

CHAPTER 2

LITERATURE REVIEW

This chapter describes several theories that support this study. These theories include Generative AI, ChatGPT as an academic writing tool, academic writing, and the Technology Acceptance Model (TAM). This theoretical foundation helps explain student perceptions of the use of ChatGPT as a tool in academic writing.

A. Theoretical Framework

1. Academic Writing

Academic writing, in the context of this study, refers to student-written assignments such as essays, research articles, and academic reports. Academic writing is a formal way of presenting ideas in school and university settings. It requires a systematic order in the scientific academic writing process (Akkaya & Aydın, 2018). Align with Mondal & Mondal (2023), academic writing is a way to express ideas and information clearly in an organized and engaging form for learning, research, and professional growth. It is used to share knowledge, establish critical thinking, and test the understanding of students. Researchers have studied numerous characteristics of academic writing over the years, such as its characteristics, issues, and teaching methods.

Academic writing also serves as a medium for communicating findings to the academic community. As a result, good writing is developed through several stages, in which authors revise their work based on feedback from peers and professors or instructors. In addition, every academic writing should be concise, clear, and easy to understand. The writing should also be structured in a certain order, ensuring that each subsection is coherent and cohesive (Akin, 2009 as cited in Akkaya & Aydın, 2018). Authors are expected to ensure that each section flows cohesively, while also engaging critically with existing research and contributing original insights.

The advent of digital technology has transformed academic writing practices. Online writing tools, citation management software, and artificial intelligence (AI)-powered writing assistants such as ChatGPT have become an essential part of the writing process. While these tools offer significant benefits, such as improving

grammar and increasing clarity, concerns about over-reliance and ethical implications remain (Eke, 2023). Academics argue for the need to balance technological assistance with the development of independent writing skills (Baidoo-Anu & Owusu Ansah, 2023). Therefore, while the use of these digital tools improves academic efficiency and quality, it is important to use them responsibly and ensure that they only support, not replace, the role of humans in general.

With the use of these AI tools, the writing process becomes more innovative, making it more coherent, organized, and efficient. AI-powered writing tools are gaining popularity in English as a Foreign Language (EFL) classrooms (Marzuki et al., 2023). Indeed, with features such as AI-generated ideas, automatic paraphrasing, and grammar checking, writers can actually save their time (Song & Song, 2023). In addition, these AI-generated writings produce academic-style writing, facilitate referencing, and reduce the chances of formatting errors, these developments create the assumption that productivity is increasing. AI tools are very helpful in the academic writing process, it can increase research productivity and improve work efficiency (Khalifa & Albadawy, 2024). However, this technology is not yet able to meet all the requirements of thorough analysis, well-organized reasoning, and in-depth subject matter knowledge that are required for effective academic writing.

2. Generative AI

Generative AI is a form of artificial intelligence that can produce textual responses to user inputs through various means, including large language models (LLM) like ChatGPT. Generative AI describes any AI technology developed to produce original content as text, images, audio, or video based on the user's commands or requests (Stryker & Scapicchio, 2024). These models, particularly the language-based models, such as GPT (Generating Pre-trained Technology), develop through understanding word usage in different contexts, millions to even billions of words. Generative AI can estimate the next word in a sentence and thus, automatically generate text that is contextually and structurally consistent.

This technology's progress over the years is massive, with various uses from virtual assistants to writing aid. Among the many, perhaps the most revolutionary

is ChatGPT (Yu, 2024). This ingenious artificial intelligence aims to generate text that resembles conversations between humans, paying attention to the context and elaborating on a given topic. ChatGPT is an AI-powered generative language model that can generate human-like text based on user input ((Mondal & Mondal, 2023). Thus, ChatGPT represents a significant leap in AI development, offering advanced language capabilities that make it a powerful tool to assist students with academic writing.

In academia, Generative AI has attracted a lot of attention for its ability to assist writing, from concept to editing and final proofreading, the GenAI writing system provides continuous assistance at various phases of the academic writing process (Kim et al., 2024). These features help students organize initial concepts into structured writing, thus helping especially at the earliest stage, namely designing academic writing. It can be observed that Generative AI is no longer considered a new concept, but rather a sophisticated mechanism that can enhance the learning rate and productivity levels in academic environments. Thus, generative AI plays an important role in academic environments especially in higher education, not as a replacement for human thinking, but as an aid in strengthening students' academic writing skills.

In general, Generative AI shows great potential to help students produce a good quality academic writing and accelerate learning in higher education environments. This tool can help students in the academic writing process, from finding or developing ideas, improving grammar, and also time saving. By using tools like ChatGPT, students get quick responses, explore various perspectives, and also develop or strengthen arguments. Therefore, this technology can be concluded as a useful tool in the academic writing process. However, its use must remain balanced and critical thinking from students in assessing the content generated by this AI is still needed.

3. ChatGPT as an Academic Writing Aid

ChatGPT, which OpenAI has created, is a Generative AI that utilizes the GPT (Generative Pre-trained Transformer) model for the purposes of text comprehension and generation upon prompts of its users. ChatGPT can generate human-like text

based on user input (Bhatia, 2023). ChatGPT has been trained to handle language in connecting the meaning of sentences to previous sentences which helps determine the user's intent. By providing topic suggestions, structural frameworks, intellectual stimulation, and enhancement of academic written discourse, ChatGPT can improve the ability to enrich students' essay writing (Ooi et al., 2023). The latest developments in generative AI enable ChatGPT to work as an assistant in research and writing for students.

In the field of education, the use of ChatGPT has numerous advantages. One of them is that it assists writing and can help students develop their ideas, organize points, and check grammar in a very short time. ChatGPT can provide in-depth feedback and check their work for grammatical and structural errors (Javaid et al., 2023). With its responsive and automated text generation capabilities, ChatGPT can serve as a virtual collaborator to help students explore concepts, develop arguments, and write better paragraphs (Setiawan & Luthfiyani, 2023). In addition to being reasonably accurate and able to recall previous conversations, the text produced by ChatGPT seems to be well-structured and logically connected (Strzelecki, 2023). Learning can be made more accessible and personalized by using these advanced AI language models to instantly provide students with individualized tutoring on a variety of subjects (Adel et al., 2024). Furthermore, ChatGPT enables the student to learn at their own pace, encouraging the learner to grasp the content better and quickening the research level. Integrating artificial intelligence (AI) into education continues to evolve and has a major impact on the way EFL students learn writing skills (Teng, 2024). ChatGPT is also useful to non-native English students of the English language in enhancing their words and sentence patterns and thus communicating better in school.

Moreover, Zohery (2023), mentioned several advantages of using ChatGPT for academic writing, for instance:

a. Speed

ChatGPT will save authors time and effort because it can generate text rapidly and effectively. Additionally, ChatGPT assists users in locating relevant

information from various sources, including books, academic papers, websites, and more.

b. Creativity

ChatGPT model can produce unique, varied, and compelling texts that inspire the writer's imagination and creativity. Additionally, ChatGPT also helps the writers to generate fresh ideas, theories, hypotheses, and viewpoints for further investigates.

c. Feedback

ChatGPT can provide comments and recommendations on the author's work, such as correcting typographical and grammatical errors, improving coherence and clarity, and adding examples and information. In addition, ChatGPT can reject inappropriate requests, challenge incorrect assumptions, remove errors, and respond to follow-up questions.

d. Engagement

ChatGPT can make scientific writing more fun and engaging by modeling the framework of a normal conversation between a writer and an AI assistant. In addition, ChatGPT can leverage personality, humor, and feelings to make the conversation more comfortable and more human.

The use of ChatGPT in schools and universities brings new prospects as well as ethical prospects that arise from excessive and irresponsible use. On the other hand, ChatGPT is one of the tools that has the potential to increase learning efficiency, especially with the support of writing assignments and the development of language skills for students where ChatGPT offers work efficiency in the writing process such as helping students develop ideas and improve their language skills. However, relying too much on this tool can also limit students' critical thinking and independence in writing. The use of ChatGPT must be balanced and there must be guidance in the use of this AI so that students can continue to develop their own thinking and academic abilities.

4. Technology Acceptance Model

The "Technology Acceptance Model" (TAM) has been chosen as the study's core framework. Technology Acceptance Model (TAM), which is an adaptation of Theory of Reasoned Action (TRA), was first introduced by (Davis, 1989). Technology Acceptance Model (TAM) is an information systems theory that aims to explain how consumers can understand and utilize technology. Related to the ideas, attitudes, and goals of the technology itself, the Technology Adoption Model (TAM) attempts to explain and predict the adoption of information technology by users.

TAM is derived from the Theory of Reasoned Action (TRA) which identifies two main factors determining a user's acceptance of technology, namely perceived usefulness and perceived ease of use. These have always proven to precede the behavioral intention to use technology in learning settings. TAM has 5 variables used to predict user acceptance, namely perceived usefulness and perceived ease of use which will affect attitudes towards users (attitude towards using), behavioral intention to use and ultimately show actual system users (Actual system use) (Davis, 1989). Venkatesh & Davis (1996), modified TAM to adapt to technological developments. The modification made was by eliminating one variable, namely attitude towards users (attitude towards using).

This study adopted the concept of Perceived usefulness (PU) and perceived ease of use (PEOU) from the Technology Acceptance Model (TAM) developed by Davis (1989) to explore the students' perceptions of ChatGPT as an academic writing. According to Davis (1989) The definition of perceived usefulness is "the extent to which a person feels that using a particular system will improve his or her performance." By definition, "useful" means "able to be used profitably." On the other hand, perceived ease of use refers to "the extent to which a person believes that using a particular system will be free from effort." This follows the definition of "ease": "free from difficulty or effort.". This study focuses on the perception aspect of technology, not its usage behavior. PU and PEOU are sufficient to explain technology acceptance because both are the main cores in TAM that influence user attitudes and intentions. Perceived usefulness (PU) and perceived ease of use

(PEOU) are key elements that influence users' tendency to integrate technology, according to the main principles of TAM (Silva et al., 2022). Both concepts are important in predicting user adoption of technology by analyzing its perceived usefulness and ease of operation. By focusing on these factors, this study aims to explore the students' perceptions of ChatGPT as an academic writing aid.

B. Study of Relevant Research

Before conducting this research, the researchers read and reviewed a number of studies on the subject of research. Most of the studies addressed ChatGPT and its application in universities. One of the key studies was that of Gruenhagen et al. (2024). The purpose of their study was to measure the perceptions of students regarding the application of generative AI technology, in this instance, ChatGPT, in academic environments. The difference between their study and this study is in the data collection methods. This study followed a quantitative path and collected data using a formal survey, whereas, in this study, the authors followed a mixed-method approach where surveys and interviews were conducted. Besides, they focused on AI-associated ethical issues and AI misuse, whereas this study examined more general issues regarding students' behavior and perceptions of academic integrity when utilizing AI solutions.

Another study was conducted by Farhi et al. (2023) which aimed to find out how students reported and used ChatGPT in class by focusing on their attitudes, opinions, and ethics. This study was quantitative involved 388 students and showed that ChatGPT had a significant impact on students' academic activities. The results showed that ChatGPT was useful insofar as it helped in writing and solving problems, however, it raised issues of dependency and ethics especially related to academic dishonesty. The researchers determined that ChatGPT has advantages and disadvantages and specific measures should be taken to control its application in educational settings.

Villarino (2024) conducted another study. It found that AI tools, specifically ChatGPT, offered assistance to rural students in their academic work. The term 'effective' here refers to the benefits gained from using such tools to reduce students' workload and improve learning efficiency. The study focused on 451

students and since it was a mixed-method study, qualitative and quantitative data were collected through surveys and interviews. The findings revealed that even though AI tools are used for academic work, there are concerns about ethical issues, dependency on such tools, and their impact on critical thinking. The main limitation of the study is that while AI tools, such as ChatGPT, can certainly help, there needs to be proper policies and training to avoid mistakes. These tools can be beneficial to student learning by teachers and educational institutions, provided their use is regulated, especially in the case of higher education.