence.
- AI Writing Partner: Grammarly can help you unblock ideas and keep users writing with AI prompts.

- Genre-Specific Writing: It provides writing suggestions for different genres such as academics, business or creative.

Quillbot

Quillbot is a software developed in 2017 by Anil Jason that uses Artificial Intelligence (AI) to help its users with what they need. This software is an online writing platform with different tools that are used to elevate human writings to a better version of it. Quillbot allows users to summarize, paraphrase, correct grammar, check plagiarism, translate and generate outlines and citations that sets users to have success in their academic writing (Pfeifer, 2024).

Quillbot's AI is trained on datasets that tell it the right and wrong ways to write it. A dataset is a collection of information. In the case of Quillbot the dataset is information regarding punctuations, grammar, tone and clarity of sentences (Pfeifer, 2024).

According to Durgumahanthi (2024), Quillbot is built on different features which are listed below;

- Paraphrasing: rephrases the text inserted in it in multiple modes i.e. changes order or vocabulary, improves fluency, formal communication, creative rephrase, increases or decreases in the same context and also rewrites in unique order.
- Grammar & Plagiarism Checker: Allows users to check spellings, grammar, punctuations and plagiarism too.
- Citation generation: it can create citations in different formats; MLA, APA and Chicago style as well.
- Summarize: It summarizes the text inserted in it.

ChatGPT

ChatGPT was created by OpenAI- an artificial intelligence research company in November 2022. Founded by a group of researchers and entrepreneurs including Elon Musk and Sam Altman in 2015. It is an Artificial Intelligence tool that understands and generates natural language texts. It works like a human. Commands are given to it and it responds according to that high proficient level and it can also be commanded to turn it to a low proficient level of human (Hetler, 2023).

ChatGpt is a type of AI that also works on algorithms just like Grammarly. It gives responses to the prompts asked by the user using the knowledge it has from those algorithms. It generates outlines for the prompts and even gives a little bit of explanation as to what should be added in it (Vaverek, 2024).

ChatGPT is a chatbot with many features, including:

- Language Translator
- Natural Language Generation
- Code Writing and Debugging
- Data Analysis
- Content Creation
- Voice Responses
- Multilingual Support

ChatGPT has undergone a remarkable evolution, transforming from basic conversation AI into a powerful, versatile version that redefines how we interact with technology. Below is detailed timeline of the evolution of ChatGPT along with its features (Hines, 2023)

- ChatGPT 1.0 (2022)
Capabilities: It can hold conversations, answers questions asked and assist with writing tasks.

Limitations: Sometimes it gave incorrect answers, lacked memory of past chats and struggled with refined contexts.

- ChatGPT 2.0 – GPT -4 (2023)

Capabilities: It gave more accurate and creative responses with improved reasoning and handling of complex queries. New features were introduced also which included that businesses have started integrating ChatGPT into their systems and added tools like code interpretation and document assistance.

Limitations: Occasional factual errors, sensitivity to ambiguous queries and challenges with highly specialized niche topics.

- ChatGPT Plus (Late 2023)

It was a limited release that could remember details like user preferences across sessions asked to ChatGPT Plus.

- ChatGPT 3.0 (2024)

Capabilities: It has extended memory capabilities for all users, enhanced debugging, web browsing and professional documentation creation. Users could also customize the tone and behavior of ChatGPT's responses.

Limitations: It struggled with subtle context in very long conversations. Dependent on user input for accuracy, making it prone to errors if given incomplete or misleading information.

- ChatGPT Today (2025)

It is packed with advanced features like real-time web browsing that can even give references from the web and live updates. It is handling better creative and technical tasks. It even has the feature to attach documents or images and can even answer questions regarding them asked by the user. Its continuous learning is that it adapts more naturally to the user's needs over time.

It is evolving regularly making it more intuitive and useful.

JasperAI

JasperAI was developed by Dave Rogenmoser, Chris Hull, and John Phillip Morgan in January 2021. It is a platform that helps content creators and marketers for content generation. It is used for Blog Writing, Social Media Writing, Style Guide etc. JasperAI works when the user adds any data into it, basically the information about their brand, product and audiences. Then, JasperAI writes about these things in your brand voice (Team, 2023).

Features of JasperAI include:

- Brand Voice Matching
- Content Templates
- Interactive Dialogue
- Browser Extension

WordTune

WordTune was developed by AI21 Labs in October 2020. It is an AI-powered reading and writing companion capable of fixing grammatical errors, understanding context and meanings, suggesting paraphrasing or alternative writing tones and generating written text based on context (Bradbury, 2024).

According to Team (2025), the features of WordTune includes:

- Rewriting
- Summarizing
- Content Generation
- Grammar & Spelling Correction
- Tone Adjustment
- Sentence Rephrasing
- Translation

Challenges of using AI in academic writing

Where technology and education merge, AI has been developed for education also. Since it has many benefits but side by side it is also a challenge for users such as students and teachers. It severely upholds the integrity of the learning process. According to Tumulty (2024), some of the challenges faced by teachers and students are that the content's originality is triggered, creativity is abused and dependency on AI generated content which causes Plagiarism (Tumulty, 2024).

To conclude, AI Tools are widely being used in almost every field, either its marketing content or in education. It is spreaded vastly but the key features are generation of content, setting the tone of the content and correct grammar and spellings. This research will focus on which AI-Powered tools are used, when and how.

Methodology

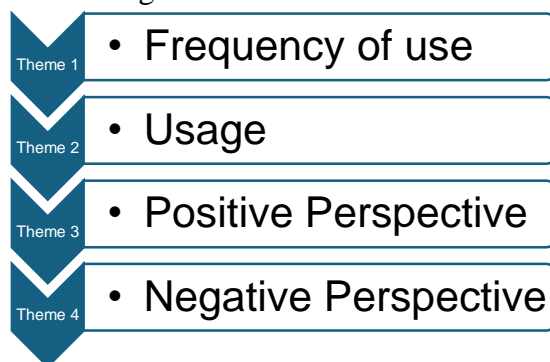
The approach followed for this research is Quantitative Approach. Quantitative research seeks collecting and analyzing information in numeric data. In order to learn more about the usage of AI technologies for academic writing, this study employs quantitative research.

Population/Sample

Students in higher education from the twin cities of Rawalpindi and Islamabad made up the study's population. 40 male participants from male institutions, 40 female participants from female universities, and 20 participants from coeducational universities provided the data. There were a total of 100 completed responses.

Data Collection Tools

Data about the various AI tools used for academic writing was gathered via a survey questionnaire. There were 20 questions in the survey, all of which focused on four main themes. The themes are as following:



Analysis

Data analysis and findings

This section presents the data analysis of the survey conducted for this research which include 20 question and 100 participants. The questionnaire was divided in to four themes 1-5 questions lay under the theme of frequency of use, questions 6-10 lay under the theme of purpose of usage, questions 11-15 lay under the theme of positive perspective, questions 16-20 lay under the theme of negative perspective.

The below mention table presents a detailed analysis of each question in the questionnaire. The responses were kept on a five-point Likert scale with (1 denoting strongly disagree and 5 denoting strongly agree). To evaluate the general trend of responses the mean value of each item was computed.

Question no	Question Statement	Mean value
1	I frequently use AI tools (e.g., Grammarly, ChatGPT) for academic writing.	4.0600
2	I rely on AI tools to assist with academic writing tasks more than once a week.	4.1600
3	I use AI tools during high-stakes assessments like exams or assignments.	4.0900
4	I believe the usage of AI Tools has increased my overall productivity in academic writing.	4.0700
5	I only use AI tools when I face challenges in structuring my ideas.	4.1800
6	I use AI tools for grammar and spell-checking.	4.2200
7	AI tools help me generate content ideas for essays or reports.	4.4300
8	I use AI tools to paraphrase or summarize complex information.	4.3900
9	I rely on AI tools to format citation and references correctly.	4.0000
10	AI tools assist me in structuring my academic essays or assignments effectively.	4.2700
11	AI tools enhance my confidence in academic writing	4.2500
12	I find AI tools helpful in improving the quality of my written work.	4.3000
13	AI tools provide valuable suggestions that I might not think of myself.	4.1800
14	Using AI tools has reduced the time I spent on academic writing task.	4.3300
15	AI tools promote better learning of academic writing conventions and styles.	4.3200
16	I feel that using AI tools makes me overly dependent on technology.	4.1100
17	AI tools sometimes provide suggestions that are not	4.1200

	contextually accurate.	
18	Using AI tools reduces my ability to write creatively without assistance.	3.8500
19	I am concerned about the ethical implications of using AI tools in academic writing.	4.0500
20	AI tools might lead to unintentional plagiarism in my academic writing.	4.1500

The analysis of the first five items under the "Frequency of Use" theme indicates that participants usually utilize AI tools often and reliably in their academic writing activities, according to the combined. According to the research, most people use AI technologies on a weekly basis and for important tests, indicating a trend of frequent use. Additionally, participants said AI technologies help them be more productive overall, and they especially use them to better organize their thoughts. The replies exhibit some variation, particularly with regard to the situations in which AI tools are employed, suggesting that although AI tools are a common tool, users may apply them differently.

Under the "Purpose of Usage" theme participants mostly utilize AI tools for activities that improve writing quality, such as grammar checking, content idea creation, paraphrasing, and essay structure,. While there is significant variation in how frequently and successfully individuals utilize AI tools for activities like citation formatting, these tools are also seen to be useful for organizing academic work and clarifying difficult information. Though the degree to which people rely on AI tools vary, they are generally highly praised for increasing productivity and efficiency in academic writing.

The major theme for the item number 11 to 15 were regarding the positive perspective on AI tools. The purpose was to figure out how the students perceive AI tools in a positive way. The majority of participants saw AI tools as resources that will help them in their academic writing journey by increasing their confidence, saving time, improving quality, and providing educational assistance. The results demonstrate a strong, favorable attitude toward the incorporation of AI tools into scholarly work, supporting the notion that these technologies are beneficial and efficient. So through these questions we reach this conclusion that students have a positive perspective regarding the usage of AI-tools in academic writing.

The major theme for last five questions were regarding the negative perspective on AI tools. The purpose was to figure out that students perceive AI- tools in a negative way too. According to the information gathered from Questions 16 through 20, participants are aware of the possible drawbacks of utilizing AI technologies, such as technological dependence, moral dilemmas, and the possibility of plagiarism. Despite the widespread agreement on these concerns, the range of answers indicates that while many people are aware of them, their level of worry differs from person to person.

Conclusion

The data collected provides valuable insights into the usage patterns and perceptions of AI tools in academic writing among the respondents. Key findings include:

1. A significant proportion of about 80-84% respondents frequently use AI tools for academic writing.
2. Many use these tools for structuring essays the responses says 86% while for generating content ideas 94%.
3. Around 80% of respondents says, they use AI-Tools for Grammar and Spell Check.
4. 78% respondents are overly independent on AI-Tools.

5. 82% of respondents are aware of the potential for unintentional copying, while 78% are aware of ethical concerns.
6. Some respondents (68%) worry that AI use reduces creative writing ability

Recommendations

The recommendations for the collected data includes:

1. To promote balanced usage among learners rather than overly dependent upon AI tools. Use them as a supplement not as a replacement for skills, fostering creativity and independent thinking.
2. Learners should be aware of the concern about AI-Tools and strategies to avoid plagiarism.
3. Educational institutions can integrate workshops on academic writing and critical thinking to reduce over-dependence on AI.
4. Guidelines should be established to ensure ethical use during high-stakes assignments.

Future Research

- Perform longitudinal research to track how students' opinions and usage of AI tools change over time, especially as these tools develop and incorporate more advanced capabilities.
- Examine how students from different academic fields (such as the humanities, sciences, and social sciences) see AI technologies in order to comprehend the requirements and challenges unique to each field.
- Examine how affordable premium AI technologies are in relation to free alternatives, and how this affects student uptake and impressions.

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