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**Option: Linguistics**

# Students' Attitudes Towards Using ChatGPT as a Research Assistance Tool

**A Case Study of Master One Students, Department of English, University of 8 Mai 1945- Guelma**

A Dissertation Submitted to the Department of Letters and English Language in Partial

Fulfillment of the Requirements for the Degree of Master in Language and Culture

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**June 2024**

## Dedication

In the name of **Allah**, Most Gracious, Most Merciful

I would like to dedicate this master's dissertation

To my guiding star and pillar of strength in this life,

my source of happiness, safety, love

and everything,

**Mom and Dad**,

May God safeguard them and elevate them as a crown upon our heads.

a **mi corazón**,

alla **mia vita**,

To **me**,

the cutest and softest creature ever.

To my pretty **sister** and handsome **brother,**

May they be endowed with boundless success in all their endeavors.

To my precious **Lily**.

To **Aya** my exceptional bestie and partner in the adventure of dissertation writing

To my dearest friends: **Nesrine** and **Noor**.

To my esteemed Friends and all who accompanied and supported me on my academic journey.

May all who come across this dedication offer their prayers for Palestine,

invoking peace, justice, and compassion for our sisters and brothers there.

**Razane**

# ACKNOWLEDGEMENT

# ABSTRACT

The advent of Chat Generative Pre-Trained Transformer (ChatGPT), an artificial intelligence chatbot developed by OpenAI, has brought substantial changes to various domains, particularly in education and research. This dissertation investigates the perceptions of Master One students regarding the utilization of ChatGPT as a research assistance tool. The core hypothesis posits that students exhibit a positive attitude towards the integration of ChatGPT in their research processes. A descriptive quantitative methodology was employed, utilizing data gathered from two comprehensive questionnaires distributed among Master One students and faculty members at the Department of English, University of 8 Mai 1945 - Guelma. The analysis of the collected data corroborates the hypothesis, revealing a predominantly favorable disposition among students towards the adoption of ChatGPT for research assistance. These findings underscore the potential of AI-driven tools to enhance academic research and highlight the growing acceptance of technological advancements in educational settings.

*Keywords:* ChatGPT, Student Perceptions, OpenAI, Research Assistance, Educational Technology.

# LIST OF ABBREVIATIONS

**AI:** Artificial Intelligence

**IOT:** Internet of Things

**ANI:** Artificial Narrow Intelligence

**AGI:** Artificial General Intelligence

**ASI:** Artificial Super Intelligence

**ANNs:** Artificial neural networks

**ML:** Machine learning

**NLP:** Natural Language Processing

**GPT:** Generative Pre-Trained Transformer

**The 5 Ws:** Who, What, When, Where, and Why

**DBR:** Design-Based Research

**HROs:** High Reliability Organizations

**The IRSS model:** the Involvement-Regimen-Self-Management-Scrutiny model

**R&D:** Research and Development

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# General Introduction

## 1. Introduction

The advent of artificial intelligence (AI) marks a transformative shift in various sectors, including education. AI-powered tools, such as ChatGPT, a sophisticated language model developed by OpenAI, demonstrate significant potential in assisting students with their academic tasks. These tools simulate human-like conversations, provide instant information, aid in research processes, and offer personalized learning experiences. The rapid integration of AI in educational settings reflects broader trends in technological advancements that reshape how knowledge is accessed and disseminated. ChatGPT, in particular, garners attention for its ability to generate coherent and contextually relevant responses based on user inputs. Its applications range from helping with writing assignments to generating ideas for research topics. Despite its potential, the effectiveness and acceptance of ChatGPT as an educational tool are contingent upon the attitudes of its users. Understanding these attitudes is crucial, especially among students who are primary beneficiaries of such technology. In the context of higher education in Algeria, the University of 08 Mai 1945, Guelma, serves as a pertinent case study for examining these dynamics. The Department of English at this university offers a unique setting to explore how Master One students perceive and utilize ChatGPT as a research assistant. This study seeks to delve into these students' attitudes, identifying both the benefits they perceive and the challenges they encounter while using this AI tool.

## 2. Statement of the Problem

The rapid integration of AI in education, particularly tools like ChatGPT, presents both opportunities and challenges. Despite the potential benefits of enhanced learning and research assistance, there is a lack of empirical data on how students actually perceive and utilize these tools. This study aims to address this gap by exploring the attitudes of Master One students at the University of 08 Mai 1945, Guelma, towards ChatGPT, examining both its perceived benefits and challenges. The Department of English at this university offers a unique setting to

examine these students' perceptions and utilization of ChatGPT as a research assistant. This study seeks to identify both the perceived benefits and the challenges encountered while using this AI tool.

## 3. Aims of the Study

The primary aim of this study is to understand the attitudes of Master One students towards using ChatGPT as a research assistant. Specifically, it seeks to identify the benefits they perceive, the challenges they encounter, and how these attitudes influence their acceptance and use of this AI tool in their academic activities. The study also aims to provide insights that could inform the development of more effective AI-powered educational tools and strategies.

## 4. Research Questions

- What are the attitudes of Master One students towards using ChatGPT as a research assistant?
- What benefits do students perceive in using ChatGPT for their academic tasks?
- What challenges do students encounter when using ChatGPT?
- How do these attitudes and experiences influence the acceptance and use of ChatGPT in their studies?

## 5. Research Hypothesis

The hypothesis for this study is that:

H1: Master One students who use ChatGPT as a research assistant will report a positive impact on their academic performance and research capabilities.

H0: Master One students who use ChatGPT as a research assistant will report no impact on their academic performance and research capabilities.

This is based on the premise that ChatGPT provides valuable support in terms of information retrieval, idea generation, and personalized learning experiences.

**6.1 Research Methodology and Design**

**6.1. Research Method**

This study employs a quantitative descriptive method. The nature of this research work indicates that it is a descriptive research since it describes students' attitudes towards using ChatGPT as a research assistance tool. In addition, their attitudes have been analyzed from a quantitative perspective to collect statistical data about it. The data collection tools are two questionnaires designed to gather data on students' and teachers' attitudes associated with using ChatGPT.

**6.2. Population and Sampling of the Study**

The study population consists of Master One students and teachers from the Department of English at the University of 08 Mai 1945, Guelma. A sample size of 50 students, and 10 teachers is selected using a random sampling method to ensure representativeness. This sample size is chosen to balance the need for a manageable number of respondents with the desire to obtain statistically significant results.

**6.3. Data Gathering Tool**

The data gathering tool is two structured questionnaires that includes both closed and open-ended questions. Closed questions uses a Likert scale to measure attitudes, while open-ended questions explores students' experiences and perceptions in more detail.

**7. Structure of the Dissertation**

In the dissertation, there are two main sections: the first part, which delves into the literature review across two chapters, and the second practical part, encompassing a single

chapter. The introductory section outlines the statement of the problem, aims of the study research, questions research, research hypothesis, population and sample of the study, data gathering tools, and the structure of dissertation.

The first chapter is divided into several sections. It provides an introduction to the advantages and limitations of using ChatGPT in various fields such as business, finance, law, healthcare, education, and research. It elaborates on the benefits of ChatGPT, including enhancing writing proficiency, streamlining the research process, and supporting educators and students. The chapter also highlights the potential challenges and ethical considerations associated with using ChatGPT, such as bias, privacy risks, and misinformation. Additionally, it discusses the future development of ChatGPT.

The second chapter offers a brief overview of academic research, discussing its importance and types, including basic and applied research. It then delves into quantitative and qualitative research methods, highlighting their distinct approaches and the contexts in which they are used. The chapter emphasizes the systematic nature of academic research, which involves careful planning, data collection, and analysis. Additionally, it addresses ethical considerations in research, ensuring the protection and informed consent of participants.

The third chapter is devoted to the analysis of teachers and students' questionnaires along with the pedagogical recommendations, limitation of the study, and suggestions for future research. It describes, and the analyses and interprets the data obtained from the two questionnaires regarding they are attitudes towards the use of ChatGPT as a research assistance tool.

The general conclusion is a summary of the whole research. It recaps the key findings and discusses their implications for practice and future research. The conclusion also addresses

the limitations of the study and suggests areas for further investigation, providing a comprehensive closure to the dissertation.

# CHAPTER ONE: CHATGPT

**Introduction**

Technology has become an integral part of our daily lives, transforming the manner we communicate, work, and interact with the world around us. It drives innovation, enhances productivity, and opens up new possibilities across various fields.

**1.1. Overview of Technology**

Technology is "the application of scientific knowledge for pragmatic reasons, especially in industry" (Oxford Languages, n.d.). It is also known that technology is "the branch of knowledge that deals with the creation and use of technical means and their interrelation with life, society, and the environment" (Merriam-Webster, n.d.)

According to Grübler (1998), technology in its simplest form includes tools and containers, like axes, arrowheads, pots, and buildings. These objects either improve our abilities, such as a hammer allowing us to apply more force, or help us do things we can't do with our bare hands, like carrying water with a pot (p.20). Engineers call these items "hardware," while anthropologists call them "artifacts." But technology is more than just these objects. Making artifacts involves invention, design, and manufacturing, which require a larger system. This system includes hardware (like machinery and factories), factor inputs (such as labor, energy, raw materials, and capital), and "software" (knowledge and skills). The French term "technique" reflects the knowledge aspect of technology. So, technology covers both the products themselves and how they are made. Furthermore, knowledge is needed not only to make artifacts but also to use them. For example, you need to know how to drive a car or use a bank account. Without this knowledge, a typewriter is just a heavy, useless piece of equipment (Grübler, 1998, p.20).

In the 1920s, Nikolay Kondratiev introduced the idea of a 'long wave,' which describes long economic cycles driven by new technological solutions, leading to extended periods of

financial and tecnological growth and stability. Around the same time, European scientists like Salomon de Wolff and Jacob van Gelderen had similar ideas about these wave-like cycles dominated by specific technologies and industries, making the 'long wave' concept widely recognized for explaining technological evolution. In the early 1990s, Dmitry Lvov and Sergey Glazyev defined a 'technological paradigm' as a set of technologies relevant to a certain level of industrial development. They identified five paradigms already in place globally. They noted that each cycle starts with manufacturers adopting new solutions, with the groundwork for future paradigms often set during the peak of the previous one or even earlier (Almgren & Skobelev, 2020, p. 2).

Almgren and Skobelev (2020) stated that the evolution of technological paradigms can be traced through five distinct stages. The First Technological Paradigm emerged during the early stages of industrialization, introducing basic machinery and steam power, and laying the groundwork for industrial development. Building upon this foundation, the Second Technological Paradigm saw the advent of mass production techniques, notably in the automotive industry, leading to significant advancements in production efficiency. The Third Technological Paradigm, emerging post-World War II, witnessed the rise of electronics, telecommunications, and aerospace industries, marking the onset of the digital era with the development of computers. From 1930 to 1985, the Fourth Technological Paradigm was marked by significant advancements in power engineering, machinery manufacturing, and the creation of synthetic materials. This led to the mass production of consumer goods, weaponry, and computers. The fifth Technological Paradigm, which began in the late 20th century, is defined by computer science, microelectronics, biotechnology, and space exploration, emphasizing personalized production, flexibility, and resource efficiency (pp.2-3).

Till today, the huge development of technology has been very satisfying, the evolution of technology continued beyond the invention of the internet and smartphones and the

interconnectedness of the world. The development of technology continued to reach what is called Artificial Intelligence The rise of AI has led to huge impacts across various sectors, including business, healthcare, and security. Despite its benefits, concerns were raised about the effect of AI some like privacy, ethical considerations, and AI applications.

### 1.1.1. Definition of Artificial Intelligence (AI)

Artificial Intelligence (AI) can be described as a collection of technologies, methods, and approaches, that are statistical and symbolic, those approaches are done to imitate human thinking (Khakurel et al.,2018, p.2). Its objective is to carry out activities that are typically accomplished by the mental abilities of humans, starting from analytical tasks, then moving to intuitive tasks, and finally to empathetic tasks. AI has been a consistent focus in computing research, with many researchers trying to understand and explore its deep structure and all other sides, including its advantages, disadvantages, and effects (Khakurel et al.,2018, p.2). Professor McCarthy proposed a project in the 1950s to teach machines language, create abstractions, solve complex problems, and ultimately enhance human capabilities. In 1966, Joseph Weizenbaum, a German-American computer scientist and professor was the first to propose the Eliza chatbot, which simulated natural conversations between humans and machines this technology caused a revolution in the artificial intelligence industry and caused the rise of millions of chatbots. After over sixty years of research, substantial progress has been achieved in AI, with various AI types and associated technologies advancing rapidly. (Khakurel et al., 2018, pp.1-2).

In addition to that, different scholars define AI differently, McCarthy (1956) described AI as "The science and engineering of making intelligent machines, especially intelligent computer programs"(p.2). Later, Rich and Knight (1991) suggested that "AI is the study of how to make computers do things at which, at the moment, people are better" (p.2). Russell and Norvig (2010) then defined AI as "the study of agents that receive percepts from the

environment and perform actions"(pp.1-2). And finally, Luger and Stubblefield (2014) characterized AI as "the branch of computer science that is concerned with the automation of intelligent behavior" (p.3).

**1.1.2. Levels of Artificial Intelligence (AI)**

The levels of artificial intelligence (AI) refer to the different stages or categories of AI development based on the capabilities and functions of AI systems. These levels are used to describe the development of AI technology from very basic to advanced forms. Strelkova et al. identified three levels of artificial intelligence, illustrating the progression in complexity and capabilities of AI systems. The first level, Artificial Narrow Intelligence (ANI), comprises machines designed for specific tasks and limited to making decisions within a particular domain, such as Google search or autopilot systems in airplanes. The second level, Artificial General Intelligence (AGI), also called strong AI or human-level AI, can match and exceed human intelligence. AGI can reason, plan, solve problems, think abstractly, grasp complex ideas, learn rapidly, and learn from experience, enabling it to behave like a human, as demonstrated by self-driving cars. The third and most advanced level, Artificial Super Intelligence (ASI), refers to intelligence that exceeds the best human brains in all areas, including scientific creativity, general wisdom, and social skills. This level of intelligence, exemplified by robots with animal-like adaptability or Google's AlphaGo game, remains a theoretical future development (Khakurel et al.,2018, p.3).

**1.3. Historical Background of Artificial Intelligence**

Moor (2006) stated that the term "artificial intelligence" was stamped out in 1956 at the Dartmouth Conference, where researchers gathered to discuss and figure out how machines could simulate human intelligence for thinking, learning, and solving problems like humans. (p.1). In 1956 the Dartmouth Summer Research Project was widely regarded as the foundational

event that established AI as a unique research discipline. John McCarthy, a mathematics professor at Dartmouth, felt unsatisfied with the lack of knowledge and exploration of the computer's capacities to show intelligence. This dissatisfaction led McCarthy, Marvin Minsky, Claude Shannon, and Nathaniel Rochester, to propose an aspiring agenda for the 1956 event, emphasizing exploring the possibilities of computers in possessing intelligence (Moor,2006, p.1).

In the late 1950s and early 1960s, a new concept appeared and had significant development, symbolic AI, which focused on using logical symbols to represent knowledge and solve problems. Allen Newell and Herbert A. Simon were key figures in AI development. They created the Logic Theorist, a computer program that mimicked human problem-solving and theorem-proving abilities, forming the basis of symbolic AI. The Logic Theorist was significant because by manipulating symbols based on logical rules it was able to demonstrate basic forms of "thinking." Allen Newell and Herbert A. with their significant contribution opened a new era in AI research, setting the stage for future developments in areas such as natural language processing, expert systems, and cognitive modeling. (Augusto,2021, pp.1-2).

The development of AI continued till reaching the period between 1980s and 1990s which was known as the" AI Winter" It was divided into two periods the first one from the 1970s to 1980s and the second one from the 1980s to 1990s. Due to unmet expectations and lack of progress in the field, this period was described by the decries of interest, research, and findings about artificial intelligence. These periods were marked by reduced funding, decreased public interest, and a slowdown in AI research and development (Delipetrev et al.,2020, p.3).

Jones (1999) stated that Artificial intelligence started flourishing again in the 1990s with the rise of machine learning and neural networks; Those two technologies are based on the technique of "Information Retrieval" which is the process of collecting information from different sources. It is when the inquirer, or user, wants to find out about something or wants to

learn more about something, i.e., the user has an information need. This internal need may be expressed in natural language, through the user's information request, e.g., I want information about the manufacture of Navaho blankets (pp.2-3).

Starting with Machine learning which usually focuses on creating computer systems capable of improving their performance without being explicitly programmed. It is a combination of computer science and statistics, playing an important role in artificial intelligence and data science. The recent surge in machine learning progress can be attributed to advancements in learning algorithms and theories. The widespread adoption of data-driven machine learning approaches has an evident contribution in different sectors, including science, technology, and commerce. These methods have revolutionized decision-making processes, enabling more informed choices in areas such as healthcare, manufacturing, education, financial modeling, law enforcement, and marketing. This transformation has led to a shift towards evidence-based practices, empowering organizations to support data for greater efficiency and effectiveness in their operations (Jordan, & Mitchell,2015, P.1).

Neural Networks are defined by Chollet (2017) as a computational model inspired by the information processing of biological neural networks in the human brain (p.17). In other words, Artificial Neural Networks (ANNs) can be seen as computer systems inspired by the way the human brain works. They consist of interconnected nodes, or "neurons," that process information. These networks became popular after McCulloch and Pitts introduced simplified neuron models in 1943. Each neuron in an ANN has a small memory and processes information it receives through connections with other neurons. The neurons use rules to combine input signals and produce output signals. This process is called the activation function (Kumar & Thakur, 2012, p.2).

Kumar and Thakur (2012) explained that Artificial Neural Networks generally consist of three layers: an input layer for receiving data, a hidden layer for performing computations, and

an output layer for generating results. In ANNs, information is stored as weights between neurons, and the network passes input data through layers to produce output. If the network's output is incorrect, it adjusts the weights through a process called backpropagation, where errors are calculated and propagated backward through the network. Researchers are working on creating electronic networks that mimic the human brain's structure and function using silicon-based technology (p2).

Artificial Neural Networks are also vital in natural language processing, tasks like speech recognition and language translation, enabling machines to understand and generate human language. Moreover, ANNs are employed in financial forecasting, fraud detection, and market analysis, where they can analyze vast amounts of data to make predictions and decisions. The adaptability and efficiency of ANNs make them valuable tools for solving real-world problems (Kumar & Thakur, 2012, p.2).
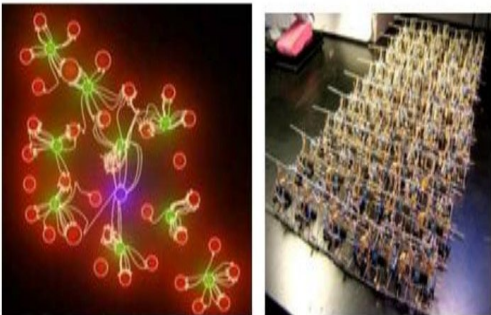


**Figure.1:** Biological vs. Artificial Neural Networks (Kumar& Thakur,2012, P.59)
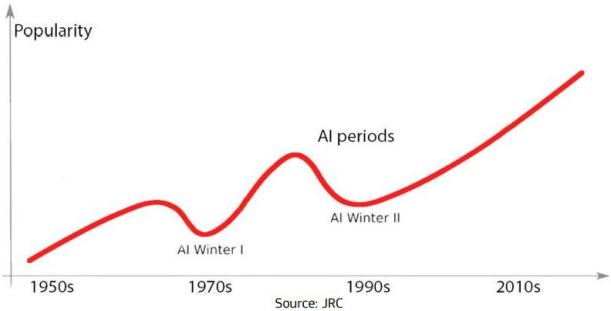
**Figure.2:** Illustrative Visualization of AI Periods (Delipetrev,2020, P.3)

Burton et al. (2017) stated that with artificial intelligence developing so rapidly different ethical concerns arose like how AI should behave in our society; for example, Robots are poised to play a more prominent role in our daily lives, assisting with tasks like cleaning, driving, and caregiving. However, as they take on these responsibilities, it raises ethical questions regarding

their broader societal obligations. These issues were explored in the Robot and Frank case study. Another ethical question was asked Should AI Systems Be Allowed to Kill? Critics of using killer robots in war argue that developing such technology could lead to a dangerous global arms race. They fear that once these robots exist, it will be hard to stop repressive governments, terrorist groups, or others from using them. On the other hand, supporters believe that killer robots could be used in just wars, and they argue that these machines could protect soldiers by keeping them out of harm's way. They also claim that killer robots might prevent wars through deterrence. Some argue that since this technology already exists in some forms, it's unrealistic to try to stop its further development. They also suggest that robots could be better than humans at following the rules of war to prevent war crimes (p.24).

## 1.4. Importance and Implementation of AI

AI in education involves utilizing AI applications or technologies in educational environments to aid in decision-making, teaching, or learning. AI can take on multiple roles within educational settings. The development of emerging computer technologies such as robotic control, sensing devices, quantum computing, and wearable devices, along with the widespread use of 5G wireless communication technologies and mobile devices, has created new opportunities and methods for integrating AI into learning and teaching design (Hwang et al., 2020, as cited in Nalbant, 2021, p.3). Moreover, AI in education has influenced both teachers and students. For example, intelligent robots can consistently answer students' questions, and pattern recognition technology can enhance online learning by interpreting students' gestures. Additionally, students from various departments can apply AI techniques to different extents (Sijing and Lan, 2018, as cited in Nalbant, 2021, p.3).

Sijing and Lan (2018) also noted that AI technology can alleviate some of the teachers' workload, but it also raises the expectations placed on teachers. For instance, in special education, teaching exceptional children often involves repetitive tasks, which intelligent robots

can help manage. However, intelligent robots have limitations; they cannot offer the guidance and real-world advice that a 'coach' or real teachers provide (Sijing & Lan, 2018, as cited in Nalbant, 2021, p.3).

The healthcare sector is another sector that witnessed a strong implementation and use of AI. AI has been used in medicine since the 1950s when doctors started using computer programs. In recent years, there has been a lot more interest and progress in using AI in medicine because computers are much more powerful now, and there is a lot more digital data available for collecting and using. AI is slowly changing how medicine is practiced (Secinaro et al. ,2021, p.1).

Islam (2021) agreed that AI has enabled significant progress in natural language processing, recognizing speech, processing images, and smart computing. These advancements are opening up new possibilities in healthcare by improving how doctors make decisions. Recent studies suggest that AI can diagnose medical conditions as well as experienced doctors. It can be used in many healthcare areas, like detecting diseases, providing health services, and finding new drugs. However, AI's effectiveness in healthcare depends on having good quality health data to train the system. But, collecting and sharing health data can be tricky and expensive, with many privacy concerns (p.319).

On the Other side Machine learning (ML) is becoming very useful in healthcare. They can help with things like analyzing medical images and monitoring health through implants. ML models are showing that they can perform as well as or even better than human experts in some healthcare tasks. (Jia,2023, p.687). In addition to that, there are many other applications of AI in the healthcare sector like, Medical Research, AI can be used to analyze and identify patterns from large complex datasets faster than compared to any other previously developed systems. Healthcare Organization AI can be used to improve the patient experience which can be in the form of an app that facilitates interaction with patients and Public Health: AI has the

potential to identify infectious diseases with their cause sources like water contamination, air pollutants, and others (Islam,2021, pp.319-320).

The last sector that has greatly benefited and advanced due to significant contributions from AI is the economic sector; He (2019) stated that some early studies, like Solow's in 1957, suggested that new technologies, including computers and the Internet, didn't have a big impact on economic growth. However, AI is seen as a major innovation that could boost economic growth. A 2016 report by Accenture suggested that AI could help the economy in three ways: by automating complex tasks, by complementing the existing workforce and assets, and by fostering innovation across all industries. Economists are now paying a lot of attention to these ideas (P.19).

For a better and deeper understanding of the significance of AI in the economy, a report from the House of Lords in the UK discusses how artificial intelligence can benefit the British economy by enhancing business efficiency and minimizing risks. The report recommends informing the public when AI is used for making significant decisions. This could be a preliminary step towards establishing regulations to govern the interaction between humans and AI, a topic initially addressed in 1955. (House of Lords, 2018, as cited in Melnychenko,2019, p.32). AI Today in economics is best used in sales and advertising to analyze a lot of data and decide when to offer a product to a specific customer. For example, online stores can use AI to update prices based on the time of day, market conditions, product shelf life, season, and customer preferences. This helps maximize sales and profits by adjusting prices to match what customers are willing to pay (Deloitte, 2018, as cited in Melnychenko,2019, p.33).

To conclude, some predictions suggest that by 2026, personal computers will be able to extend human life by more than the elapsed time per unit of time. By 2040, search engines will respond not only to voice queries but also to thoughts. By 2043, nanorobots and cybernetic devices will enable the human body to assume any form by replacing organs with significantly

higher-quality alternatives. By 2045, a technological singularity is expected, transforming the planet into a massive computer and surpassing human comprehension of technological progress. (SPACE, 2016 as cited in Melnychenko,2019, p.31).

**1.5. Exploring ChatGPT**

**1.5.1. History Development**

ChatGPT has been created through many years of effort from different generations working in AI, beginning with Expert Systems and progressing with recent advances in natural language processing (NLP) (Wang et al.,2023, n.p.). As a starting point, it is essential to first understand ChatGPT's definition before exploring its history. According to OpenAI (2022), "ChatGPT is a sibling model to InstructGPT, which is trained to follow an instruction in a prompt and provide a detailed response". In other words, ChatGPT is designed to understand instructions in a prompt and provide detailed responses. The Generative Pre-Trained Transformer (GPT) is a language model developed by OpenAI, Inc., and ChatGPT is a GPT-based chatbot trained to generate human-understanding texts from inputs (prompts) (Cheng et al.,2023, n.p.). Released by OpenAI, based in San Francisco, ChatGPT is a software application designed to emulate human-like conversations based on user requests, providing satisfying answers to a wide range of questions (Fitria, 2023, p.52).

ChatGPT took years of research in AI and language understanding. It all began with GPT in 2018. Over time, OpenAI made it better. Now, ChatGPT is based on GPT-4, which is a big step forward in understanding and talking like humans. This shows how chatbots have improved to chat more naturally. This can be illustrated through Hou's (n.d.) words, the development of ChatGPT comes from years of research and progress in artificial intelligence (AI) and natural language processing (NLP). It started with OpenAI introducing the first GPT (Generative Pre-trained Transformer) model in 2018. Since then, OpenAI has continuously

improved and expanded the model's capabilities. ChatGPT, based on the GPT-4 architecture, represents a major advancement in AI language understanding and generation (p.6).

Roumeliotis and Tselikas (2023) declared that ChatGPT was launched in November 2022, with the main goal of providing accurate answers to users' questions. It uses various deep learning and reinforcement algorithms, trained on over 150 billion human-generated items like books, articles, blog posts, conversations, and reviews. The platform gained one million users in its first week and emerged as a significant technology in AI and natural language processing (p.3). In other words, ChatGPT was launched to answer people's questions well. It used lots of different smart computer techniques and was trained on a huge amount of human-made stuff like books, articles, and conversations. It got viral fast, with over a million users in just the first week. It's seen as a cool new thing in AI and language stuff.

According to Roumeliotis and Tselikas (2023), ChatGPT was made in two big steps. The first one learning about language without any guidelines for what's right or wrong. This helped ChatGPT to understand how words and sentences fit together. Then, it learned specific tasks like finishing sentences or answering questions with the help of examples where it could see what's the right answer. By practicing and adjusting, ChatGPT became good at these tasks, and this made it able to do lots of language stuff accurately and well (p.3)

As it is stated by Gunia et al. (2023) ChatGPT, an evolution of GPT models, revolutionizes conversational AI with its human-like dialogue capabilities. Its development journey includes four key steps: starting with code completion tasks, then learning to follow instructions, advancing to produce more accurate text, and finally optimizing for chat-based interactions. With 175 billion parameters inherited from its predecessor, GPT-3, ChatGPT was trained using reinforcement learning from human feedback. It offers two API versions, emphasizing steerability and handling longer inputs. Within two months of launch, it gained 100 million users globally, with broad language and programming language support. Predicted

to generate $200 million by 2023 and $1 billion by 2024, ChatGPT's influence extends to job markets and beyond, showcasing its potential to transform digital interactions and enterprise applications (pp.20-23).

Transformer-type models have become increasingly popular in the field of natural language processing (NLP), replacing recurrent neural networks (such as LSTMs). Recurrent models had limitations in capturing long-distance relationships in text and weren't very efficient for parallel processing. Transformers, on the other hand, addressed these issues by using attention mechanisms and parallelizing calculations. Generative Pre-Training (GPT) was one of the first models based on Transformers technology, focusing on generating text in a sequential, self-referential manner. It evolved from GPT to GPT-2 and then to GPT-3, with significant increases in model size and training data. GPT-3, with its massive number of parameters and extensive pre-training, achieved remarkable performance even with minimal fine-tuning, especially in scenarios where it hadn't been explicitly trained. This evolution led to the creation of ChatGPT, a version of GPT fine-tuned specifically for generating conversational responses, enabling it to understand and produce human-like text in various contexts (Kocoń et al., 2023, n.p.).
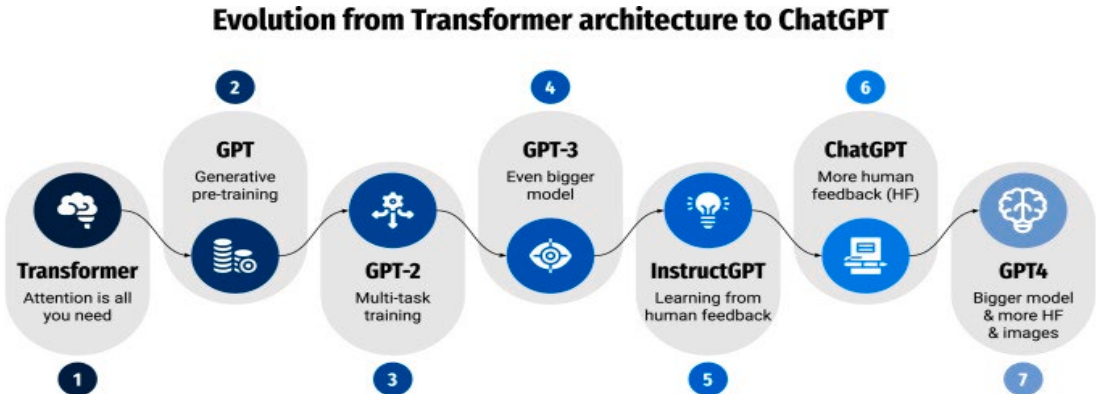


**Figure.3:** Development of autoregressive models based on Transformer architecture (Kocoń et al., 2023, n.p.).

### 1.5.2. How ChatGPT Works

Before delving into how ChatGPT operates, it's essential to clarify key concepts related to it. According to Lund and Wang (2023), these concepts include the attention mechanism, which helps neural networks focus on specific input aspects for predictions, and chatbots, computer programs simulating human conversation. Additionally, the generative model creates new data, while GPT uses learning techniques for human-like language understanding and generation. Language models like GPT and multimodal neurons interpret different data forms like text, images, and speech. NLP analyzes human language for meaning and information extraction. Neural networks, with interconnected nodes, learn tasks through data adjustments. Supervised fine-tuning enhances models with labeled data, while transfer learning improves performance across related tasks. Unsupervised pretraining teaches models data patterns without labeled examples. Together, these concepts empower ChatGPT to effectively understand, generate, and interact with human language, driving its diverse functionalities and applications (p.26).

The 5 Ws, Who, What, When, Where, and Why, in Hou (n.d.) book can be included in how ChatGPT works. Who is about the people or groups involved, so when you ask ChatGPT about specific individuals or groups, it understands better and gives better answers. What is the topic being talked about, so if you ask ChatGPT about a specific thing, it can give a better response. When is about the time frame, so if you give ChatGPT a specific time period, it can understand the context and give more accurate answers. Where is the location, if you ask ChatGPT about a certain place, it knows what you're talking about and can give more helpful information. And finally, why is about the reasons behind something, so if you ask ChatGPT about why something happened, it can give you a better explanation. By using these questions when talking to ChatGPT, you can help it give you better and more useful responses in your conversations (pp.10-11).

Fitria (2023) mentioned that ChatGPT operates using a cutting-edge learning method called Reinforcement Learning from Human Feedback (RLHF). This technique enables ChatGPT to engage in dialogue, provide detailed responses, acknowledge errors, challenge misconceptions, and decline inappropriate requests. During its initial stages, ChatGPT was trained through interactions with human AI trainers, who assumed roles as both users and assistants, allowing for comprehensive learning from diverse perspectives. Unlike previous AI systems that merely provided literal answers, ChatGPT can understand and respond within the context of ongoing conversations, mimicking human-like conversational fluency and comprehension (p.53).

### 1.5.3. Examples of the Field of Application

Ray (2023) provides a comprehensive review of some ChatGPT fields of application such as healthcare and medicine, business and finance, law and legal services, banking, and scientific research. In healthcare, it aids medical professionals in diagnosing, preparing personalized treatment plans, and summarizing research findings for patient education. In business and finance, ChatGPT helps with financial tasks like making reports automatically, analyzing how customers feel about things, and giving advice on investments to make better decisions. Within law and legal services, it makes tasks easy such as summarizing legal documents, drafting legal texts, and providing quick answers to legal inquiries. Banking, banks use ChatGPT to make chatbots for service of customer, spot fraud, and manage investments. This helps customers to make good financial choices and have better experiences. Lastly, in scientific research, ChatGPT aids in data processing, analysis, and interpretation by extracting information from scientific literature, simplifying complicated data, and making predictions for future outcomes. Through these diverse fields, there are more various sectors of ChatGPT's application and it continues to revolutionize its processes (pp.134-140).

In academia, as Bašić et al. (2023) pointed out, ChatGPT serves as a valuable assistant, offering support in various aspects of scholarly work. It aids in enhancing writing proficiency by providing feedback on style, coherence, and grammar. Additionally, ChatGPT assists in extracting key points from texts and furnishing citations. This functionality not only streamlines the writing process but also allows researchers to focus more on essential tasks such as analysis and interpretation. Research indicates that ChatGPT's capabilities extend to generating abstracts producing high-quality research papers, as well as crafting dissertations and essays. Such contributions underscore ChatGPT's potential to enhance efficiency and productivity within academia (p.2). To sum up, it is a helpful tool in academia. It improves writing skills by giving style and grammar feedback, aids in extracting key points and citations, and generates abstracts and papers, boosting efficiency in academic tasks.

The smart AI assistant, ChatGPT, can be used in various fields to assist users in different ways. In customer support, it acts as a helpful guide, answering questions and resolving issues in online chats. In marketing, ChatGPT utilizes personalized data to suggest products or services tailored to individual preferences, making shopping experiences more enjoyable. For entertainment, it serves as a fun companion, engaging users in quiz games or creating custom memes based on their interests. Moreover, in education, ChatGPT acts as a supportive tutor, offering learning materials, answering queries, and leading interactive tutorials to facilitate better understanding of subjects (Wenth, 2023, p.7).

Rathore (2023) argued that in higher education, ChatGPT serves as a valuable tool for producing accurate and tailored academic content quickly. Professors can use it to meet tight deadlines when grading papers or creating teaching materials. Similarly, students benefit by using ChatGPT for research, writing, and editing assignments. They can ask questions in natural language, receive feedback promptly, and access a wide range of content on various topics.

Overall, ChatGPT enhances efficiency for both professors and students, aiding in tasks like grading, research, and content creation in higher education (p.66).

**1.6. Impact of ChatGPT**

**1.6.1. Advantages and Benefits**

ChatGPT as an AI model has become the fastest-growing consumer application in history, gathering 100 million monthly active visitors within two months after its launch (Hu, 2023, as cited in Zhou et al.,2023, p.1). ChatGPT demonstrates remarkable generalization and creativity, making interactions feel natural and engaging. It can understand user intentions and respond to multiple messages while remembering past chats to answer hypothetical questions more accurately (Zhou et al., 2023, p.2). Zhou et al. (2023) also stated that This ability to learn from feedback enhances its capacity to assist users effectively. Additionally, ChatGPT excels in creative writing tasks, gradually improving its output over time. It can generate ideas, write stories and poems, and create speeches, showcasing its strong performance in various creative endeavors (p.2).

ChatGPT's versatility is showcased through its diverse applications, such as in healthcare, legal services, customer support, education, and content creation (Mijwil et al., 2023, p.19). It also offers language translation services, helping bridge communication gaps across different languages and facilitating global interactions (Liu et al., 2023, p.5). As a personal assistant, ChatGPT can handle tasks like scheduling appointments, setting reminders, controlling smart home devices, and sending messages, greatly simplifying daily routines (Nazir & Wang, 2023, p.4). Furthermore, its ability to process massive amounts of data through large-scale distributed computing resources enables ChatGPT to improve its language understanding and generation capabilities continually (Kataoka et al., 2023, p.537).

In addition to its technical capabilities, Nazir and Wang (2023) stated that ChatGPT provides valuable support in mental health by offering continuous, non-judgmental listening and emotional support. It can help users manage anxiety and stress by providing resources on mental health conditions and self-help techniques (p.5). Its multilingual capabilities make it accessible globally, allowing users to interact in their native languages and promoting inclusivity (Nazir & Wang, 2023, p.7). Lastly, ChatGPT's efficiency in generating rapid responses saves time and resources, enhancing productivity for businesses and individuals (Liu, 2019, as cited in Nazir & Wang, 2023, p.6).

The numerous advantages of ChatGPT make it a powerful and versatile tool. Its ability to understand and respond to user inputs naturally, combined with its continuous learning and improvement in creative tasks, enhances user interactions. The wide range of applications, from healthcare to language translation and personal assistance, demonstrates its adaptability and usefulness in various fields.

**1.6.2. Challenges and Limitations**

Zhou et al. (2023) stated that despite its impressive capabilities, ChatGPT struggles with certain types of reasoning and problem-solving tasks. For instance, it often provides incorrect answers to math and logic problems, which have clear and definite solutions (p. 4). This issue is a significant concern for the developers of ChatGPT, as reasoning in areas such as math, science, and statistics should ideally be infallible. Additionally, ChatGPT cannot search websites in real-time to acquire new knowledge or access up-to-date information. This limitation hinders the model's ability to learn new information or update its existing knowledge promptly, despite its vast repository of information (Zhou et al., 2023, p. 4). Moreover, its understanding of context is limited; it struggles to explain complex topics simply and accurately because it does not truly comprehend the concepts as humans do (Chen et al., 2023, p. 8).

Bender and Friedman (2018) stated that another major challenge for ChatGPT is the presence of biases in its training data. Because the model heavily depends on the data it is trained on, any biases in this data can result in distorted or unjust outcomes (p. 589). This bias can manifest in various forms, including difficulty understanding complex sentences and different forms of meaning. For example, ChatGPT may struggle with sentences that contain extra information or atypical word usage, making it hard to discern the correct meaning (Bender & Koller, 2020, p. 9). Furthermore, ChatGPT is unable to recognize or understand images, limiting its usefulness in situations where visual interpretation is essential (Zheng et al., as cited in Roumeliotis & Tselikas, 2023, p. 20).

Security vulnerabilities and privacy risks also pose substantial concerns. ChatGPT's capabilities can be exploited to create harmful or misleading content, such as generating false information, deceptive messaging, or extracting sensitive information through social engineering (Brown et al., 2020, p. 9). Additionally, sharing information with ChatGPT could lead to the recording of sensitive user data, and if not handled properly, this data could be accessed or misused, creating privacy gaps (Bommarito & Katz, 2022, as cited in Nazir & Wang, 2023, p. 7). Moreover, ChatGPT's inability to fully grasp social and cultural nuances, such as sarcasm or humor, may result in inappropriate responses or misunderstandings (Zheng et al., as cited in Roumeliotis & Tselikas, 2023, p. 20). Finally, the environmental impact of training large language models like ChatGPT is notable, as the process requires substantial computational power and energy, contributing to increased energy consumption and carbon emissions (Strubell et al., 2019, pp. 4-5).

**Figure.4:** Front Inform Technol Electron Eng Examples of ChatGPT's limitations, (a) logic/math problem (b) knowledge (Zhou et al., 2023, P.9).

### 1.6.3. Ethical Considerations

The world of today has witnessed widespread use of language models generally and ChatGPT specifically. ChatGPT's working program is based on collecting vast amounts of text data, which gave it the ability to demonstrate remarkable capabilities in understanding and generating human-like text. Due to that different ethical concerns were raised about the use and the consequences of ChatGPT.

Brown et al. (2020) agreed that Advanced language models like GPT-3 present significant concerns regarding misinformation and harmful content. These models can be exploited for activities such as spreading misinformation, creating spam, phishing attacks, abusing legal processes, writing fraudulent academic essays, and engaging in social engineering. The high-quality text generated by these models is often indistinguishable from human-written text, lowering barriers to harmful activities and posing a concern for society as the models improve (p.9). Moreover, issues of privacy and data security arise when these models interact with users, as they may request personal information to complete queries. It's

essential to prioritize user privacy and data security. Implementing practices like data anonymization, end-to-end encryption, and differential privacy standards can safeguard user data and mitigate the risk of breaches or misuse (ChatGPT Human Test, 2023, as cited in Nazir & Wang, 2023, p. 8). Additionally, the potential for human displacement due to the integration of language models in tasks like content generation and customer support raises ethical concerns. While AI can enhance efficiency, it could result in job displacement and significant economic impacts. Ethical considerations should aim to balance human involvement in AI, promote collaboration, and offer upskilling opportunities for affected individuals (Nazir & Wang, 2023, p. 8).

Hua (2023) agreed that Plagiarism and copyright infringement are further issues associated with language models like ChatGPT. The use of AI in academic writing has led to concerns about academic misconduct, with the temptation for students to engage in plagiarism due to the model's ability to solve problems easily (p. 16). Despite efforts by OpenAI to address this, such as adding watermarks to responses, these measures can be circumvented, and plagiarism detection systems may not always accurately identify AI-generated text. Additionally, the risk of using copyrighted material in training data without permission and the question of attributing authorship to AI-generated content have sparked discussions among scholars. The lack of transparency about the sources of training data raises concerns about potential copyright infringement if permission from copyright holders is not obtained (Hua, 2023, p. 17). Furthermore, the potential for political manipulation is alarming, as biased or malicious texts used in training can influence politics and society by amplifying certain worldviews. This risk of political manipulation underscores the need for careful consideration of the biases present in training data (Hua, 2023, p. 19).

## 1.7. Future directions and challenges

### 1.7.1. Potential future developments in AI and ChatGPT

Hou (n.d) stated that ChatGPT and similar conversational AI technologies are likely to become much more advanced in the future. chatbots will be able to handle complex conversations better, such as speaking multiple languages and understanding different types of media. These chatbots might also become more personalized, offering tailored support to individuals. Another potential development is the integration of emotional intelligence into chatbots. This means they could better understand and respond to people's feelings. For example, a mental health chatbot could offer empathetic responses to those feeling anxious or depressed (p.7). So, as ChatGPT continues to improve, we can expect more sophisticated chatbots, increased emotional intelligence, and potential changes to job markets and society. It's crucial to use these advancements in a way that benefits everyone.

In line with Haleem and Singh (2022) AI might be able to figure out which students would benefit most from certain tutors. These tutors wouldn't just help with learning but could also be good mentors, offering guidance and inspiration. When creating new AI tools, we have to think carefully, especially because people feel lots of different things about AI, like being scared, hopeful, worried, amazed, and fascinated (n.p.).

In the field of radiology, AI is becoming more important. It can make medical imaging analysis better and faster, helping radiologists diagnose diseases more accurately. AI does this by assisting in detecting and diagnosing issues in images, guiding therapies, and analyzing images automatically. Another benefit is that it can lessen the amount of work radiologists have to do, giving them more time (Lecler et al., 2023, n.p.).

**1.7.2. Integration of AI with other Technologies**

Recent progress in robotics and AI has led to the creation of advanced robots capable of human-like movements and behaviors, like Boston Dynamics' Atlas robot. Integrating AI with robotics could lead to machines that blur the line between human and machine, potentially

impacting every aspect of human life. This integration might reshape communication patterns, possibly extending legal and moral rights to robots. However, the consequences of this shift remain uncertain, and it's essential for people, even those without technical expertise, to consider the implications of AI-enhanced robots on society and their personal and professional lives (Leoste et al., 2021, p.3). To sum up, AI and robotics coming together, could change how we interact and have a good impact. It can give robots even legal rights as well. But, it's not clear yet what all the effects will be.

As Rajan and Saffiotti (2017) pointed out that it's a good time for AI and Robotics to team up and explore together. By working together, they can create new opportunities for young researchers who understand both fields. This approach can help develop robots that are more integrated with the world around them. Instead of focusing on just one area, like AI or Robotics, this approach combines both to solve real-world problems and make life better for people (p.7).

**1.7.3. Ethical Concerns about ChatGPT Future Development**

When using ChatGPT, it's essential to be aware of its limitations and ethical concerns. Firstly, its training data only goes up to September 2021, so it might not know about the latest information or events. Secondly, while it can sound like a human, it might sometimes say things that are wrong or don't make sense. Thirdly, the model might unintentionally show biases from the data it learned from, leading to unfair or offensive answers. Additionally, sharing personal information with ChatGPT could be risky because it might be saved for research reasons. Lastly, there's a risk of misuse, as people could use ChatGPT to create fake news, deepfakes, or other harmful content. Understanding these limits and ethical concerns is crucial for using ChatGPT responsibly and making informed decisions when interacting with it (Hou, n.d., p.7).

Hou (n.d) stated that in the future development of ChatGPT, it's crucial to consider ethics and society. Firstly, we must address bias, which means ensuring that the training data used is

diverse and representative to avoid perpetuating prejudices. Secondly, transparency is vital, meaning users should know how their data is used and understand any limitations of the chatbot. Lastly, accountability is key, requiring mechanisms for users to report issues and for the chatbot to handle errors responsibly. Creating ethical ChatGPT chatbots involves putting users first, which may include involving them in the development process and regularly seeking feedback. By prioritizing diversity, transparency, and accountability, we can build chatbots that are effective and beneficial for individuals and society. With the right approach, ChatGPT can provide fast support while also respecting privacy, security, and ethical use of data (p.9).

Stahl and Eke (2024) demonstrate that ChatGPT's growing popularity is closely tied to its social and ethical evaluation, influenced by its capabilities and characteristics. These include the production of high-quality text in response to human input, engaging in dialogical interactions on various topics, tailoring output to specific language styles, potential integration into other communication modalities like voice, learning from interactions to improve content quality, and being based on a large language model. These features raise ethical concerns regarding privacy, misinformation, and the potential for biased or harmful content (n.p.).

**Conclusion**

In conclusion, this chapter provides a comprehensive overview of technology and Artificial Intelligence (AI), particularly focusing on the evolution of AI technology, its historical background, implementation across various sectors, advantages, limitations, and ethical considerations. Technology, rooted in human evolution, has progressed significantly, culminating in the digital age marked by the advent of AI. Artificial Intelligence, encompassing a wide array of technologies, aims to mimic human thinking and perform tasks traditionally accomplished by humans. Its development has seen notable milestones, from symbolic AI to the resurgence fueled by machine learning and neural networks. AI's implementation has

brought about transformative changes across fields such as education, healthcare, and the economy, enhancing quality of life and driving technological progress.

The discussion delves into the workings of advanced AI chatbots like ChatGPT, highlighting key concepts such as attention mechanism, generative model, and transfer learning. ChatGPT finds applications in diverse domains, from healthcare to entertainment, showcasing its versatility and utility in various tasks. While AI offers numerous benefits, it also presents several challenges and ethical considerations. The future of ChatGPT holds promise for further advancements, including improved conversational capabilities, multilingual support, and integration with emotional intelligence.

Ethical considerations remain paramount in guiding the future development of AI technologies like ChatGPT. Addressing biases, ensuring transparency, and promoting accountability are essential steps to foster responsible and beneficial use of AI for individuals and society at large. Thus, the future of ChatGPT development necessitates a balanced approach that prioritizes both technological advancement and ethical considerations to create AI systems that are safe, effective, and socially beneficial.

# CHAPTER TWO: ACADEMIC RESEARCH

**Introduction**

Academic research is fundamental in advancing knowledge and solving problems by employing rigorous and systematic methods. This chapter delves into the multifaceted nature of academic research, beginning with a clear definition and highlighting its importance in contributing to various fields of study. The structure of the chapter is outlined to provide a comprehensive understanding of the research process, types of research, ethical considerations, and common challenges faced by researchers.

## 2.1. Definition of Academic Research

Academic research is "a process of asking questions and generating knowledge to answer these questions using rigorous accountable methods" (Newman & Gough, 2020, p.3). Moreover, Kumar (2011) emphasized key aspects that should be in academic research, including the need for it to be "controlled, rigorous, valid and verifiable, empirical, [and] critical" as much as possible (as cited in Abdulai & Owusu-Ansah, 2014, p.2). Villegas (2022) stated that "academic research is a systematic process of studying a research problem or situation, where the intention is to identify facts that help solve the problem or deal with the situation." (n.p). In other ways, it is a methodical way to study and solve problems or situations.

### 2.1.1. Importance of Academic Research in Advancing Knowledge and Solving Problems

According to Vyad (2023) Academic research is important for several reasons. Firstly, it serves as a tool for learning benefiting the whole academic community not just students. In the process of research scholars dig into various perspectives, uncovering new insights for further discussions. Additionally, academic research often sheds light on prevalent societal issues in the realms of culture, health, education, or other practices, leading to potential solutions. Moreover, in business sectors, research plays a vital role in understanding market trends, fostering product innovation, meeting societal demands, contributing to business growth and

development. Lastly, engaging in academic research fosters personal growth by gaining analytical skills, cultivating focus, organizing ideas, and a broader perspective, all of which are essential for students (para.4 - 8).

**2.1.2. Stages in Writing an Academic Paper**

Writing an academic paper usually follows the IMRAD format, which includes introduction, methodology, results, analysis, and discussion. The introduction gives a clear overview of the topic and explains the need for more research, leading to a good investigation plan. The methodology section describes how data is collected and analyzed, which is then shown in the results section. In the analysis phase, data patterns are examined to support or challenge the main hypothesis. Finally, the discussion connects the analysis with the research goals, suggests future studies, and highlights the research's practical, useful, and socially important aspects. Academic research should serve practical purposes, not just for entertainment (Mars, 2016, p. 10)

The structure for an academic paper, as outlined by Azul (n.d.), includes several key sections organized in a specific format. The structure starts with the introduction, where the full title of the paper is written in uppercase and lowercase, bold, and center-aligned, with the study's objectives included at the end of the introduction in paragraph form. Next is the literature review section, where sub-topics are written on the left side in normal letters, not bold. The methods section and then results and discussion section should have titles written in big and small letters, bold, and on the left side. Tables should be without lines between columns, with titles in big and small letters, bold, centered, and shaped like an inverted pyramid. If there's a plan or program, put it before the conclusion with a table number. The conclusions and recommendations sections are both in uppercase/lowercase, bold, and left-aligned format. The references section, arranged alphabetically regardless of source type, is presented in big and small letters, bold, and left-aligned format on a separate page. The entire paper should be single-

spaced for the final version, and follow the rules for margins and page numbers. APA style is followed for presenting entries in the text and the list of references (p.1).

**2.2. The Research Process**

The research process includes: topic selection, literature review, research design, and data collection, analysis, and interpretation of results. These steps are important for conducting a complete and organized research study.

**2.2.1. Topic Selection**

When starting a research project, the first step is selecting a topic that aligns with your interests and relates to your studies or work. This topic should be broad, encompassing a significant area within your field. Begin by exploring key articles and references in your chosen area to gain a deeper understanding. As your knowledge grows, your focus may evolve based on your research findings. It's also beneficial to consider broader societal issues, as research addressing these concerns is often deemed significant by experts and the general public. Therefore, when selecting a research topic, consider what matters both to you and to the wider world (Horan,2009, pp.21-22).

According to Luse et al. (2012), developing a research topic involves several key steps. First, it's important to be open to challenging existing beliefs and paradigms in the field. This involves thinking creatively and considering new ideas. Next, thoroughly defining the problem to be addressed is crucial. Once the problem is clear, focus on magnifying it by breaking it down into smaller, manageable parts. This can be achieved through extensive reading, experiments, or thought experiments. The next step is to search for relevant theories that can inform your research problem, which requires conducting a comprehensive literature review. Finally, synthesize existing research to create a literature review that not only summarizes knowledge

but also introduces new perspectives. Following these steps can lead to a well-defined research topic informed by theory and contributing new insights to the field (pp.144-146).

## 2.2.2. Literature Review

A literature review is a comprehensive summary and critical analysis of existing research and information about certain topic. It's goals to provide a fresh understanding of the subject and forms the basis for future research. There are different types of literature reviews, traditional or narrative, that summarize and critique existing literature, systematic reviews that carefully review all relevant studies, meta-analyses that statistically analyze findings from multiple studies, and meta-syntheses that integrate and interpret qualitative research findings. Each type serves to gather information, identify gaps in knowledge, and come up with new ideas to explore further (Cronin et al., 2008, pp.38-39). To sum up, it is a detailed summary and analysis of what has been researched about a topic and it helps us understand what is already known and points out areas that need more study.

Based on Snyder (2019), the different approaches to conducting a literature review. a systematic review involves a thorough and structured search for all relevant studies that meet specific criteria. It's highly organized and aims to provide objective and reliable conclusions, making it ideal for answering specific research questions. On the other hand, a semi-systematic review offers more flexibility while still following a structured process, making it useful for topics with diverse perspectives where a general overview is needed. An integrative review focuses on combining information from various fields or perspectives to develop new theoretical frameworks or insights. Although challenging, it's beneficial for mature or emerging topics that require a synthesis of diverse ideas. When deciding on an approach, consider your research question and the review's purpose, as each approach has its strengths and considerations (pp. 334-336).

Based on Denney and Tewksbury (2013), a literature review provides a complete overview of past research. It lays the groundwork for new researches. It uses reliable sources like academic journals and books and both ancient and recent studies. Literature review is really important for a few reasons. First, it helps the writer learn a lot about their topic by gathering as much information as possible, which makes the writing stronger because the writer knows what's been studied before. Second, it shows readers that the writer knows their stuff, which makes the writing more credible, through looking at past research and knowing what's been done before, which highlight why more research is needed. In general, A good literature review is like a map for researchers. It shows what others have studied and suggests where researchers can explore next (pp.219-220).

### 2.2.3. Research Design

Sileyew (2019) states that "The research design aims to create a suitable framework for a study. One of the most crucial choices in this process is selecting the research approach, as it dictates how the necessary information for the study is gathered. Nonetheless, the research design process includes numerous interconnected decisions" (p.28). In other words, the research design is really important because it decides how we get the right information for our study. This includes making a lot of connected decisions that build the structure of our research. Thus, Williams (2007) provides researchers use three main approaches to conduct research: quantitative, qualitative, and mixed methods. They choose an approach based on the type of data needed for their research question. Quantitative research involves numerical data and is used for questions requiring numerical analysis. Qualitative research deals with textural data and is chosen for questions needing in-depth understanding. Mixed methods research uses both numbers and words to answer questions that need both kinds of information. Each method has its own ways of collecting and analyzing data, like using surveys for numbers and interviews

for words. Researchers pick the best method to plan their study and answer their questions well (pp.65-70).

Design-Based Research (DBR) according to Easterday et al. (2014) is a method that combines design with scientific methods to help solve problems in education. It has six main steps: focus, understand, define, conceive, build, and test. First, the problem should be defined, and the project's scale determined. Following that, learners and topics are thoroughly researched, along with existing approaches, to more understanding of the issue. Establish clear objectives and criteria for success. Then, create detailed plan. The solution is then developed based on this plan. Finally, real users evaluate the solution, providing valuable feedback for further enhancements (pp. 319-321).

### 2.2.4. Data Collection, Analysis, and Interpretation of Results

Let's start with data collection, data comes from primary or secondary sources. Primary sources mean you collect the data yourself directly. Secondary sources use data that's already been collected, both types of data can be published (like in reports or books) or unpublished (like in files or registers). To get good data, you need to think about cost, practicality, using samples that represent the whole group, avoiding mistakes, and not spending much time collecting data. It's also important to know how secondary data was collected to make sure it's reliable. In research, you can do surveys to ask a group of people or experiments to test things out. The main steps in data collection are figuring out the problem, planning how to study it, designing the study, and sometimes piloting the survey to make sure everything works good (Igwenagu, 2016, pp.41-44).

Analyzing data then follows, all about delving deep into information like what we observe, how our eyes move, and what we say out loud during tasks. Looking closely at information to understand it better as well. For data observation, which is information collected

by watching and noting what happens during an activity or situation, researchers use codes to study how well tasks are done, like counting mistakes or following a sequence of steps. Having more than one person do this helps make sure the study is reliable. Then compare these codes to set standards using special computer programs. Eye movement data, which is information about where and how long someone looks at different things, like pictures or words, helps understand how they process information visually, it is like studying where people look and for how long. Researchers use software to identify fixations (when eyes stay still) and areas they focus on in pictures or texts. This helps find patterns in how people view things. Verbal protocol data, which is information obtained by recording what someone says out loud while they are doing something, like explaining their thoughts or actions during a task, like explaining their thoughts or actions during a task. It's about studying what people say during tasks. Researchers divide these into parts based on pauses or meanings, with multiple people checking to make sure it's done accurately. Software also helps with organizing and understanding this verbal data (Van Gog et al., 2008, p.788).

Finally, interpretation originally meant making sense of ancient texts that were hard to understand, like myths or religious writings. Over time, it expanded to explain the meaning of written texts in different areas like law, religion, and literature. Now, interpretation is seen as a way humans understand any kind of communication or human actions, making it a universal effort (Willig & Rogers, 2017, p.275). However, improving how we understand important discoveries means acknowledging that quantitative and qualitative methods have their limits in finding meaning in data. Depending only on one type of significance can sometimes mislead us. To tackle this, mixed methods data analysis is recommended for better interpretation in both quantitative and qualitative research. By blending qualitative data, we gain insight into various types of significant findings in quantitative research. Similarly, including quantitative data enriches our understanding in qualitative research, helping us achieve a deeper insight. This

approach, using mixed methods, allows us to get a fuller picture and make better sense of significant discoveries (Onwuegbuzie & Leech, 2004, pp.778-779).

## 2.3. Types of Academic Research

### 2.3.1. Basic Research

Academic research is a systematic investigation of a specific area of study that aims to expand knowledge, solve problems, or develop new theories. Researchers typically use different methods, like experiments, surveys, or observations, to collect the needed data and draw conclusions. In addition to that, there are different types of academic research like, basic research, applied research, quantitative research, and qualitative research. Choosing which type to use is usually determined by the nature of the research or the proposed problem. According to Calvert (2006), basic research is often used in science policy. It is commonly thought to refer to research directed solely toward acquiring new knowledge rather than any more practical objective (p.199). Calvert also notes that basic research is a flexible and ambiguous concept that scientists use to acquire prestige and resources (p.199). Additionally, Brunsson (1994) highlighted that basic research might not always represent the activities performed at the lab bench and that scientists are often subject to conflicting pressures. (as cited in Calvert,2006, p.205). The concept of basic research started with ancient Greek philosophers and was later developed by German idealist philosophers who emphasized the purity of seeking knowledge untainted by practical goals. In the late 1800s, the terms "pure" and "applied" science became widely accepted.  During the period of the Second World War the idea that government funding of science was legitimate because society depended on the products of scientific research. After the war, the funding of basic research underwent a shift. Scientists began to focus more on social and economic objectives, influenced by the belief that they should demonstrate the economic potential of their work. This change was also driven by the pressures for nations to remain competitive on a global scale.  Overall, basic research has evolved, and today it is closely

intertwined with the production of goods and technological development that benefit society. Scientists and policymakers continue to navigate these pressures for applicability, which has led to changes in how they describe and approach research activities (Calvert,2006, pp.202-203).

The basic research follows the same process as any typical academic research, which includes identifying the research problem, conducting a literature review, developing a hypothesis, designing the study, collecting data, analyzing data, interpreting results, and drawing conclusions are all steps in the research process. This entire process is exploratory in nature. It aims are advancing the understanding and expanding the existing knowledge, rather than focusing solely on creating new technologies. While the immediate commercial applications of basic research findings may not be apparent, they often lay the foundation for breakthroughs in the future, sometimes many years later. Basic research is characterized by its exploratory nature, conducted without a specific end goal in mind. It is typically not driven by the needs of any particular organization or aimed at solving immediate practical problems. Many doctoral-level research projects fall under the category of basic research, contributing to the broader scientific community's understanding of various phenomena (Habib et al., 2014, pp.5-6).

**2.3.2. Applied Research**

Applied research is defined as a systematic study aimed at gaining knowledge or understanding to address a specific, recognized need (JEC, 2010, 2016, as cited in Akcigit, 2021, p.1). In addition to that, Baimyrzaeva noted that applied research occurs in everyday contexts to address specific issues faced by individuals, organizations, and industries and he also pointed out that applied researchers typically do not aim to answer large, unresolved questions about the universe or society. Also, applied research is usually conducted by teams within organizations or external consultants with diverse skills, necessary because the problems

they address are complex. For example, a study on homelessness might involve economists, legal experts, and clinical psychologists. Researchers must manage time effectively, balancing client needs with thorough research, despite challenges like rescheduled interviews and funding delays. They must be resourceful in finding information efficiently. Applied research is typically conducted where the issue occurs, allowing access to relevant, current information. For instance, studying homelessness might involve observing how homeless individuals live and transition in a specific city. Applied researchers use experiments sparingly due to their complexity and instead rely on various data sources. They start by clarifying client expectations and often need to interpret poorly articulated problems, ensuring they understand the research goal, problem, and boundaries (Baimyrzaeva,2018, pp.6-12).

There are various types of applied research, including evaluation research, which involves analyzing data related to a specific topic. It aims to provide objective insights and facilitate more informed decision-making. This type of research is commonly utilized in business environments to identify strategies for reducing overhead costs significantly. Research and Development (R&D) represents another form of applied research. Its primary objective is to innovate and develop new products, services, or goods that align with specific market demands. it identifies market needs and concentrates on enhancing existing products to better fulfill organizational requirements. Action research, on the other hand, seeks to understand natural and everyday occurrences. It aims to provide practical solutions to business challenges by guiding organizations in the right direction (Liza, 2022, para 2).

Applied research also seeks to provide solutions to practical issues and address the needs of specific clients. For instance, a city council might request a study to determine the most effective ways to reduce homelessness in response to growing citizen complaints and media attention. The goal of this study would be to find sustainable and cost-effective solutions to decrease homelessness (Baimyrzaeva,2018, p.10).

Applied research and basic research go hand in hand even though the distinction between them is not always clear, as both can lead to unexpected outcomes and contribute to each other. While applied research is typically aimed at solving specific problems and may use methods like case studies or controlled experiments, it can still yield new knowledge with broader implications. Conversely, basic research, which often employs theoretical or observational methods, may eventually lead to practical applications. Despite their differences in focus and methods, both types of research are essential for advancing the understanding and finding solutions to real-world challenges; examples of applied research include the development of COVID-19 vaccines or the creation of energy-efficient technologies. This type of research often uses methods and knowledge generated by basic research to achieve its goals (Andy,2023, para.4).

### 2.3.3. Quantitative Research

Edmonds, and Kennedy (2010) argued that "quantitative research is a type of educational research in which the researcher decides what to study; asks specific, narrow questions; collects quantifiable data from participants; analyzes these data using statistics, and conducts the inquiry in an unbiased, objective manner" (p.12). This shows that quantitative research is best done in the technological and educational domain since it deals with a large amount of data. Another view indicates that quantitative research involves investigating a specific problem by testing a theory, using numerical measurements, and analyzing the data with statistical techniques (Habib et al., 2014, p.8). In addition to that Watson (2015) agreed that Quantitative research involves systematically investigating social phenomena using statistical or numerical data, assuming that these phenomena can be measured. It focuses on gathering and analyzing data to identify trends and relationships, using measurements that can vary from easily quantifiable factors like height and weight to more complex concepts like thoughts and feelings. This approach is deductive, starting with measurements, applying

analysis, and drawing conclusions. Quantitative research does not claim superiority over qualitative research; in fact, it can formally test theories through hypotheses and statistical analyses (pp.1-2).

The process followed by quantitative research is similar to other academic research, with five main steps. First, it involves identifying the fundamental questions that the study aims to address. Second, researchers identify the participants for the study, including both the population and the sample. Third, they choose the method required to address the questions, which includes defining variables, determining measures of the variables, and deciding on the overall research design. Fourth, researchers select the analysis tools needed to analyze the data collected. Finally, they focus on understanding and interpreting the results obtained from the analysis (Holton & Burnett, 2005, p.32). Additionally, there are two main categories of research design in quantitative research: Experimental design, where the researcher manipulates one variable (the independent variable) and examines its effect on another variable (the dependent variable). For instance, to study the impact of an analgesic dose on pain levels, you could alter the dose of the analgesic (independent variable) and measure its effect on pain levels (dependent variable) (Watson, 2015, p.7).

Quantitative research is best used for its several advantages, like the ability to replicate studies due to standardized data collection methods and clear definitions of abstract concepts. It allows for direct comparisons of results across different cultural settings, times, or participant groups, enabling statistical comparisons. Additionally, the use of large sample sizes facilitates reliable data processing and analysis through established quantitative methods. This approach also promotes thorough hypothesis testing, necessitating that researchers must carefully define variables, predictions, data collection methods, and testing procedures prior to concluding (Bhandari, 2020, para.3).

### 2.3.4. Qualitative Research

Based on Hesse-Biber and Leavy (2010), Qualitative research involves many different views and ways to learn. Researchers in social and behavioral sciences use these methods to understand things better (p.4). Moreover, Dainty (2024) defines qualitative research as "the study of the nature of phenomena", including "their quality, different manifestations, the context in which they appear or the perspectives from which they can be perceived" (P.1).

Qualitative research comes from different fields like anthropology, sociology, and psychology. It focuses on understanding people's thoughts and feelings, describing their social environment, and valuing what they know. Instead of testing specific ideas, researchers ask broad questions to explore how people communicate, what they think about situations, and how things are connected. As they gather information, these questions can change to focus more on what they're learning. This approach is adaptable and adjusts to researchers' findings, allowing for simultaneous changes in the questions and the study itself. Sampling, data collection, analysis, and interpretation occur concurrently (Fossey et al.,2002, p.723).

Qualitative research uses different methods like focus groups, interviews, and observations to learn about people's experiences. Each method has its strengths and weaknesses. For example, interviews are good for learning about individual experiences, while focus groups are better for understanding shared experiences. After collecting data, researchers use thematic analysis to find patterns and meanings. Thematic analysis is more than just counting words; it looks at the deeper meanings in the data. Researchers use coding to organize the data into themes, which are the main ideas or subjects. These themes are developed by grouping similar data ideas. Qualitative data analysis can be complex, and there are many different approaches. New methods are being developed, like analyzing conversations or using art, to better understand people's experiences (Dainty, 2024, P.2).

Qualitative research aims to explore and understand the deeper dimensions of human experiences and social environments. It focuses on uncovering the subjective meanings that

people attribute to their lives and actions, as well as the social contexts in which these meanings are embedded. A key aspect of effective qualitative research is the illumination of participants' perspectives, interpretations, and contexts that shape their understanding of the world around them. This approach aims to capture the richness of human experiences, emphasizing the need and importance of viewing phenomena from the participant's point of view (Fossey et al.,2002, p.717).

Quantitative and Qualitative research go along with each other many times (Mixed method) even though they are contradictory; Quantitative research uses deductive reasoning and statistical analysis to describe, explain, and predict phenomena. It focuses on quantifying relationships between variables and typically involves larger sample sizes. Qualitative research, on the other hand, uses inductive reasoning to gain a deep understanding of human behavior. It aims to interpret phenomena rather than generalize findings and involves smaller samples and non-probability sampling. Researchers usually use both quantitative and qualitative methods together in a mixed-method approach to address research problems comprehensively. Researchers choose between quantitative, qualitative, or mixed methods based on their research problem and objectives (Khalid et al.,2012, p.16).

## 2.4. Ethical Consideration

### 2.4.1. Participant Protection and Informed Consent

Participant protection is a crucial aspect of ethical research practices, and researchers must pay attention to it because it could cause misconduct.

Participant protection means that before launching a research project, the researcher or research team must assess the potential for causing harm to any individuals involved. If any potential negative consequences are identified, the team will diligently work to determine the most effective strategies to minimize these effects (Dooly et al.,2017, p.352).

One key concept in participant protection that researchers must be aware of is informed consent; Fouka and Mantzorou (2011) agreed that informed consent is a significant ethical concern in research. According to Armiger, it involves a person giving their consent knowingly, voluntarily, intelligently, and clearly (P.4).

The process of informed consent consists of three main steps; During the first step of the informed consent process, The research team must offer transparent and truthful details about the study as well as the rights of the participants. They should explain who is funding the research, what benefits participants might receive, and who will take care of them if there are any problems. Participants should also have the chance to ask questions and get more information.  In the second step; participants must understand what they are agreeing to. This can only happen if the information is presented in a simple way that covers all the important parts of the study. This conversation must happen when the participant is calm and not rushed. How well someone understands the research can depend on how much time is spent explaining it, how much they get to talk to the research team, and their reading and writing skills. Just because someone can't read or write doesn't mean they can't understand complex information, but it might mean the information needs to be explained differently. The third step is for the potential participants to freely decide if they want to take part in the research or not. This means they not only need to understand the project but also be able to make their own decision (Bhutta, 2004, p.722).

 A written informed consent form for research should mention that it is for research, explain what the study is about and how long it will last. It should also describe the procedures, any risks involved, and how these risks will be reduced. Benefits from the study should be mentioned, and any alternative options should be explained. It should also clarify how information will be kept private and who can access it. If there's payment involved, that should be mentioned too. The form should provide contact details for questions and explain that

participation is voluntary and won't result in any penalties. In addition to that, in research, getting consent can be hard because of a few things. Sometimes, people don't understand the forms because of language problems or wrong translations. They might also expect things that won't happen in the study. Religious beliefs can also affect if someone joins a study or not. With children, you need permission from their parents, and if they're older than 7, they need to agree too, which can be tricky if they don't want to (Nijhawan et al.,2013, pp.136-.138).

### 2.4.2. Confidentiality and Data Management

Confidentiality refers to agreements regarding handling individuals' data and respecting the privacy of sensitive information that may be shared (Elsner,2001, p.40). In simple terms, confidentiality in research means keeping participants' identities private. In interview studies, this is especially important because the detailed information given by participants could accidentally reveal who they are. This is called deductive disclosure according to the words of Heggen and Guillemin (2012), where someone reading the research could determine who was interviewed based on details like where they work or their characteristics. For example, if a study mentions a school district, someone familiar with that district could guess the identities of the teachers mentioned in the study (p.457).

Confidentiality is crucial in research and it is addressed in various stages of the research process. Firstly, researchers assure confidentiality to participants by using consent forms that promise to change identifying information, like names and addresses, to pseudonyms. This is done at the beginning of data collection to build trust with participants. However, these assurances are made without knowing the specific information participants will share, and discussions about confidentiality are often not continued throughout the study (Kaiser,2009, p.4). Secondly, researchers ensure confidentiality during data cleaning by removing identifiers from the data set. This includes replacing names with pseudonyms and deleting addresses. However, unique combinations of traits can still identify individuals, especially in rare cases

like certain medical conditions. Qualitative data, such as interview transcripts, are more challenging to anonymize completely, as they often contain specific details about people and places that are difficult to change without altering the original meaning (Kaiser,2009, p.5).

A common confidentiality issue is that it conflicts with the validation tool of 'Member check,' which involves validating research findings with the participants themselves. For example, in one study, the researcher withheld the outcome of the research study from the informants, believing it was for their benefit. However, this decision prevented them from reading what was written about them and having a chance to respond, effectively silencing them. So as a result of that, Confidentiality should be practically understood as severing the disconnection between a participant's true identity and how their identity is referenced in the research report. such as by using a pseudonym or preserving anonymity. Therefore, confidentiality in research is primarily about preserving anonymity in the research report (Yu,2008, pp.163-164).

Data management on the other hand is a conscious process of collecting, analyzing, using, and saving data (Owan & Bassey, 2018, p.36). It is a complex process with several stages. First, data collection involves using the right tools to gather accurate information. Researchers must have the skills for this, and participants should provide honest answers. Data processing comes next, where collected data is cleaned and corrected for errors. This makes the data usable and reliable. Then, data analysis breaks down the data to understand it better, which helps in making informed decisions. This analysis can be quantitative (using numbers) or qualitative (summarizing observations). After that, data integration merges different datasets to create a bigger picture. This can be time-consuming but is important for thorough research. Data storage is crucial for keeping records for future reference and sharing with others. Lastly, data security ensures that private information is protected from unauthorized access or damage, which is vital for maintaining the integrity of research data (Owan & Bassey,2019, pp.1254 - 1259).

Otherwise, Directorate General for Research & Innovation (2016) stated that "Research data includes every piece of data acquired and generated during the research process, and may comprise, among others, text, spreadsheets, questionnaires, photographs, films, test responses, slides, laboratory notes, statistics, observations, results of experiments, measurements, samples, algorithms, scripts, and workflows. It can be defined as any information, in particular facts or numbers, collected to be examined and considered as a basis for reasoning, discussion, or calculation" (as cited in Elsayed & Saleh,2018, p.281).

Recently, people have become more aware of the importance of managing and reusing research data. Before, the focus was mainly on making scientific publications freely accessible, but now there's a shift towards making both publications and research data open to everyone (Elsayed & Saleh,2018, p.282).

### 2.4.3. Integrity in Reporting Results

The term "integrity" is derived from the Latin word "integrita," which conveys the concept of wholeness or completeness. In the context of behavior, integrity refers to an individual with strong moral values, including honesty, sincerity, and uprightness. (Steneck,2006, p.55). As per Khanyile et al. (2006), research integrity is simply, justice and honesty in proposing, conducting, and reporting research or doing it right and telling the truth about what you did. In other words, it means that one conducts one's research as carefully as one can and presents the results as honestly as one can. Integrity in research embraces the aspirational standard of scientific conduct rather than simply the avoidance of questionable practices (p.41).

In professional behavior, professional integrity is the adherence to elevated moral principles or professional standards. In the context of research, research integrity involves possessing and consistently adhering to high moral principles and professional standards as

outlined by professional organizations, research institutions, and, where relevant, government and public expectations (Steneck,2006, p.55). Holton and Burnett (2005) believe that, some people think integrity means doing the right thing according to virtues like wisdom, justice, courage, and moderation. Others see integrity as being about what's morally right or wrong. Some see it as a mix of values that are important to the person being judged. Another perspective sees integrity as essentially the same as acting morally or ethically (p.20).

Integrity is crucial in research, especially when reporting results. This means being transparent, clear, and avoiding any misconduct. Fabrication and falsification are dishonest practices where results or data are made up or altered to mislead. Plagiarism is another form of misconduct where previous work is not properly credited. These actions deceive readers and waste researchers' time. Perpetrators of these practices are identifiable, but victims, including those who believe false results or have their work plagiarized, can be harder to identify. It's important to avoid these practices to maintain research integrity and trust in scientific inquiry (Chaddah,2021, p.19).

### 2.4.4. Avoiding Conflicts of Interest and Bias

Avoiding conflicts of interest and bias involves ensuring that individuals or organizations act fairly and make decisions that are free from undue influence or prejudice. Firstly, conflict of interest is described by Cohen (2001) as a situation in which an individual or institution has a main allegiance that necessitates specific actions, while also having a secondary interest that (1) could undermine that primary allegiance, and (2) is tempting enough to create a reasonable possibility that it might undermine it (p. 210).

Research and industry working together more closely has led to increased conflicts of interest, highlighted by cases like the Wakefield scandal. Reports show that a lot of money, around $1.5 billion yearly, moves from industry to universities, possibly even more now. About

a quarter of biomedical researchers have ties to industry, and studies funded by companies tend to favor the sponsor's interests. This poses a big problem for research credibility because external funding can influence research outcomes significantly. Thus, a qualitative study was done to understand how academics handle ethical decisions and conflicts of interest. They interviewed 64 faculty members from a big university in the southwestern United States, including men and women from various professor roles and academic fields like sciences and humanities. The findings showed different ways researchers deal with conflicts of interest. Firstly, many think disclosing conflicts is best. Some believe in self-removal, meaning they step away from situations where they might be influenced. Others think conflicts are normal and can be beneficial, so they accommodate them. Some participants denied having conflicts at all, while others recognized the complexity of these issues without offering specific solutions (Mecca et al., 2015, pp.2 - 8).

Secondly, bias is described by Boutron (2019) as a systematic error or deviation from the truth in results or inferences. Biases can occur in either direction, leading to underestimation or overestimation of the true intervention effect. They can vary in magnitude, with some being minor compared to the observed effect, and others being significant enough that an apparent finding may be entirely attributable to bias (p.188)

Qualitative research, such as ethnography, is not immune to bias. In fact, it is often considered more susceptible because the researcher is deeply involved in the data collection process and can influence the interpretation of events. For instance, in ethnography, there is a danger of "going native," where the researcher assimilates the biases of the participants, viewing events only from their standpoint (Hammersley & Gomm,1997, p.2)

Reducing bias can also involve techniques like respondent validation, constant comparisons across participant accounts, representing deviant cases, prolonged involvement or

observation of participants, independent analysis by other researchers, and triangulation (Smith & Noble,2014, pp.4-5).

**2.5. Challenges and Solution**

**2.5.1. Project Organization and Management**

The organization of research is the initial step for researchers to ensure efficiency, productivity, and the ability to produce high-quality work.

Setting clear goals is important for academic writing. Without clear goals, the writing paper can feel unfocused and unproductive. To set good goals, the researcher must start by listing the project goals, such as revising a paper or writing a new manuscript. Then, break these goals down into smaller, concrete goals for each writing session. Displaying the goals prominently can help the researcher stay focused and motivated. By setting and sticking to goals, he can become a more efficient and productive writer (Silvia,2007, pp.30-31).

At the outset of Creswell (2014) research, researchers must determine the type of research design they will employ, as research designs serve as the blueprint or plan for the study. They include everything from big ideas to the specific ways data is collected and analyzed. These plans involve many decisions, and they don't have to be made in a particular order. One important decision is which design to use for a study. This decision should consider the researcher's beliefs, the way they plan to investigate (called strategies), and how they will collect, analyze, and interpret data. The selection of a research design is also influenced by the research problem, the researcher's expertise, and the intended audience for the study (P.22).

When it comes to drafting the research, there's no one-size-fits-all approach. Some writers, like Booth, start early and then refine their ideas over time. Some like outlining and creating several outlines before diving into a serious draft. Others prefer to work things out in their heads and start drafting only when they have a clear idea of the whole picture prepared for

drafting, it's helpful to write summaries, analyses, and critiques from the beginning This process aids in understanding the audience, their interest in the topic, and the specific message the researcher intends to communicate. The researcher should also be capable of delineating the issue being addressed, the proposed solution, supporting evidence, and how potential questions or objections from the audience will be addressed (Booth et al.,2008, pp.185-185).

As Silvia (2007) mentions, many researchers face the problem of not having enough time to write, but this belief is like a myth. They think they need big chunks of time to write, but this idea is false and only makes them frustrated. They imagine searching through their schedules for the perfect time to write, but this search is pointless. Instead of searching for time, they should make time to write by creating a schedule and sticking to it. It's important to find a regular time each week that works best for the researcher himself even if it's just a few hours. This regularity is more important than the number of days or hours he spends writing. Once he starts writing regularly and knows how to manage his time, he will see a big increase in your output (pp.12-13).

**2.5.2. Dealing with Unexpected Obstacles**

Weick and Sutcliffe (2001) emphasized that High Reliability Organizations (HROs) give few instructions in dealing with unexpected obstacles in research processes. Firstly, they closely monitor minor failures recognizing them as potential signs of larger system issues. Secondly, they avoid oversimplifying complex situations ensuring that essential information is not overlooked. Thirdly, HROs stay focused on operational realities valuing qualitative knowledge alongside quantitative data. Fourthly, they cultivate resilience by preparing for and learning from crises emphasizing adaptability and quick communication. Lastly, HROs prioritize expertise over than who's in charge, allowing those with relevant knowledge to lead in critical situations promoting a culture of trust and learning (n.p).

### 2.5.3. Overcoming Writer's Block and Research Fatigue

Writing blocks are when people struggle to write because they face challenges. Skinner explained that blocks can happen because writing isn't often rewarded and can even be punished. This makes writers feel blocked, especially when they write under stressful situations. The IRSS model (the Involvement-Regimen-Self-Management-Scrutiny model which is a model that focuses on understanding and addressing writing blocks, especially in academic settings) defines blocks for professors in four ways. First, not getting involved in writing to discover new ideas. Second, Not practicing writing regularly and in a balanced way. Next, struggling to manage negative thoughts and feelings about scholarly writing. Last, keeping writing private until it's finished, which can lead to surprises when faced with criticism (Boice, 1993, p.44).

Writer's block, as discussed by Selvia (1976) is often perceived as a dispositional fallacy, where the inability to write is attributed to a blockage that doesn't truly exist. It's defined as the behavior of not writing, and the cure for it, if it can be cured, is simply to write. Academic writers are encouraged to follow a writing schedule, set goals, and prioritize tasks to overcome any perceived writer's block. The key takeaway is that writer's block primarily affects those who believe in it, and writers who commit to writing consistently tend to avoid such issues (pp. 45-47).

### Conclusion

Academic research is a systematic process of inquiry aimed at discovering and interpreting facts, revising accepted theories, or practically applying new theories or laws, benefiting communities, fostering innovation, and enhancing personal growth. It encompasses basic research driven by curiosity and applied research solving specific problems, with quantitative research testing theories using statistical analysis and qualitative research delving

into human experiences. Ethical considerations, such as participant protection, integrity, and avoiding bias, are paramount, along with efficient project organization. Strategies from High Reliability Organizations help overcome obstacles like writer's block, emphasizing resilience and expertise, contributing to the advancement of knowledge and addressing practical challenges across various fields.

Academic research plays an essential role in advancing knowledge, fostering critical thinking, and driving societal progress. It serves as the foundation for innovation and it solving complex problems through systematic investigation, researchers contribute new insights, theories, and methodologies to their respective fields. Academic research serves to validate existing knowledge, ensuring its accuracy and relevance. Moreover, it offers a gathering for sharing ideas and working together, improving cross-disciplinary methods to tackle complex problems. Ultimately, academic research is instrumental in shaping our understanding of the world, improving human well-being, and tracing the way for future discoveries.

To inspire further engagement in academic research, it is crucial to emphasize the impact and significance of research contributions. Encouraging individuals to explore new areas of inquiry and to seek innovative solutions. Getting the chance to learn from and work with experienced researchers can help you feel like you belong in the research community and give you a clear sense of purpose. Additionally, promoting the sharing of research result through conferences, publications, and public engagement can show the value of research and inspire others to get involved. By fostering a supportive research environment, a new generation of researchers can be cultivated, who are eager to make meaningful contributions to their fields and society.

# CHAPTER THREE: FIELD INVESTIGATION

**Introduction**

The third chapter is devoted to the analysis and interpretation of both students' and teachers' questionnaires administered to teachers and students at the University of 08 Mai 1945-Guelma. Hence, this chapter starts by briefly describing the population by which the research was conducted and the main tools. Then, the analysis and the interpretation of students' and teachers' questionnaires are provided. Finally, it discusses the results, proposes, and some pedagogical implications for further research along with the limitations of the current study.

**3.1 Students' Questionnaire**

**3.1.1 Sample**

The questionnaire targets 50 Master One students at the Department of English 08 Mai 1945-Guelma University.

**3.1.2 Description of Students' Questionnaire**

The current questionnaire consists of twenty-three (23) questions, which vary between open/closed-ended and multiple-choice questions, which are answered by ticking the corresponding boxes, justifying or explaining where it is necessary. Thus, this questionnaire is divided into four sections as follows:

**Section One: General Information (Q1-Q3)**

The first section deals with personal information about EFL students because such information could help to analyze the findings. This section consists of three questions: students' age (Q1), gender (Q2), and how long they have been studying English (Q3).

**Section Two: ChatGPT (Q4-Q14)**

This section deals with the first variable of the current study "ChatGPT". Moreover, this section covers the students' knowledge about ChatGPT (Q4 and Q5), whether they have used ChatGPT before or not (Q6), and to which extent they find it useful (Q7), the following question aimed to know if students use ChatGPT in conducting their academic research (Q8) and if yes, they are supposed to justify (Q9) this is to know more about the use of ChatGPT among master one students more specifically in conducting research. Furthermore, (Q10) asks students what specific aspects of ChatGPT they find most helpful in their research process with different mentioning different options, later on, students are asked how they find using ChatGPT (Q11) and do they agree if ChatGPT would improve their research quality (Q12) with an explanation for their answers whether they agree or disagree (Q13). The last question of this section is concerned with the ethical considerations related to using AI-based tools like ChatGPT in research (Q14).

**Section Three: Academic Research (Q15- Q19)**

This section deals with the second variable "Academic Research", which aims to explore Master One students' experience and relation with academic research during their academic journey. Hence, it contains five questions. The first question in this section seeks to know if Master One students have conducted academic research before (Q15) and if yes, how they would rate their work (Q16). After that, students are asked to mention what are the challenges they usually encounter during the research process (Q17), then the following question aims to investigate the most usable research engine in finding sources and if ChatGPT is one of them (Q18). Finally, the last question in this section is about the importance of ethics in academic research (Q19).

**Section Four: The influence of ChatGPT on academic research (Q20-Q23)**

The final section, which is a combination of the two variables (ChatGPT and Academic Research), is the core component of the questionnaire because it aims to explore the influence of ChatGPT on Academic research Thus, it seeks to know how ChatGPT as a research tool could help the development of academic research from different sides. The first question of this section aims to know if ChatGPT is the most useable research assistance tool (Q20), then students are asked about how important they think ChatGPT's role will be in shaping the future of academic research (Q21) and they are supposed to justify their answer whatever it is (Q22). The last question of this section and the questionnaire generally is given to students freely to add any additional feedback or comments about their experience using ChatGPT as a research assistance tool (Q23).

**3.1.3. Data Analysis and Interpretation**

**3.1.3.1. Analysis of Results and Findings from Students' Questionnaire**

**Section One: Personal Information**

Q1. Age: ……. year

**Table 3.1**

*Students' Age*

| Age categories | Number of students | Percentage |
|---|---|---|
| 20 – 22 | 24 | 48 % |
| 22 - 24 | 23 | 46 % |
| 24 - more | 3 | 6 % |
| Total | 50 | 100 % |

Table 3.1 shows the categorization of age into three distinct groups, facilitating organized responses. The majority (48%) of master one students are between the ages of 20 and 22 and others (46%) stated that they are around 22-24 years. While a few of them (6%) are 24 years old or more. This brings several advantages to the research like enrichment of the data through the presentation of diverse perspectives and experiences, enhancement of the research discussion by highlighting the varied perspectives, deeper insights across the different age groups, and improvement of the generalizability of the findings.

Q2. Specify your gender

a- Male

b- Female

**Table 3.2**

 *Students' Gender*

| Options | Number of students | Percentage |
| --- | --- | --- |
| a | 7 | 14 % |
| b | 43 | 86 % |
| Total | 50 | 100 % |
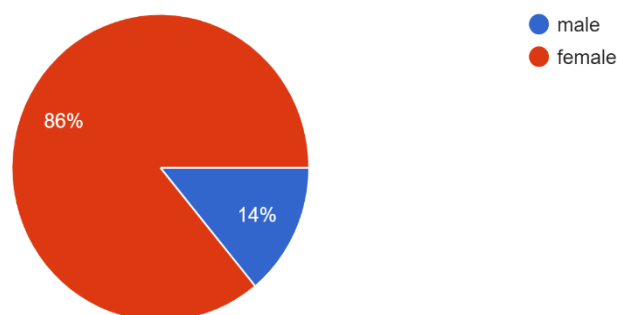


**Graph 3.1**: *Students' Gender*

The results in Table 3.2 demonstrate that the male participants are (14 %) of the whole population while females are (86%). This could be because of the influence of broader societal

trends, where certain fields like technical and scientific domains traditionally attract more male interest, while fields such as English studies may attract females more. However, individual motivations and preferences can vary significantly.

Q3. How long have you been studying English?

**Table 3.3**

*Years Studying English*

| Years | Number of students | Percentage |
|---|---|---|
| 4 – 8 | 2 | 4 % |
| 8 - 12 | 38 | 76 % |
| 12 - more | 10 | 20 % |
| Total | 50 | 100% |

As displayed in Table 3.3, the years of studying English are divided into three categories to clarify the answers. A large number (76%) of master one students reported studying English for 8 to 12 years, while (20%) have been studying for 12 years or more, and (6%) have studied for 4 to 8 years. The different lengths of time students have studied English show that they have various levels of experience. This can affect how teachers teach, how the curriculum is designed how the lessons are planned, and the learning environment. It helps to see if things are changing over time which may lead to improvements in teaching languages.

**Section Two:** ChatGPT

Q4. Are you familiar with ChatGPT?

a- Yes

b- No

**Table 3.4**

*Students' Familiarity with ChatGPT*

| Option | Number of students | Percentage |
|--------|---------------------|------------|
| a | 48 | 96 % |
| b | 2 | 4 % |
| Total | 50 | 100 % |
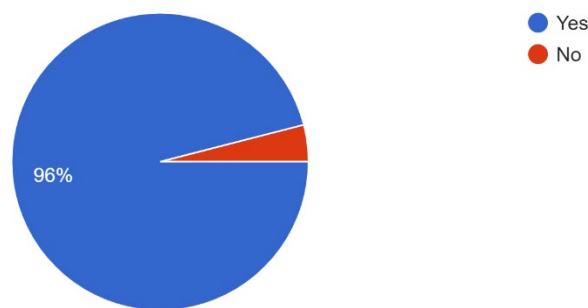


**Graph 3.2:** *Students' Familiarity with ChatGPT*

Table 3.4 displays that the highest number (96%) of students are familiar with ChatGPT. Whereas only a small percentage (4%) are not. This indicates a high level of awareness of ChatGPT among Master one students in the English department at Guelma's University. Perhaps because of its popularity stems from its ability to meet their needs for studying, such as improving writing and quickly finding information. This makes it a favored tool among them.

Q5. If yes, how can you define it?

-The main points that the students went through, based on their definitions, are as follows:

a- Artificial Intelligence tool

b- AI assistance in education

c- AI-based question-answering tool

**Table 3.5**

*Students' Definitions of ChatGPT*

| Option | Number of students | Percentage |
|--------|--------------------|-----------| 
| a | 17 | 38% |
| b | 16 | 34% |
| c | 19 | 32% |

Table 3.5 reveals that (38%) of participants defined ChatGPT as an Artificial Intelligence tool. Additionally, (34%) described it as an AI assistance in education, and (32%) believe it is an AI-based question-answering tool. This means people understand ChatGPT in different ways and use it for various purposes. Some might rely on it for general AI tasks, while others might focus on its educational benefits or its ability to provide quick answers to questions. This variety in understanding highlights the flexibility and broad range of applications ChatGPT offers to its users.

Q6. Have you ever used ChatGPT?

a- Yes

b- No

**Table 3.6**

*Students' Use of ChatGPT*

| Option | Number of students | Percentage |
|--------|--------------------|------------| 
| a | 49 | 98 % |
| b | 1 | 2 % |
| Total | 50 | 100 % |
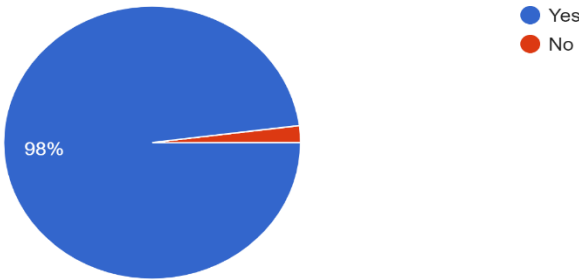


**Graph 3.3:** *Students' Use of ChatGPT*

In Table 3.6, the data clearly shows that nearly all students, specifically (98%), have utilized ChatGPT. The remaining (2%) represents only one student who hasn't utilized the tool. This statistical breakdown underscores the widespread trend of using ChatGPT, and a high level of adoption of it among Master's students, reflecting its popularity and acceptance within this academic community.

Q7. To what extent do you find ChatGPT useful?

a- Very useful

b- Useful

c- Not useful

**Table 3.7**

*Usefulness of ChatGPT*

| Option | Number of students | Percentage |
|--------|-------------------|------------|
| a | 20 | 40 % |
| b | 29 | 58 % |
| c | 1 | 2 % |
| Total | 50 | 100% |
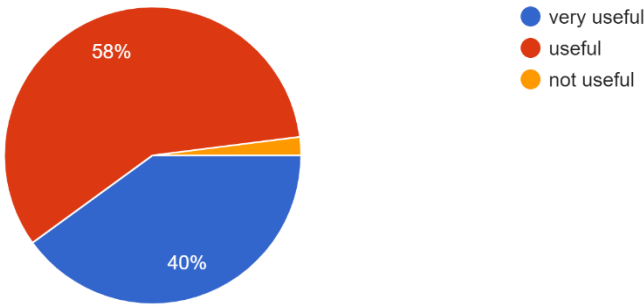


**Graph 3.4:** *Usefulness of ChatGPT*

Based on the results in Table 3.7, we can see that a notable (58%) of them find it useful, while an additional (40%) of them opted for a very useful option. Whereas, only (2%) of the participants chose the not useful option. This overwhelming response reinforces the notion that ChatGPT is indeed a useful and effective tool for Master's students, aligning with the trend observed in Table 3.6 regarding its widespread usage.

Q8. While conducting academic research; (eg: presentations) do you use ChatGPT?

a- Yes

b- No

**Table 3.8**

*Students' Use of ChatGPT in Academic Research*

| Option | Number of students | Percentage |
|--------|-------------------|------------|
| a | 43 | 86 % |
| b | 7 | 14 % |
| Total | 50 | 100 % |
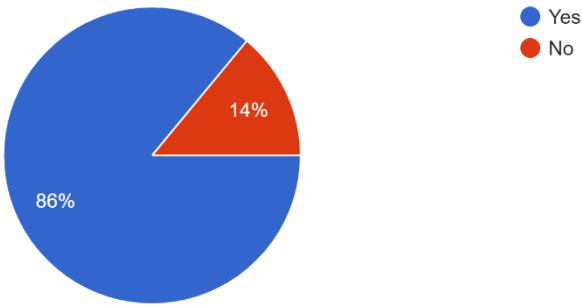


**Graph 3.5:** *Students' Use of ChatGPT in Academic Research*

Table 3.8 displays that the majority (86%) of the students use ChatGPT in doing academic research, while only (14%) of students reported not using ChatGPT for such tasks. The high percentage of students using ChatGPT reflects its effectiveness and relevance in assisting students with their research endeavors. It's usability when it comes to academic research as well. On the other hand, the minority of students who do not use ChatGPT might have concerns about its reliability, prefer traditional methods, or lack awareness of its potential benefits. This contrast highlights the diverse attitudes toward integrating AI tools like ChatGPT into academic research.

Q9. Justify

- The main points that the students go through, based on their justifications, are as follows:

a. ChatGPT helps organize research by creating clear outlines. It makes defining objectives and forming hypotheses easier, so starting research feels less overwhelming.

b. ChatGPT saves time on research tasks. It quickly generates summaries and finds relevant information, letting researchers focus on analysis.

c. ChatGPT provides quick and concise information. It processes large amounts of data and gives the essential points, speeding up the research process.

d. ChatGPT makes it easier to find information. It answers specific questions, offers insights on various topics, and suggests further reading, helping researchers learn more.

**Table 3.9**

*Justification*

| Option | Number of students | Percentage |
|--------|-------------------|------------|
| a | 10 | 20 % |
| b | 15 | 30 % |
| c | 9 | 18 % |
| d | 20 | 40 % |

According to Table 3.9, students use ChatGPT for various reasons. Considerable number of students (40%) use it because it facilitates gaining information, 30% because it's a time-saving tool, 20% because it overcomes challenges in outlining research, and 18% because it provides concise and quick data. These responses show the adaptability of ChatGPT in supporting different aspects of the research process and highlight its broad applicability and significant impact on enhancing the research efficiency of students.

Q10. What specific aspects of ChatGPT do you find most helpful in your research process?

a- Idea Generation

b-Literature Review Assistance

c-Data Analysis Support

 d- Writing Assistance

e- Citation and Referencing

f-Language and Grammar Check

g- Time Efficiency

h- Others (h- creativity assistance, i- summarize)

| Options | Number of students | Percentage |
|---------|--------------------|-----------|
| a | 28 | 56% |
| b | 10 | 20% |
| c | 14 | 28% |
| d | 26 | 52% |
| e | 10 | 20% |
| f | 21 | 42% |
| g | 29 | 58% |
| h | 1 | 2% |
| i | 1 | 2% |

**Table 3.1**

*Key Helpful Aspects of ChatGPT in Research*
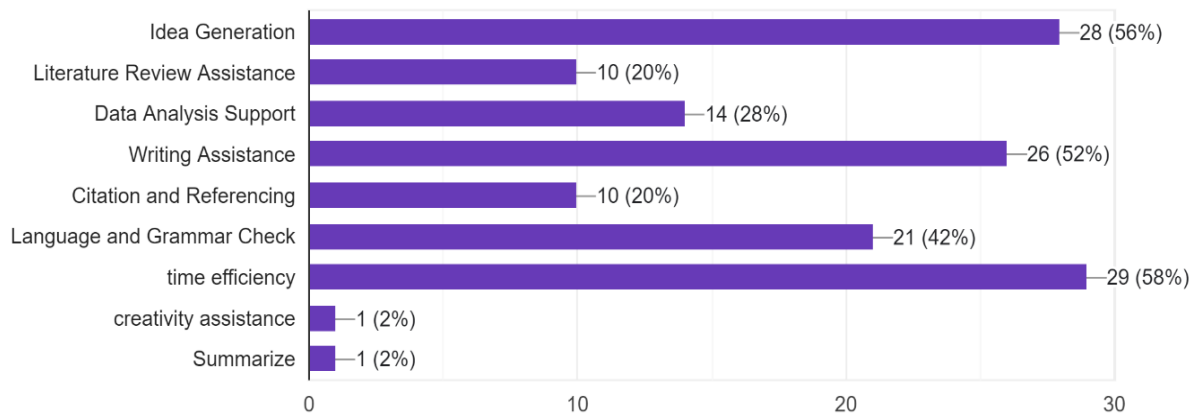
**Graph 3.6:** *Key Helpful Aspects of ChatGPT in Research*

In Table 3.10, the majority of students found several aspects of ChatGPT to be highly beneficial. Specifically, (58%) of participants identified time efficiency as a key advantage, followed closely by idea generation (56%), and writing assistance (52%). Also, language and grammar checks were noted by (42%) of respondents, and data analysis support by (28%). While literature review assistance and citation referencing were rated equally by (20%) of respondents. Additionally, two participants mentioned creativity assistance and summarization as valuable features of ChatGPT, each at (2%). These findings hint at how ChatGPT helps students a lot with their research and writing. It makes things easier and faster, helps come up with new ideas, improves writing quality, checks for mistakes in language and grammar, and even supports handling data better. To sum up, ChatGPT is valued for its multifaceted support in various stages of academic research and writing.

Q11. How do you find using ChatGPT for your research?

a-Easy

b-Average

c-Hard

**Table 3.11**

*Ease of Using ChatGPT for Research*

| Option | Number of students | Percentage |
|--------|-------------------|------------|
| a | 32 | 64 % |
| b | 18 | 36 % |
| c | 0 | 0 % |
| Total | 50 | 100 % |
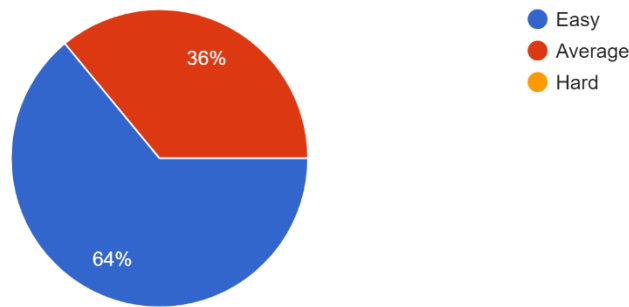


**Graph 3.7:** *Ease of Using ChatGPT for Research*

Drawing from the outcomes presented in Table 3.11, we can see that a notable (64%) of the respondents find it easy to use ChatGPT, while (36%) of them opted for the average option. Interestingly, none find it hard to use. From the results, it is clear that using ChatGPT is an easy and entertaining task, and there is a positive experience towards using it for research. This could be because it has helpful features, is easy to access, doesn't take long to learn, and offers support when needed like prompts for ideas and grammar checks.

Q12. Do you agree that the use of ChatGPT would improve your research quality?

a-Agree

b-Disagree

c-Neutral

**Table 3.12**

*The Assessment of the Potential Impact of ChatGPT on Research Quality*

| Option | Number of students | Percentage |
|--------|--------------------|------------|
| a | 26 | 52% |
| b | 5 | 10% |
| c | 19 | 38% |
| Total | 50 | 100% |

In Table 3.12, the vast majority (52%) agree that ChatGPT could help them do better research. However, (10%) of the participants disagree. They don't think using ChatGPT would improve their research quality. And (38%) are neutral. Which means they neither agree nor disagree. They might not be sure if ChatGPT would make their research better. Overall, it seems like there's a good number of people who believe ChatGPT could be useful for improving research quality, but there are also some who are unsure or don't think it would help.

Q13.Explain.

 - The main points that the students go through, based on their explanation, are as follows:

a. Valuable for identifying credible sources that can be trusted for information.

b. Helps in organizing the work and correcting mistakes

c. Efficiently saves time and effort during research and task completion.

d. Raises concerns about reliability in outcomes.

e. Using sources without proper acknowledgment (plagiarism).

f. Enables the execution of creative and imaginative aspects of the work.

**Table 3.13**

*Explanation of ChatGPT's Impact on Research Quality*

| Option | Number of students | Percentages |
|--------|--------------------|-------------|
| a | 14 | 28% |
| b | 10 | 20% |
| c | 4 | 8% |
| d | 6 | 12% |
| e | 2 | 4% |
| f | 4 | 8% |

Table 3.13 illustrates different points of view among participants regarding the impact of ChatGPT on the quality of their research. A notable portion (28%) agree that ChatGPT significantly helps in finding good quality sources, thereby enhancing the overall quality of their research. This indicates that many participants value ChatGPT for its ability to provide reliable and high-quality information. Additionally, (20%) of participants find ChatGPT useful for organizing and outlining their work, as well as for correcting mistakes. This suggests that a significant number of users appreciate ChatGPT's role in improving the structure and accuracy of their research. A smaller group (8%) acknowledges that ChatGPT saves them time and effort, highlighting its efficiency in streamlining the research process. On the other hand, (12%) of participants consider ChatGPT unreliable, indicating some skepticism about the dependability of the information it provides. This reflects concerns about the accuracy and trustworthiness of AI-generated content. Another (8%) believes that ChatGPT executes their creative input. This

suggests a perception that reliance on ChatGPT might hinder their ability to engage in creative thinking. The smallest group (4%) is concerned about the risk of plagiarism associated with using ChatGPT and therefore avoids it. This underscores the importance of ethical considerations and the need for caution when using AI tools in academic research.

Q14.Are you aware of the ethical considerations related to using AI-based tools like ChatGPT in research?

a-Yes

b-No

**Table 3.14**

*Ethical Consideration of ChatGPT*

| Option | Number of students | Percentage |
|--------|--------------------|------------|
| a | 39 | 78% |
| b | 11 | 22% |
| Total | 50 | 100% |
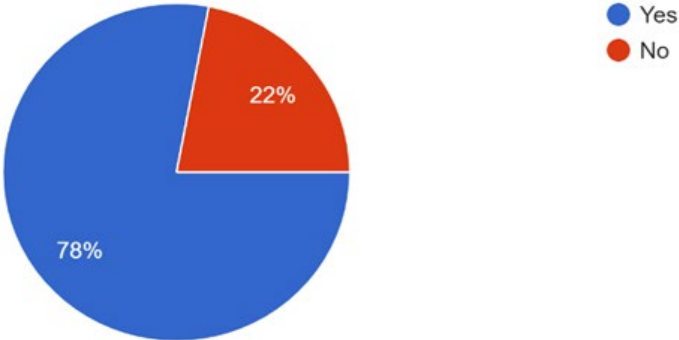


**Graph 3.8:** *Ethical Consideration of ChatGPT*

Table 3.14 shows that the highest majority of the participants (78%) of the participants are aware of the ethical considerations related to using AI-based tools like ChatGPT in research. This suggests that a majority of the participants have some knowledge or understanding of the ethical issues involved in using these tools. However, (22%) of the participants are not aware of these considerations. This indicates that there is still a significant portion of the research community that may benefit from more education or awareness-building efforts regarding the ethical implications of using AI tools in research. These findings highlight the importance of providing researchers with sufficient information and resources to navigate the ethical challenges associated with AI-based tools to promote responsible and ethical research practices.

**Section Three: Academic Research**

Q15. Have you conducted academic research before?

a-yes

b-no

**Table 3.15**

*Conducting Academic Research*

| Option | Number of students | Percentage |
|--------|--------------------|------------|
| A | 25 | 50% |
| B | 25 | 50% |
| Total | 50 | 100% |

Table 3.15 above reveals that both options are equal with (50%) of the participants not conducting academic research, indicating that they may not be actively involved in academic research activities. Or simply because master one students at the University of 08 Mai Guelma

are not obliged to conduct academic research till their master 2. The other (50%) of participants did conduct academic research, indicating a sizable portion of the sample population is actively engaged in academic research activities. This suggests a significant interest or involvement in academic pursuits among this group.

Q16.If yes how would you rate your work?

a-Excellent

b-Good

c-Average

d-Bad

**Table 3.16**

*Rating Your Academic Research*

| Option | Number of students | Percentage |
|--------|--------------------|------------|
| a | 3 | 12% |
| b | 14 | 56% |
| c | 8 | 32% |
| d | 0 | 0% |
| Total | 50 | 100% |
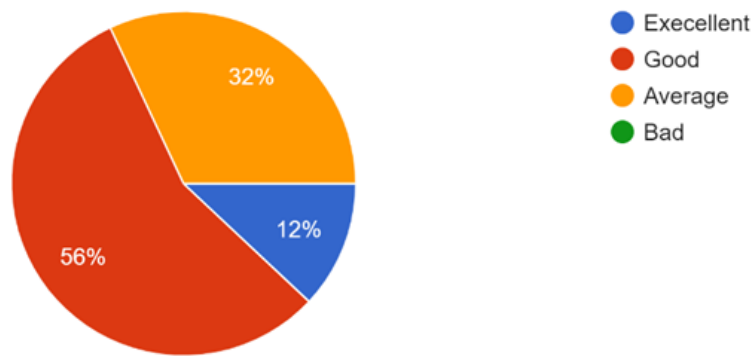
**Graph 3.9**: *Rating Your Academic Research*

Table 3.16 illustrates that the majority of participants (56%) reported having a good experience in conducting their academic research. Additionally, a significant portion (32%) rated their experience as average. Impressively, (12%) of respondents found their research experience to be excellent. Notably, no participants indicated a negative experience, with (0%) reporting a bad experience. This data suggests that a large proportion of researchers have positive perceptions of their academic research experiences. The absence of negative responses indicates a generally favorable sentiment toward the research process among the surveyed participants.

Q17.What challenges do you usually encounter during the research process? (select all the apply)

a-Finding relative literature

b- Designing research methodology

c- Collecting data

d-Analysing data

e-Interpreting results

f-Time constraints

g-Access to resources

**Table 3.17**

*Challenges Encountered During the Research Process*

| Option | Number of students | Percentage |
|--------|---------------------|------------|
| a | 13 | 26% |
| b | 9 | 18% |
| c | 32 | 64% |
| d | 22 | 44% |
| e | 10 | 20% |
| f | 29 | 58% |
| g | 25 | 50% |
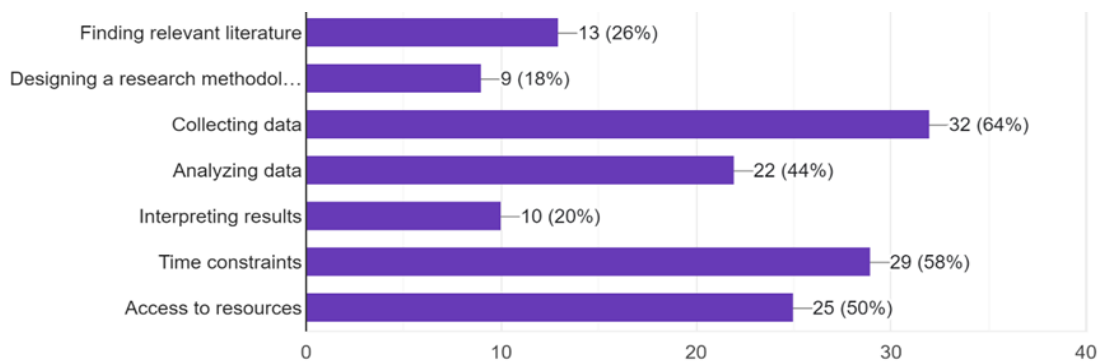


**Graph 3.10:** *Challenges Encountered During the Research Process*

Table 3.17 shows that Collecting data emerged as the most significant challenge, with (64%) of participants finding it very challenging. This underscores the importance of robust data collection strategies and the potential complexities involved in gathering relevant and reliable data for research projects. Time constraints were also a major issue, with (58%) of participants experiencing difficulties in managing their time effectively. This emphasizes the need for researchers to carefully plan and allocate sufficient time for each stage of the research

process. Accessing resources was another significant challenge, with (50%) of participants facing difficulties in obtaining the necessary resources for their research. This highlights the importance of access to resources such as literature, funding, and equipment in ensuring the successful completion of research projects. Analyzing data was also cited as a challenge by (44%) of participants. This underscores the importance of having the necessary skills and tools to effectively analyze and interpret data in research projects. On the other hand, fewer participants reported challenges in finding literature (26%), interpreting results (20%), and designing research methodology (18%). This suggests that these aspects of the research process may be perceived as less challenging compared to data collection, time management, resource access, and data analysis.

Q18. In your opinion, what is the most useable research engine in finding sources for research?

a-Google Scholar

b-Research Gate

c-Microsoft Academic

d-perplexity

e-ChatGPT

f-Web of science

**Table 3.18**

*The Most Useful Research Engines for Finding Sources*

| Option | Number of students | Percentage |
|---|---|---|
| a | 13 | 26% |
| b | 5 | 10% |
| c | 1 | 2% |
| d | 9 | 18% |
| e | 21 | 42% |
| f | 1 | 2% |
| Total | 50 | 100% |
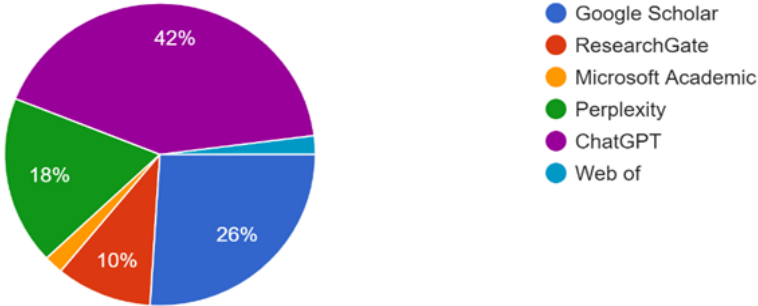


**Graph 3.11:** *The Most Useful Research Engines for Finding Sources*

Table 3.18 shows that a conciderable number of participants ( 42%)use ChatGPT as a research engine for finding resources, this suggests that users find value in using ChatGPT to assist with their research needs, possibly due to its ability to provide quick and relevant information based on natural language queries. Next to it, Google Scholar is also favored by the participants with (26%) of them using it as a research engine and that's due to Google Scholar's popularity which is not surprising, given its well-established reputation as a comprehensive academic search engine. Then (18% )of the participants use perplexity to find sources for their research this indicates that some users are exploring more specialized tools for

their research needs. And (10%) of participants use Research Gate. Its usage aligns with its purpose as a platform for researchers to share and discover scholarly content but it is not much used among students during their research journey. Meanwhile, only (2%) agreed on using Microsoft Academic, and also (2%) of them used the Web of Science as a research engine to find resources. These lower usage percentages for Microsoft Academic and Web of Science may suggest that these platforms are not as widely used or known among the participants for their research activities.

Q19. Ethics are important in academic research?

a-Strongly agree

b-Agree

c-Natural

d-Strongly disagree

e-Disagree

**Table 3.19**

*Ethics in Academic Research*

| Option | Number of students | Percentages |
|--------|-------------------|-------------|
| a | 28 | 56% |
| b | 15 | 30% |
| c | 6 | 12% |
| d | 0 | 0% |
| e | 1 | 2% |
| Total | 50 | 100% |
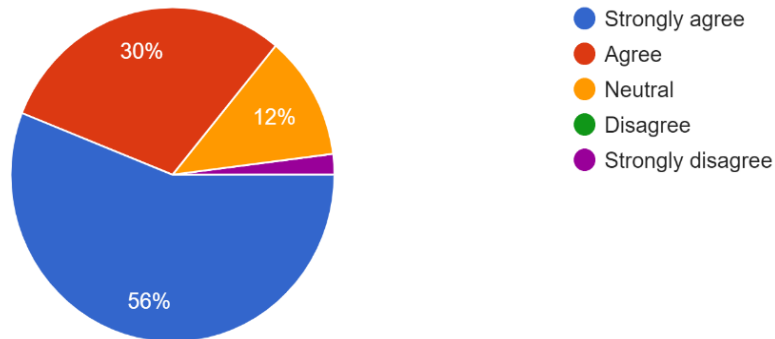
**Graph 3.12:** *Ethics in Academic Research*

Table 3.19 highlights a strong consensus among participants regarding the importance of ethics by which the majority of participants (56%) strongly agree that ethics are very important, with an additional 30% agreeing that ethics play an important role in academic research. The high percentage of participants who strongly agree indicates a clear recognition of the significance of ethical considerations in research, suggesting a strong commitment to upholding ethical standards in academic endeavors. Furthermore, the low percentage of participants who disagree (2%) or are neutral (12%) suggests that the vast majority of respondents recognize and value the importance of ethics in academic research. This indicates a positive attitude towards ethical conduct in research and reflects a commitment to maintaining integrity and accountability in academic pursuits**.**

**Section Four: The Influence of ChatGPT on Academic Research**

Q20. ChatGPT is the most useable research assistance tool. Do you agree?

 a-Strongly agree

b-Agree

c-Natural

d-Strongly disagree

e-Disagree

**Table 3.20**

*ChatGPT as a Research Assistance Tool*

| Option | Number of students | Percentages |
|---|---|---|
| a | 18 | 36.7% |
| b | 14 | 28.6% |
| c | 14 | 28,6% |
| d | 0 | 0% |
| e | 4 | 6.1% |
| total | 50 | 100% |

Table 3.20 reveals a strong inclination among participants towards ChatGPT as a highly usable research assistance tool. A significant majority (36.7%) strongly agree that ChatGPT is the most usable tool for research assistance, indicating a high level of satisfaction and confidence in its capabilities. Additionally, 28.6% of participants also agree with this statement, further supporting the notion that ChatGPT is widely perceived as a valuable resource for research activities. Meanwhile, 28.6% of participants are neutral, suggesting that while they do not strongly agree or disagree, they may be open to exploring ChatGPT's potential as a research assistance tool. A small percentage (6.1%) of participants disagree with the statement, indicating that there are some reservations or challenges perceived by a minority regarding

ChatGPT's suitability as a research tool. However, no participants strongly disagree, suggesting that even those with reservations may not completely dismiss ChatGPT's usefulness.

Q21.How important do you think ChatGPT's role will be in shaping the future of academic research?

a-Very important

b-Somewhat important

c-Neutral

d-Not important

**Table 3.21**

*The Future Impact of ChatGPT on Academic Research*

| Option | Number of students | Percentages |
|--------|--------------------|-------------|
| a | 19 | 38% |
| b | 22 | 44% |
| c | 6 | 12% |
| d | 3 | 6% |
| Total | 50 | 100% |
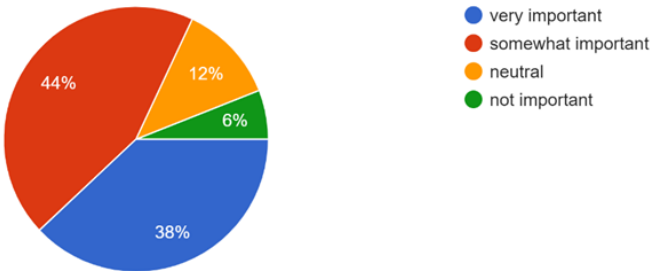


**Graph 3.13:** *The Future Impact of ChatGPT on Academic Research*

Table 3.21 provides insights into the perceived importance of ChatGPT's role in shaping the future of academic research among participants, by which a significant number of participants (44%) consider ChatGPT's role as somewhat important, indicating a moderate level of significance attributed to its impact on the future of academic research. Furthermore, (33%) of participants believe that ChatGPT's role is very important, suggesting a higher degree of influence and potential transformative power in shaping the future landscape of academic research. Meanwhile, (12%) of participants remain neutral, indicating a lack of strong opinion regarding ChatGPT's role. This could reflect uncertainty or a need for more information on the subject. In addition to that, a small percentage (6%) of participants do not see any importance in the way ChatGPT is shaping the future of academic research. This minority view suggests that there are differing perspectives on the significance of ChatGPT's role in academia.

Q22.Justify

 - The main points that the students go through, based on their justifications, are as follows:

a-Effichancy and relaibility

b-Source of information

c-Ethical consideration

d-Not reliable

**Table 3.22**

*Justification of the importance of ChatGPT in shaping the future of academic research*

| Option | Number of students | Percentages |
|--------|--------------------|-------------|
| a | 15 | 30% |
| b | 4 | 8% |
| c | 9 | 18% |
| d | 4 | 8% |

Table 3.22 highlights various viewpoints on the significance of ChatGPT in influencing the future of academic research. A notable majority of participants (30%) believe that ChatGPT will play an important role due to its efficiency and reliability concerning time, correcting mistakes or improving the writing. This perspective emphasizes how ChatGPT can streamline the research process, making it faster and more accurate, thereby potentially enhancing the quality and productivity of academic research. Additionally, (8%) of participants find ChatGPT important because they view it as a reliable source of information. This suggests that some researchers trust the tool's ability to provide credible and high-quality data, which can be crucial for conducting thorough and accurate research. Conversely, ethical considerations are a concern for a substantial number of participants (18%). This group is wary of potential ethical issues related to using AI tools like ChatGPT in research, such as bias, transparency, and accountability. These concerns highlight the need for careful and responsible use of AI in academic settings to ensure ethical standards are maintained. Lastly, (8%) of participants do not consider ChatGPT a reliable source. This skepticism may stem from concerns about the accuracy and trustworthiness of AI-generated content, suggesting that some researchers may hesitate to fully rely on ChatGPT for their work. Overall, while many participants recognize the benefits of ChatGPT in enhancing research efficiency and reliability, there are significant concerns about its ethical implications and reliability. These diverse perspectives underscore

the importance of balancing the advantages of AI tools with ethical considerations and ensuring their responsible use in academic research.

**Any further suggestions are welcome**

Based on the results of the questionnaire, the following points were suggested:

- It is fine to use it to get inspired, but it becomes unfair for both the teachers and the students to use ChatGPT and claim that their personal work.

- I don't agree with the idea of using it for the whole work but it should be used as a source of help.

- Sometimes it gives irrelevant information, so you must use it carefully.

- Advising to use ChatGPT in a logical way and do not overutilize it, to always have your own creativity.

- ChatGPT helps me with my Homework and research because I don't have time to find information.

- ChatGPT is one of the most helpful tools that I personally find efficient.

- It was a disappointment most of the time.

- I think it's not that good for all users.

**3.1.3.2 Summary of results and findings from students' questionnaire**

The results from the student questionnaire in Section One indicate that most English students at the University of 8 Mai 1945, Guelma are between 20 and 24 years old. This is because the sample consists of Master One students. Additionally, (86%) of the participants are female, likely because languages, especially English, tend to attract more females than males. Furthermore, (76%) of the participants have studied English for 8 to 12 years, which includes their time in middle school, secondary school, and university, contributing to their strong knowledge of the English language.

The analysis of section two, entitled "ChatGPT," reveals that (96%) of Master One students are familiar with ChatGPT, commonly defining it as an AI-based question-answering tool, an Artificial Intelligence tool, or AI assistance in education, with these definitions given in nearly equal percentages. Additionally, (98%) of the participants reported using ChatGPT. This data highlights the widespread use and high adoption rate of ChatGPT among Master's students. Furthermore, (58%) of students find ChatGPT useful as a helping tool in their work, and notably, (86%) of Master One students use it in their academic research, reflecting its effectiveness and relevance in supporting their research efforts. This usefulness is justified by ChatGPT's ability to Overcome the challenges of outlining research, save time, provide concise and quick data, and facilitate information gathering. These responses demonstrate ChatGPT's adaptability in supporting various aspects of the research process, emphasizing its broad applicability and significant impact on enhancing students' research efficiency.

According to the questionnaire analysis of Master One's students, participants indicate that the most beneficial aspects of using ChatGPT are its time efficiency (58%), idea generation (56%), writing assistance (52%), and language and grammar checking (42%). These results highlight how ChatGPT significantly aids students with their research and writing tasks. It accelerates the process, helps generate new ideas, improves the quality of writing, checks for language and grammar errors, and even enhances data management. Additionally, (64%) of participants reported finding ChatGPT easy to use. And the majority of them, (52%), believe that using ChatGPT enhances the quality of their research. They attribute this to several factors: ChatGPT helps them find high-quality sources, organize their work, correct mistakes, and save time and effort. These findings underscore the significant role ChatGPT plays in streamlining and improving the research process for students. Speaking about the ethical considerations of using ChatGPT, the majority of participants (78%) indicated that they are aware of these concerns. These findings emphasize the necessity of equipping researchers with ample

information and resources to navigate the ethical challenges associated with AI-based tools. It is crucial to promote responsible and ethical research practices. Ensuring that researchers understand the ethical implications of using tools like ChatGPT is essential for maintaining integrity and accountability in their work. This awareness allows them to make informed decisions and uphold ethical standards in their research activities.

The analysis of section three, entitled "Academic Research," reveals an even split among survey participants, with 50% having conducted academic research and the other 50% not having done so. Additionally, 56% of those who engage in academic research rate their experience as good. Master One students with experience in academic research reports face several challenges during their research journey. The most significant challenges they face include collecting data, time constraints, access to resources, and data analysis. The challenges students face in academic research led them to use various research engines to assist with different aspects, especially in finding sources for their research. The statistics reveal that the most commonly used engine is ChatGPT, with (42%) of students using it, followed by Google Scholar (26%). The high percentage of ChatGPT users indicates that students find significant value in using ChatGPT to aid their research needs, likely due to its ability to provide quick and relevant information based on natural language queries. Another critical aspect of conducting academic research is the ethical consideration. When asked about the importance of ethical considerations in research, the majority of Master One students strongly agree on its importance. This response indicates a positive attitude towards ethical conduct in research and demonstrates a commitment to maintaining integrity and accountability in their academic endeavors.

The analysis of the final section, entitled "The Influence of ChatGPT on Academic Research," reveals that students are generally satisfied with using ChatGPT as a research tool. The majority of the participants, (36.7%), consider ChatGPT the most useful research assistance

tool. This indicates that Master One students greatly benefit from ChatGPT and appreciate its role in their academic research. Furthermore, (44%) of the students believe that ChatGPT's role in shaping the future of academic research is somewhat important, and (38%), of them think that ChatGPT's role in shaping the future of academic research is very important. This high regard for ChatGPT stems from its efficiency and reliability in saving time, correcting mistakes, and improving writing quality. This perspective shows how ChatGPT can streamline the research process, making it quicker and more accurate, which could enhance the overall quality and productivity of academic research. Additionally, the statistics show that a significant number of students are concerned about the ethical considerations related to using ChatGPT, such as issues of bias, transparency, and accountability. These concerns highlight the importance of using AI responsibly and ethically in academic settings to maintain high ethical standards. In summary, Master One students express strong satisfaction and find great benefits in using ChatGPT as a research tool. The majority acknowledge that it helps improve the quality of their research, although they also emphasize the need for careful attention to ethical considerations.

**3.2. Teachers' Questionnaire**

**3.2.1. Sample**

This questionnaire targets ten teachers with different professional degrees; at the department of English 8 Mai 1945- Guelma University.

**3.2.2. Description of Teachers' Questionnaire**

The questionnaire that has been administrated for the teachers was designed on basis of the theoretical chapter. It aims at exploring the teacher's attitudes towards the use of ChatGPT as a research assistance tool. The questionnaire consists of 17 questions (eight are closed, one

is semi-open ended, and seven are open-ended questions.), classified under four sections, each of which highlights a different aspect.

**Section One: Personal Information (Q1-Q3)**

In this section, teachers are asked to answer three questions about their personal background. In question one, they are asked about their age. In question two, they are asked to specify their gender: male or female. In the third question, they are asked about their academic level: Magister, PhD, or Professor. These questions are designed to obtain the necessary information about teachers' experience because it would affect the teachers answers in the upcoming questions.

**Section Two: ChatGPT (Q4-Q12)**

This section aims to investigate teachers' familiarity and experience with ChatGPT as a research assistance tool. Question four asks if they are familiar with ChatGPT (yes or no) and question five for those who answered yes, requests a brief definition of ChatGPT. Question six asks if they have ever used ChatGPT in conducting academic research (yes or no), followed by question seven which asks them to justify their answer. Question eight seeks to identify potential challenges of incorporating ChatGPT in academic research. Question nine asks how ChatGPT contributes to enhancing students' research work. Question ten asks if they advise their students to use ChatGPT (yes or no), followed by Question eleven which asks for justification. Question twelve inquiries about the potential of ChatGPT to revolutionize academic research.

**Section Three: Academic Research (Q13–Q14)**

This section explores the digital tools recommended by teachers for academic research. Question thirteen asks teachers to select all applicable digital tools they recommend (options include ChatGPT, other AI-powered tools, reference management software, search engines,

data analysis software, online databases, or other specified tools). Followed by question fourteen that asks for teachers' agreement on the importance of ethical considerations in academic research, with options ranging from strongly agree to strongly disagree.

**Section Four: The Influence of ChatGPT on Academic Research (Q15–Q17)**

The last section deals with the frequency and impact of using ChatGPT in academic research. Question fifteen asks how often teachers use ChatGPT (never, rarely, sometimes, often, or always). Question sixteen asks them to compare ChatGPT's assistance with traditional methods or other digital tools, with options like quick responses, diverse sources, idea generation, equal usefulness, or other specified benefits. Question seventeen provides space for additional feedback or comments about their experience using ChatGPT as a research assistance tool.

**3.2.3. Data Analysis and Interpretation**

**3.2.3.1. Analysis of Results and Findings from teachers' Questionnaire**

**Section one: Personal Information:**

Q1. Age: ……. Year

**Table 3.23**

*Teachers' Age*

| Age categories | Number of participants | Percentage |
|---|---|---|
| 20 - 30 | 2 | 20 % |
| 30 - 40 | 6 | 60 % |
| 40 - 50 | 2 | 20 % |
| Total | 10 | 100 % |

Table 3.23 categorizes ages into three groups for easier analysis. Most teachers (60%) are between 30 and 40 years old. The rest are split equally, with 20% aged 20-30 and 20% aged 40-50. This diversity can improve the generalizability of the findings, making them more applicable to a wider audience and increasing the relevance of the research. It also enriches the data with varied perspectives and experiences, enhances the discussion by covering a broader range of issues, and offers different points of view. Thus, the age diversity among teachers in the study significantly contributes to the comprehensiveness and applicability of the research.

Q2. Specify your gender

a- Male

b- Female

**Table 3.24**

*Teachers' Gender*

| Option | Number of participants | Percentage |
|--------|------------------------|------------|
| a | 2 | 20 % |
| b | 8 | 80 % |
| Total | 10 | 100 % |

The results in table 3.24 demonstrate that the male participants are (20%) of the whole population while females are (80%). This disparity could impact the research by highlighting gender-specific perspectives and experiences, particularly those of female teachers. While this could provide valuable insights into the experiences and challenges faced by women in the teaching profession, it may also limit the applicability of the findings to male teachers.

Q3. Academic level

a- Magister

b-Phd

c- Professor

**Section two: ChatGPT**

**Table 3.25**

*Teachers' Academic Level*

| Option | Number of participants | Percentage |
|--------|------------------------|------------|
| a | 4 | 40 % |
| b | 6 | 60 % |
| c | 0 | 0 % |
| Total | 10 | 100 % |

Table 3.25 indicates that a high number (60%) of teachers have a PhD, while 20% have a Magister degree. However, none have a professor degree yet. This means most teachers are highly qualified, which likely improves the quality of education and research. PhD teachers bring a lot of knowledge and expertise, making learning better for students. Their strong research skills lead to high-quality academic work and create a rich intellectual environment.

Q4. Are you familiar with ChatGPT?

a- Yes

b- No

**Table 3.26**

*Teachers' Familiarity with ChatGPT*

| Option | Number of participants | Percentage |
|---|---|---|
| a | 7 | 70 % |
| b | 3 | 30 % |
| Total | 10 | 100 % |

Table 3.26 displays that the highest number (70%) of teachers are familiar with ChatGPT. Whereas only a small percentage (30%) are not. This indicates a high level of awareness of ChatGPT among teachers. This high awareness level suggests that many teachers are likely using new technologies in their teaching methods, which could make learning better for students.

Q5. If yes, how can you define it?

-The main points that the teachers went through, based on their definitions, are as follows:

a- AI Language Generation and Search Tool

b- An AI tool helps to quickly create and understand content.

**Table 3.27**

*Teachers' Definitions of ChatGPT*

| Option | Number of participants | Percentage |
|---|---|---|
| a | 6 | 60 % |
| b | 5 | 50 % |

Table 3.27 unveils that most teachers agree on the definitions of ChatGPT. Specifically, (60%) describe it as an AI language generation and search tool, whereas (50%) view it as an AI tool that helps create and understand content. The results showcase that teachers see ChatGPT

as having many sides, not just for making text but also for helping create and understand things. Maybe they think it's useful because it can make things like lesson plans and explanations easier. Hence, it's also handy for explaining hard subjects to students, making learning clearer and simpler.

Q6. Have you ever used ChatGPT in conducting academic research?

a- Yes

b- No

**Table 3.28**

*Utilization of ChatGPT in Academic Research*

| Option | Number of participants | Percentage |
|--------|------------------------|------------|
| a | 7 | 70 % |
| b | 3 | 30 % |
| Total | 10 | 100 % |

Table 3.28 reveals that 70% of teachers have utilized ChatGPT for academic research, while 30% have not yet used it. This suggests that most teachers are embracing current technological trends, leading to increased innovation and adaptability in educational settings. This encourages educators to try out new teaching methods, experiment with different approaches, and adjust to changing learning environments, ultimately improving the effectiveness and relevance of education in today's digital age.

Q7. Whether yes or no, why?

-The main points that the Teachers went through, based on their answers, are as follows:

a- Research Outlining Assistance

b- Exploring New Technologies in Academic Inquiry

c- Incompatible with academic ethics.

**Table 3.29**

*Reasons for Usage or Non-Usage*

| Option | Number of participants | Percentage |
|--------|------------------------|------------|
| a | 4 | 40% |
| b | 5 | 50% |
| c | 3 | 30% |

As displayed in Table 3.29, teachers who use ChatGPT explain that it assists with research outlines (40%) and aids in exploring new academic technologies (50%). Conversely, teachers who haven't used it believe it's incompatible with academic ethics (30%). On one hand, a considerable percentage of teachers who use ChatGPT see it as a good tool for research outlines and exploring new academic technologies, suggesting they perceive ChatGPT as practical in their professional development and teaching practices. On the other hand, the percentage of teachers who view ChatGPT as incompatible with academic ethics highlights a reservation regarding the ethical implications of using AI tools in educational contexts. This shows that many teachers have different opinions about ChatGPT: some like it for research and tech, while others worry about its ethics. These differing viewpoints illustrate the ongoing discussion about incorporating AI technologies such as ChatGPT into academic environments.

Q8. What are the potential challenges of incorporating ChatGPT as a research assistance tool for students in conducting academic research?

-The main points that the Teachers went through, based on their answers, are as follows:

a- Challenges of Ensuring Data Reliability in Academic Research

b- Navigating Plagiarism Risks

**Table 3.30**

*Challenges of Using ChatGPT in Academic Research*

| Option | Number of participants | Percentage |
|--------|------------------------|------------|
| a | 9 | 90% |
| b | 5 | 50% |

As it is illustrated in table 3.30, teachers placed a strong emphasis (90%) on the challenges of ensuring data reliability in academic research. However, another significant concern (50%) highlighted by teachers was navigating plagiarism risks. This means that teachers have to manage two important things in their research: making sure their data is reliable and following ethical rules to avoid plagiarism. It shows how complicated doing research can be, as they have to get accurate data while also being honest and fair in their work to keep their research trustworthy.

Q9. How does the use of ChatGPT contribute to the enhancement of your students' work/research?

a-Organizational and Accuracy Assistance

b- Idea Generation and Language Support

c- Research Preparation

**Table 3.31**

*ChatGPT's Contribution to Enhancing Student Work and Research*

| Option | Number of teachers | Percentages |
|--------|--------------------|-------------|
| A | 4 | 40% |
| B | 2 | 20% |
| C | 4 | 40% |

Table 3.31 indicates a significant number of teachers (40%) that believe that ChatGPT aids students primarily in organizing their work and ensuring accuracy. This indicates a strong appreciation for ChatGPT's ability to help students structure their research and verify the correctness of their information, which are critical aspects of producing high-quality academic work. Another (40%) of teachers see ChatGPT as a valuable tool for research preparation. This suggests that many educators recognize the efficiency ChatGPT provides in gathering information and preparing research materials, thereby streamlining the initial stages of the research process. Lastly, (20%) of teachers think ChatGPT assists with idea generation and language support. This highlights ChatGPT's role in providing students with creative ideas, relevant vocabulary, and proper language structures, which can enhance the overall quality and originality of their research.

Q10. Do you advise your student to use ChatGPT as a research tool?

a-Yes

b-No

**Table 3.32**

*Teacher Recommendations on Using ChatGPT as a Research Tool*

| Option | Number of teachers | Percentage |
|--------|--------------------|------------|
| A | 8 | 80% |
| B | 2 | 20% |
| Total | 10 | 100% |

The table 3.32 indicates that a significant majority of teachers (80%) recommend their students use ChatGPT as a research tool. This strong endorsement suggests that many educators recognize the benefits of ChatGPT in assisting with research tasks, such as finding reliable sources, organizing information, and improving overall research quality. Conversely, (20%) of teachers do not advise their students to use ChatGPT. This minority perspective may reflect concerns about potential drawbacks, such as the reliability of AI-generated information, ethical considerations, or the risk of over-reliance on technology which might hinder the development of critical thinking and research skills.

Q11. Justify

a- Resource Diversity

b- Ethical consideration

c- Proper usage

**Table 3.33**

*Reasons for Recommending ChatGPT as a Research Tool*

| Option | Number of teachers | Percentages |
|--------|-------------------|-------------|
| A | 2 | 20% |
| B | 3 | 30% |
| C | 5 | 50% |
| Total | 10 | 100% |

Table 3.33 indicates that a significant number of teachers (50%) advocate for the appropriate use of ChatGPT among students. This suggests that while they acknowledge the potential benefits of ChatGPT, such as helping students stay informed about technological advancements and enhancing their learning experiences, they also stress the importance of students understanding how to use it responsibly. Additionally, (30%) of teachers express concerns regarding the ethical implications of ChatGPT, highlighting a need for awareness and education on ethical considerations related to AI technology. Lastly, (20%) of teachers recommend ChatGPT because it offers access to a variety of sources, suggesting that they see it as a valuable tool for expanding students' knowledge base and encouraging critical thinking. Overall, the data reflects a nuanced perspective among teachers regarding the use of ChatGPT in education, emphasizing the importance of proper guidance and ethical awareness for students.

Q12. How do you think that ChatGPT has the potential to revolutionize the conduction of research?

a- AI as a Tool for Researchers

b-Has no potential

c-Writing Assistance

**Table 3.34**

*The Potential of ChatGPT to Revolutionize Research Conduction*

| Option | Number of teachers | Percentages |
|--------|--------------------|-----------| 
| A | 6 | 60% |
| B | 2 | 20% |
| C | 2 | 20% |
| Total | 10 | 100% |

Table 3.34 reveals that (60%) of teachers believe ChatGPT has the potential to revolutionize research as an AI tool, highlighting its transformative capabilities in the research process and its ability to take the future of conducting research to another high professional level. Additionally, (20%) of teachers think ChatGPT will be revolutionary in providing writing assistance, emphasizing its role in enhancing the quality and efficiency of academic writing. Conversely, another (20%) of participants do not see ChatGPT as having the potential to revolutionize research, indicating a significant degree of skepticism. This mixed perspective underscores the varying levels of acceptance and trust in AI technologies within the academic community. While a majority recognize the potential of ChatGPT to transform research practices and improve writing, a notable minority remains cautious, reflecting concerns about the limitations and challenges of integrating AI into academic research.

**Section Three: Academic Research**

Q13.Which of the following digital tools do you recommend your student to use in conducting Academic Research? (Select all that apply).

a-ChatGPT

b- Other AI-powered tools

c- Reference management software (e.g., EndNote, Zotero)

d-Search engines (e.g., Google Scholar, PubMed)

e-Data analysis software (e.g., SPSS, R)

f-Online databases (e.g., JSTOR, ScienceDirect)

 g-Other (please specify)

**Table 3.35**

*Teacher Recommendations on Digital Tools for Academic Research*

| Option | Number of Teachers | Percentages |
|--------|--------------------|-------------|
| a | 4 | 40% |
| b | 2 | 20% |
| c | 8 | 80% |
| d | 10 | 100% |
| e | 6 | 60% |
| f | 6 | 60% |
| g | 0 | 0% |

Table 3.35 highlights the preferences of teachers regarding digital tools for academic research, showing that All teachers (100%) unanimously recommend using research engines like Google Scholar and PubMed. This overwhelming support underscores the importance and reliability of these platforms in providing access to high-quality academic sources and literature. A significant majority (80%) also recommend reference management software such as EndNote and Zotero. This indicates the value teachers place on tools that help organize and manage citations, which are crucial for maintaining accuracy and efficiency in research

documentation. Data analysis software, such as SPSS and R, and online databases like JSTOR and ScienceDirect are each recommended by (60%) of teachers. This suggests a recognition of the importance of tools that facilitate comprehensive data analysis and access to a wide range of academic articles and journals, both of which are vital for conducting thorough and rigorous research. However, recommendations for ChatGPT (40%) and other AI-powered tools (20%) are notably lower. This could reflect a cautious approach towards newer technologies, with concerns about the reliability, ethical implications, or potential over-reliance on AI in academic work. While some teachers see the benefits of AI tools, a significant portion remains hesitant to fully endorse them.

Q14. Ethical considerations are crucial in conducting academic research.

a-Strongly agree

b-Agree

c-Natural

d-Disagree

e-Strongly disagree

**Table 3.36**

*Ethical consideration in academic research*

| Option | Number of teachers | Percentages |
|--------|--------------------|-------------|
| a | 10 | 100% |
| b | 0 | 0% |
| c | 0 | 0% |
| d | 0 | 0% |
| e | 0 | 0% |
| total | 10 | 100% |

Table 3.36 reveals that (100%) of the participants strongly agree that ethical considerations are crucial in conducting academic research. This overwhelming agreement highlights the fundamental role that ethics play in the research process. Ethical considerations are vital to ensuring the integrity, credibility, and validity of research findings. They help in protecting the rights and well-being of participants, ensure transparency and honesty in reporting results, and prevent misconduct such as plagiarism and data fabrication. This shows the commitment to maintaining high ethical standards and promoting responsible conduct in academic research.

**Section Four: The Influence of ChatGPT on Academic Research.**

Q15. How often do you use ChatGPT to assist in your academic research work?

 a-Never

b-Rarely

c-Sometimes

d-Often

e- Always

**Table 3.37**

*Frequency of ChatGPT Usage in Academic Research*

| Option | Number of teachers | Percentages |
|--------|-------------------|-------------|
| A | 4 | 40% |
| B | 0 | 0% |
| C | 4 | 40% |
| d | 2 | 20% |
| E | 0 | 0% |
| total | 10 | 100% |

Table 3.37 indicates a diverse range of usage frequencies for ChatGPT in academic research among participants. In which a significant amount (40%) of participants never used ChatGPT in their academic research. This could be due to various reasons, such as a lack of familiarity with the tool, skepticism about its effectiveness, or preference for traditional research methods. Another (40%) of participants use ChatGPT sometimes, suggesting a moderate level of engagement. These participants may find ChatGPT helpful for specific tasks or in certain situations but do not rely on it as their primary research tool. The smallest group (20%) uses ChatGPT often in their academic research. This indicates a high level of trust and reliance on ChatGPT for enhancing research efficiency, finding sources, organizing information, or other research-related activities.

Q16. How would you compare ChatGPT's assistance in research tasks to traditional methods or other digital tools you've used?

a- Quick responses

b- Diverse sources

c- Idea generation

d- Equal usefulness

**Table 3.38**

*Teacher Comparisons of ChatGPT to Traditional Methods and Other Digital Tools*

| Option | Number of teachers | Percentages |
|--------|--------------------|-------------|
| a | 3 | 30% |
| b | 4 | 40% |
| c | 4 | 40% |
| d | 2 | 20% |

The table 3.38 shows a significant majority (40%) of teachers believe that ChatGPT offers access to a diverse range of sources more effectively than traditional methods. This highlights the value of ChatGPT in providing a broad spectrum of information quickly, which can enhance the comprehensiveness of research. Another (40%) of teachers appreciate ChatGPT for its idea-generation capabilities. This indicates that many educators find ChatGPT useful for brainstorming and developing new concepts, which can be particularly beneficial in the early stages of research. Additionally, (30%) of teachers value ChatGPT for its quick responses. The speed at which ChatGPT can provide information and answers is seen as a significant advantage, making it a useful tool for time-sensitive research tasks. Lastly, (20%) of teachers consider ChatGPT equally useful as traditional methods and other digital tools. This suggests that while ChatGPT has its strengths, some educators still find traditional methods and

other digital tools to be equally valuable in their research processes. Overall, the data reflects a positive perception of ChatGPT's capabilities, particularly in terms of source diversity, idea generation, and response speed, while also recognizing the continued relevance of traditional and other digital research methods.

**Any further suggestions are welcome**

Based on the results of the questionnaire, the following points were suggested:

- We need to organize workshop and study it to rise Learners' teachers' awareness about the effectiveness uses of AI Tools in research process and to take decisions step towards ethical consideration.

**3.2.3.2. Summary of Results and Finding from Teachers' Questionnaire**

Based on the teachers' questionnaire results, a large number of responses are quite positive, in the sense that they support more of our hypotheses and answer our research questions. It is reasonable to think that the participating experienced teachers are noticeably aware of the utility of using ChatGPT within the academic area and believe it has a positive impact. They think that this AI technology is a good research assistance tool that helps students in many ways. However, there are some concerns about whether it can truly align with academic ethics.

Firstly, many teachers emphasize the challenges of ensuring data reliability in academic research. Additionally, some teachers highlight concerns about navigating plagiarism risks, showing the complexity of balancing accurate data collection with ethical research practices.

When discussing the contributions of ChatGPT to students' work, some teachers note its assistance in organizing work and ensuring accuracy. Others see its value in research preparation and appreciate its role in idea generation and language support.

As they were asked if they advise their students to use ChatGPT as a research tool, a strong majority of teachers recommend using ChatGPT as a research tool, citing benefits such as resource diversity, ethical considerations, and proper usage. However, a minority do not advise its use, reflecting concerns about the reliability of AI-generated information and the potential over-reliance on technology. Also, in the part where the question was about their opinion regarding the potential of ChatGPT to revolutionize research, a high number of teachers believe in its transformative capabilities, particularly in enhancing the quality and efficiency of academic writing. Conversely, few remain skeptical about its potential. Moreover, in terms of recommended digital tools for academic research, all teachers recommend research engines like Google Scholar and PubMed, highlighting their reliability and access to high-quality sources. Also, some of them recommend reference management software such as EndNote and Zotero and data analysis software like SPSS and R, and online databases like JSTOR and ScienceDirect. However, recommendations for ChatGPT and other AI-powered tools are lower, reflecting a careful approach toward newer technologies.

In the final section, all teachers strongly agree on the importance of ethical considerations in academic research, underscoring the fundamental role ethics play in ensuring the integrity and credibility of research findings. Additionally, several teachers never assist ChatGPT in their academic research work; this could be due to a lack of familiarity with the tool, skepticism about its effectiveness, or a preference for traditional research methods. In contrast, others often or sometimes assist it, which indicates a high level of trust and reliance on ChatGPT for enhancing research efficiency.

These results suggest that while there is strong support for the use of digital tools and recognition of the benefits of ChatGPT in academic research, there are also significant concerns regarding ethical considerations and the reliability of AI-generated information. Teachers emphasize the need for proper guidance and education on the responsible use of AI technologies in research.

**Conclusion**

In essence, this chapter confirmed the first hypothesis and answered the questions using both teachers' and students' questionnaires, which looked into their attitudes towards using ChatGPT as a research assistance tool. The statistical analysis showed that Master One students and English teachers at the University of Guelma exhibit a positive attitude towards incorporating ChatGPT in the academic fields. However, many of them still worry about whether AI-generated information is trustworthy and ethical. Therefore, to make the best use of ChatGPT, EFL students have to grasp the significance of ethical considerations when using it for academic research.

**Pedagogical Recommendations**

Considering the diverse research findings obtained in the current study. It is obvious that both teachers and students have a positive attitude towards using ChatGPT as a research assistance tool. Using ChatGPT in the academic field will help students in many ways, but despite its usefulness, there are some concerns about the ethical considerations related to its use and the reliability of the information it provides. In this regard, this section aims to highlight some pedagogical implications and recommendations for EFL students and teachers to ensure the effective and ethical use of ChatGPT. Both teachers and students must adopt a critical and thoughtful approach towards its application in academic research.

**Limitations of the study**

When we collected the data, we had to use an online questionnaire because teachers were too busy with exams, grading quizzes, and student assessments. The sample size was small, so the results cannot be generalized to the entire population. Additionally, most students avoided open-ended questions due to time constraints. They might also have been fatigued from completing numerous questionnaires, as many researchers chose Master One students as their case study. Initially, we faced some technical issues, but these were eventually resolved. Furthermore, the study was conducted within a limited timeframe, which may have affected the depth and thoroughness of data collection and analysis.

**Suggestions for further research**

Based on the results of the questionnaires, some suggestions were made. Firstly, it is important to look into students' views on ethical issues when using ChatGPT, like plagiarism and academic integrity. Additionally, researchers should explore how students make sure they use AI tools ethically in their research. These studies can help understand how to use ChatGPT in academics while keeping a high ethical standard. Therefore, researchers should carry out experiments to see how ChatGPT affects academic integrity. For future research, it would be helpful to use these findings to create guidelines for using AI tools ethically in education.

**General Conclusion**

This study has explored the attitudes of Master One students at the university of 08 Mai 1945 (Guelma) toward using ChatGPT as a research tool, focusing on its usability and effectiveness in their academic endeavors. The research aimed to understand the relationship between the variables, explore students' perceptions of ChatGPT, and investigate its impact on their attitudes toward conducting research. To achieve these objectives, the study was structured into three chapters:

The first chapter provided a comprehensive literature review on ChatGPT, offering an in-depth understanding of this advanced language model. It detailed the characteristics and functionalities of ChatGPT, explained its underlying mechanisms and development processes, and incorporated perspectives from various scholars and engineers. This review highlighted both the strengths and potential areas for improvement of ChatGPT, particularly in academic and research contexts. This foundation was essential for understanding the relevance of ChatGPT to the research objectives.

The second chapter focused on the concept of academic research, revisiting its foundational principles to provide a comprehensive understanding of conducting high-quality, professional academic research. It detailed various types of academic research, essential methodologies, and best practices, ensuring rigor and coherence. The chapter also emphasized the importance of integrity, transparency, and ethical conduct in the research process, equipping researchers with the necessary knowledge and skills to undertake academic research effectively and ethically.

The final chapter, "Field of Investigation," examined the impact of ChatGPT on academic research. This practical component involved administering two questionnaires. The first targeted a randomly selected group of fifty Master One students of English at 08 Mai 1945

University of Guelma, gathering insights into their experiences and perceptions of using ChatGPT for research purposes. The second questionnaire was directed at a randomly selected group of ten English teachers from the same university, seeking their professional opinions on the utility and impact of ChatGPT in academic research. This methodological approach provided a comprehensive understanding of how ChatGPT influences academic research from both student and teacher perspectives.

The findings indicate that Master One students perceive ChatGPT positively, recognizing it as a valuable and effective tool in their research processes. The relationship between the variables suggests that the usability of ChatGPT significantly enhances students' attitudes toward conducting academic research. Students reported that ChatGPT helps streamline their research efforts, providing quick and accurate information, generating ideas, and enhancing overall research efficiency. However, teachers, while recognizing the utility of ChatGPT, expressed significant reservations regarding ethical concerns.

ChatGPT has demonstrated substantial value for Master One students, enhancing their academic research by providing an intuitive and efficient platform for information retrieval and idea generation. The favorable perceptions documented in this study highlight ChatGPT's potential to revolutionize the research experience for students, establishing it as an essential academic assistance tool. Nevertheless, the ethical concerns raised by teachers underscore the need for careful consideration of ethical guidelines and the development of best practices to ensure the responsible use of AI in academic research.

In conclusion, this study underscores the transformative potential of ChatGPT in academic research while highlighting the importance of addressing ethical concerns. Future research should explore these ethical dimensions further and consider longitudinal studies to assess the long-term impact of ChatGPT on academic research practices.

**REFERENCES**

Abdulai, R. T., & Owusu-Ansah, A. (2014). Essential Ingredients of a Good Research

Proposal for Undergraduate and Postgraduate Students in the Social Sciences. SAGE

Open, 4(3), 1–15. https://doi.org/10.1177/2158244014548178

Akcigit, U., Hanley, D., & Serrano-Velarde, N. (2021). Back to basics: Basic research

spillovers, innovation policy, and growth. The Review of Economic Studies, 88(1), 1-

43.

Almgren, R., & Skobelev, D. (2020). Evolution of technology and technology governance.

Journal of Open Innovation: Technology, Market, and Complexity, 6, 22.

https://doi.org/10.3390/joitmc6020022

Andy, S. (2023, September 13). The difference between basic and applied research – Key

differences – Academia Insider. Academia insider.

https://academiainsider.com/the-difference-between-basic-and-applied-research-key

differences/

Augusto, L. M. (2021). From symbols to knowledge systems: A. Newell and HA Simon's

contribution to symbolic AI.

Azul, C. M. M. (n.d.). RESEARCH FORMAT. *Www.academia.edu*. Retrieved March 29,

2024, from https://www.academia.edu/8046885/RESEARCH_FORMAT

Baimyrzaeva, M. (2018). Beginners' guide for applied research process: What is it, and why

and how to do it. University of Central Asia, 4(8), 1-42.

Bašić, Ž., Banovac, A., Kružić, I., & Jerković, I. (2023). CHATGPT-3.5 as writing assistance

in students' essays. Humanities and Social Sciences Communications, 10(1).

https://doi.org/10.1057/s41599-023-02269-7.

Bender, E. M., & Friedman, B. (2018). Data statements for natural language processing:

Toward mitigating system bias and enabling better science. Transactions of the

Association for Computational Linguistics, 6, 587–604.

Bender, E. M., & Koller, A. (2020). Climbing towards NLU: On meaning, form, and

understanding in the age of data. In Proceedings of the 58th Annual Meeting of the

Association for Computational Linguistics (pp. 5-10).

Bhandari, P. (2020, June 12). What Is Quantitative research? | definition, Uses and Methods.

Scribbr. https://www.scribbr.com/methodology/quantitative-research/

Bhutta, Z. A. (2004). Beyond informed consent. Bulletin of the World Health Organization,

82, 771-777.

Boice, R. (1993). Writing Blocks and Tacit Knowledge. *The Journal of Higher Education*,

*64*(1), 19–54. https://doi.org/10.2307/2959976

Booth, W. C., Colomb, G. G., & Williams, J. M. (2008). The craft of research (3rd ed.).

University of Chicago Press.

Boutron, I., Page, M. J., Higgins, J. P., Altman, D. G., Lundh, A., Hróbjartsson, A., &

Cochrane Bias Methods Group. (2019). Considering bias and conflicts of interest

among the included studies. Cochrane handbook for systematic reviews of

interventions, 177-204.

Brown, T., Mann, B., Ryder, N., Subbiah, M., Kaplan, J. D., Dhariwal, P., ... & Amodei, D.

 (2020). Language models are few-shot learners. Advances in neural information

 processing systems, 33, 1877-1901.

Buchanan, R. Angus (2023, November 10). history of technology. Encyclopedia Britannica.

 https://www.britannica.com/technology/history-of-technology.

Burton, E., Goldsmith, J., Koenig, S., Kuipers, B., Mattei, N., & Walsh, T. (2017). Ethical

 considerations in artificial intelligence courses. AI magazine, 38(2), 22-34.

Calvert, J. (2006). What's special about basic research?. Science, Technology, & Human

 Values, 31(2), 199-220.

Chaddah, P. (2021). Ethics in research publications: fabrication, falsification, and plagiarism

 in science. Academic integrity and research quality. University Grants Commission,

 New Delhi, 18-33.

Chen, X., Ye, J., Zu, C., Xu, N., Zheng, R., Peng, M., ... & Huang, X. (2023). How Robust is

 GPT-3.5 to Predecessors? A Comprehensive Study on Language Understanding

 Tasks. arXiv preprint arXiv:2303.00293.

Cheng, S. W., Chang, C. W., Chang, W. J., Wang, H. W., Liang, C. S., Kishimoto, T., ... & Su,

 K. P. (2023). The now and future of ChatGPT and GPT in psychiatry. Psychiatry and

 clinical neurosciences, 77(11), 592-596.

Chollet, F. (2021). Deep learning with Python. Simon and Schuster.

Cohen, J. J. (2001). Trust us to make a difference: Ensuring public confidence in the integrity

of clinical research. Academic Medicine, 76(2), 209-214.

Creswell, J. W. (2014). Research design: Qualitative, quantitative, and mixed methods

approaches (3th ed.). SAGE Publications.

Cronin, P., Ryan, F., & Coughlan, M. (2008). Undertaking a literature review: a step-by-step

approach. British journal of nursing, 17(1), 38-43.

Dainty, K. N. (2024). Qualitative research in cardiac arrest research: A narrative review.

Resuscitation Plus, 17, 100568. https://doi.org/10.1016/j.resplu.2024.100568.

Delipetrev, B., Tsinaraki, C., & Kostić, U. (2020). Historical evolution of artificial

intelligence (EUR 30221EN, JRC120469). Luxembourg: Publications Office of the

European Union. https://doi.org/10.2760/801580

Denney, A. S., & Tewksbury, R. (2013). How to write a literature review. Journal of criminal

justice education, 24(2), 218-234. https://doi.org/10.1080/10511253.2012.730617

Dooly, M., Moore, E., & Vallejo, C. (2017). Research ethics. Research-publishing. net.

Easterday, M. W., Lewis, D. R., & Gerber, E. M. (2014). Design-based research process:

Problems, phases, and applications. Boulder, CO: International Society of the

Learning Sciences.

Edmonds, W. A., & Kennedy, T. D. (2010). A reference guide to basic research design for

education and the social and behavioral sciences. New York, NY: Pearson.

Elsayed, A. M., & Saleh, E. I. (2018). Research data management and sharing among

researchers in Arab universities: An exploratory study. IFLA journal, 44(4), 281-299.

Elsner, R., Martin, C. A., & Delahunty, C. (2001). Ethically responsible research. Food
Technology, 55, 36-42.

Fitria, T. N. (2023, March). Artificial intelligence (AI) technology in OpenAI ChatGPT
application: A review of ChatGPT in writing English essay. In ELT Forum: Journal of
English Language Teaching (Vol. 12, No. 1, pp. 44-58).

Fossey, E., Harvey, C., McDermott, F., & Davidson, L. (2002). Understanding and evaluating
qualitative research. Australian & New Zealand journal of psychiatry, 36(6), 717-732.

Fouka, G., & Mantzorou, M. (2011). What are the Major Ethical Issues in Conducting
Research? Is there a Conflict between the Research Ethics and the Nature of Nursing?
Health Science Journal, 5, 3-14.

Grübler, A. (1998). Technology: Concepts and Definitions. In Technology and Global Change
(pp. 19–90). chapter, Cambridge: Cambridge University Press.

Gunia, H., Galińska, K., & Massimiliano, M. (2023). Ultimate CHATGPT Handbook For
Enterprises. ORANGE EDUCATION PVT LTD.

Habib, M., Maryam, H., & Pathik, B. B. (2014). Research methodology-contemporary
practices: Guidelines for academic researchers. Cambridge Scholars Publishing.

Haleem, A., Javaid, M., & Singh, R. P. (2022). An era of ChatGPT as a significant futuristic
support tool: A study on features, abilities, and challenges. BenchCouncil transactions
on benchmarks, standards and evaluations, 2(4), 100089.

Hammersley, M., & Gomm, R. (1997). Bias in social research. Sociological research online, 2(1), 7-19.

Heggen, K., & Guillemin, M. (2012). Protecting participants' confidentiality using a situated research ethics approach. The sage handbook of interview research: The complexity of the craft, 465-476.

Hesse-Biber, S. N., & Leavy, P. (2010). The practice of qualitative research. Sage.

Holton, E. F., & Burnett, M. F. (2005). The basics of quantitative research. Research in organizations: Foundations and methods of inquiry, 29-44.

Horan, C. (2009). Research topic selection & development: Suggested guidelines for the student researcher.

Hou, S. C. (n.d.). The Secret to Getting Great Answers: ChatGPT's Art of Prompting. KOKOSHUNGSAN®. February 27,2024,

https://www.google.dz/books/edition/The_Secret_to_Getting_Great_Answers_Chat/46y0EAAAQBAJ?hl=en&gbpv=0

Hou, S. C. (n.d.-b). The Ultimate Guide to ChatGPT: Understanding the Future of AI Chatbots. KOKOSHUNGSAN®. February 28, 2024,

https://www.google.dz/books/edition/The_Ultimate_Guide_to_ChatGPT_Understand/vvGxEAAAQBAJ?hl=en&gbpv=0

Hua, S., Jin, S., & Jiang, S. (2023). The Limitations and Ethical Considerations of ChatGPT. Data Intelligence, 1-38.

Hu K, 2023. ChatGPT Sets Record for Fastest-Growing User Base—Analyst Note

Igwenagu, C. (2016). *Fundamentals of Research Methodology and Data Collection* (pp. 41–44).https://staging-nodebb-uploads.s3.amazonaws.com/FundamentalsofResearchMethodologyandDataCollection-%25philu%25-6fae26dd-631d-4e66-9864-663ec2b30204.pdf

Islam, S. (2021). Artificial Intelligence in Healthcare. International Journal of Engineering Materials and Manufacture, 6(4), 319-323.

Jia, Z., Chen, J., Xu, X., Kheir, J., Hu, J., Xiao, H., ... & Shi, Y. (2023). The importance of resource awareness in artificial intelligence for healthcare. Nature Machine Intelligence, 1-12.

Jones, K. S. (1999). Information retrieval and artificial intelligence. Artificial Intelligence, 114(1-2), 257-281

Jordan, M. I., & Mitchell, T. M. (2015). Machine learning: Trends, perspectives, and prospects. Science, 349(6245), 255-260.

Kaiser, K. (2009). Protecting respondent confidentiality in qualitative research. Qualitative health research, 19(11), 1632-1641.

Kataoka, Y., Yamamoto-Kataoka, S., So, R., & Furukawa, T. A. (2023). Beyond the Pass Mark: Accuracy of ChatGPT and Bing in the National Medical Licensure Examination in Japan. JMA journal, 6(4), 536-538.

Khakurel, J., Penzenstadler, B., Porras, J., Knutas, A., & Zhang, W. (2018). The rise of artificial intelligence under the lens of sustainability. Technologies, 6(4), 100.

Khalid, K., Abdullah, H. H., & Kumar M, D. (2012). Get along with quantitative research process. International Journal of Research in Management, 2(2), 15-29.

Khanyile, T. D., Duma, S., Fakude, L. P., Mbombo, N., Daniels, F., & Sabone, M. S. (2006). Research integrity and misconduct: a clarification of the concepts. Curationis, 29(1), 40-45.

Kocoń, J., Cichecki, I., Kaszyca, O., Kochanek, M., Szydło, D., Baran, J., ... & Kazienko, P. (2023). ChatGPT: Jack of all trades, master of none. Information Fusion,99, 101861.

Kumar, K., & Thakur, G. S. M. (2012). Advanced applications of neural networks and artificial intelligence: A review. International journal of information technology and computer science, 4(6), 57.

Lecler, A., Duron, L., & Soyer, P. (2023). Revolutionizing radiology with GPT-based models: Current applications, future possibilities and limitations of ChatGPT. Diagnostic and Interventional Imaging, 104(6), 269-274.

Leoste, J., Jõgi, L., Õun, T., Pastor, L., San Martín López, J., & Grauberg, I. (2021). Perceptions about the future of integrating emerging technologies into higher education—the case of robotics with artificial intelligence. Computers, 10(9), 110.

Liu, Y., Han, T., Ma, S., Zhang, J., Yang, Y., Tian, J., ... & Ge, B. (2023). Summary of chatgpt-related research and perspective towards the future of large language models. Meta-Radiology, 100017.

Liza, U. (2022, October 31). Applied Research: Definition, Types & Examples. QuestionPro.

https://www.questionpro.com/blog/applied-research/.

Luger, G. F., & Stubblefield, W. A. (2014). Artificial Intelligence: Structures and Strategies

for Complex Problem Solving. Pearson.

Lund, B. D., & Wang, T. (2023). Chatting about ChatGPT: how may AI and GPT impact

academia and libraries?. Library Hi Tech News, 40(3), 26-29.

https://www.emerald.com/insight/content/doi/10.1108/LHTN-01-2023-0009/full/html

Luse, A., Mennecke, B., & Townsend, A. (2012). Selecting a research topic: A framework for

doctoral students. International Journal of Doctoral Studies, 7(1), 143-152.

Mars, N. (2016). Academic Writing & Research. 22 Lions.

Mecca, J. T., Gibson, C., Giorgini, V., Medeiros, K. E., Mumford, M. D., & Connelly, S.

(2015). Researcher perspectives on conflicts of interest: A qualitative analysis of views

from academia. Science and Engineering Ethics, 21, 843-855.

Merriam-Webster. (n.d.). Technology. In Merriam-Webster.com dictionary. Retrieved from

https://www.merriam-webster.com/dictionary/technology

Moor, J. (2006). The Dartmouth College artificial intelligence conference: The next fifty

years. Ai Magazine, 27(4), 87-87.

Melnychenko, O. (2019). Application of artificial intelligence in control systems of economic

activity. Virtual Economics, 2(3), 30-40.

McCarthy, J. (1956). Proposal for the Dartmouth summer research project on artificial

      intelligence. Retrieved from

      https://jmc.stanford.edu/articles/dartmouth/dartmouth.pdf

Mijwil, M., Aljanabi, M., & Ali, A. H. (2023). ChatGPT: Exploring the role of cybersecurity

      in the protection of medical information. Mesopotamian Journal of Cybersecurity,

      2023(2023), 18–21.

Nazir, A., & Wang, Z. (2023). A comprehensive survey of ChatGPT: Advancements,

      applications, prospects, and challenges. Meta-radiology, 100022.

Newman, M., & Gough, D. (2020). Systematic Reviews in Educational Research

      Methodology, Perspectives and Application.

      https://library.oapen.org/bitstream/handle/20.500.12
657/23142/1007012.pdf?sequenc#page=22

Nijhawan, L. P., Janodia, M. D., Muddukrishna, B. S., Bhat, K. M., Bairy, K. L., Udupa, N., &

      Musmade, P. B. (2013). Informed consent: Issues and challenges. Journal of advanced

      pharmaceutical technology & research, 4(3), 134-140.

Onwuegbuzie, A. J., & Leech, N. L. (2004). Enhancing the interpretation of "significant"

      findings: The role of mixed methods research. The qualitative report, 9(4), 770-792.

OpenAI. (2022, November 30). Introducing ChatGPT. OpenAI; OpenAI.

      https://openai.com/blog/chatgpt.

Owan, V. J., & Bassey, B. A. (2018). Comparative study of manual and computerized software techniques of data management and analysis in educational research. International Journal of Innovation in Educational Management (IJIEM), 2(1), 35–46.

Owan, VJ & Bassey, BA (2019). Data management practices in educational research. In PN Ololube & GU Nwiyi (Eds), Encyclopedia of institutional leadership, policy, and management: A handbook of research in honour of Professor Ozo-Mekuri Ndimele, 1251-1265.\

Oxford Languages. (n.d.). Technology. In Oxford Languages. Retrieved from

https://www.lexico.com/definition/technology

Rajan, K., & Saffiotti, A. (2017). Towards a science of integrated AI and Robotics. Artificial Intelligence, 247, 1-9.

Rathore, B. (2023). Future of AI & generation alpha: ChatGPT beyond boundaries. Eduzone: International Peer Reviewed/Refereed Multidisciplinary Journal, 12(1), 63-68.

Ray, P. P. (2023). ChatGPT: A comprehensive review on background, applications, key challenges, bias, ethics, limitations and future scope. Internet of Things and Cyber-Physical Systems.

Rich, E. and Knight, K. (1991) Artificial Intelligence. McGraw-Hill, New York.

Roumeliotis, K. I., & Tselikas, N. D. (2023). ChatGPT and Open-AI model: A preliminary review. Future Internet, 15(6), 192. https://doi.org/10.3390/fi15060192

Russell, S., & Norvig, P. (2010). Artificial Intelligence: A Modern Approach (3rd ed.). Pearson Education, Inc.

Selvia, P. (1976). *How to Write a Lot* . American Psychological Association. https://books-library.net/files/books-library.online-02282155Al7A1.pdf

Sileyew, K. J. (2019). Research design and methodology (Vol. 7). Cyberspace.

Silvia, P. J. (2007). How to write a lot: A practical guide to productive academic writing (1st ed.). APA Life Tools.

Smith, J., & Noble, H. (2014). Bias in research. Evidence-Based Nursing, 17(4), 100-101. https://doi.org/10.1136/eb-2014-101946.

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. Journal of business research, 104, 333-339.ScienceDirect. https://doi.org/10.1016/j.jbusres.2019.07.039

Steneck, N. H. (2006). Fostering integrity in research: Definitions, current knowledge, and future directions. Science and engineering ethics, 12, 53-74.

Van Gog, T., Paas, F., Savenye, W., Robinson, R., Niemczyk, M., Atkinson, R., ... & Hancock, P. A. (2008). Data collection and analysis. In Handbook of research on educational communications and technology (pp. 763-806). Routledge.

Villegas, F. (2022, May 20). Academic Research: What it is + Free Tools. QuestionPro. https://www.questionpro.com/blog/academic-research-guide/

Vyad. (2023, December 16). Academic Research: Its Importance & Ways to Conduct. ALLASSIGNMENTHELP.COM. https://www.allassignmenthelp.com/blog/importance-of-academic-research/

Weick, K. E., & Sutcliffe, K. M. (2001). Managing the unexpected (Vol. 9). San Francisco:

Jossey-Bass.

Wenth, A. (2023). ChatGPT - Talk to me!: Your guide for successful communication with

ChatGPT including 400 sample prompts. In Google Books. Andreas Wenth

https://www.google.dz/books/edition/ChatGPT_Talk_to_me/vdqlEAAAQBAJ?hl=en&gbpv1

Williams, C. (2007). Research methods. Journal of Business & Economics Research (JBER),

5(3). https://doi.org/10.19030/jber.v5i3.2532

Willig, C. (2017). Interpretation in qualitative research. The SAGE handbook of qualitative

research in psychology, 274-288.

Yu, K. (2008). Confidentiality revisited. Journal of Academic Ethics, 6, 161-172.

# Appendices

## Appendix A: Students' Questionnaire

Dear Master One students of the University of 8 May 1945 Guelma. Prior to our research, we would appreciate if you answered the following questionnaire for us, which is a part of a research paper entitled "Students Attitudes Towards Using ChatGPT as a Research Assistance Tool". The aim of the questionnaire is to assess students' perceptions, experiences, and attitudes towards using ChatGPT as a research assistance tool. Please answer by ticking (✔) the appropriate option or provide a concise response as needed. Your participation in completing this questionnaire will greatly contribute to our study. Rest assured that any information you provide is confidential and will only be used for research purposes. Thank you in advance for your cooperation.

**Djoudi Razane and Faci Aya**

**Department of letters & English Language**

**University of 8 Mai 1945 Guelma**

**Section One: General Information**

1) Age        …..

2) Gender        a- Male        b- Female

3) How long have you been studying English?        …..  years

**Section Two: ChatGPT**

4) Are you familiar with ChatGPT?

a- Yes        b-No

5) If yes, how can you define it?

……………………………………………………………………………………………………

………………………………………………………………………………………………….

6) Have you ever used ChatGPT?

a- Yes     ☐        b- No ☐

7) To which extent do you find ChatGPT useful?

a-Very useful ☐     b-Useful ☐     c-Not useful ☐

8) While conducting an academic research;(eg: presentations) do you use ChatGPT?

a-Yes ☐     b- no ☐

9) justify.

……………………………………………………………………………………………………

…………………………………………………………………………………………………..

10) What specific aspects of ChatGPT do you find most helpful in your research process?

a- Idea Generation ☐     b-Literature Review Assistance ☐

d-Data Analysis Support ☐     e- Writing Assistance ☐

f- Citation and Referencing ☐     g-Language and Grammar Check ☐

h- Time Efficiency ☐

i- Others …………………………………..………………………………………….

11) How do you find using ChatGPT for your research?

a-Easy ☐     b-Average ☐     c-Hard ☐

12) Do you agree that the use of ChatGPT would improve your research quality?

a- Agree ☐            b- Disagree ☐            c- Neutral ☐

13) Explain.

…………………………………………………………………………………………..

…………………………………………………………………………………………..

14) Are you aware of the ethical considerations related to using AI-based tools like ChatGPT in a research?

a-Yes ☐            b-No ☐

**Section Three: Academic Research**

15) Have you conducted an academic research before?

a-Yes ☐            b-No ☐

16) If yes, how would you rate your work?

a- Excellent ☐            b- Good ☐

c- Average ☐            d- Bad ☐

17) What challenges do you usually encounter during the research process? (Select all that apply)

a-Finding relevant literature ☐            b-Designing a research methodology ☐

c- Collecting data ☐            d-Analyzing data ☐

e-Interpreting results ☐            f-Time constraints ☐

g-Access to resources ☐

18) In your opinion, what is the most useable research engine in finding sources for research?

a- Google Scholar ☐    b- ResearchGate ☐    c-Microsoft Academic ☐

d- Perplexity ☐    e- ChatGPT ☐    f- Web of Science ☐

19) Ethics are important in academic research?

a-Strongly agree ☐    b- Agree ☐

c- Neutral ☐    d-Disagree ☐

e- Strongly disagree ☐

**Section Four: The Influence of ChatGPT on Academic Research**

20) ChatGPT is the most useable research assistance tool. Do you agree?

a-Strongly agree ☐    b- Agree ☐

c- Neutral ☐    d-Disagree ☐

e- Strongly disagree ☐

21) How important do you think ChatGPT's role will be in shaping the future of academic research?

a- Very important ☐    b-Somewhat important ☐

c- Neutral ☐    d- Not important ☐

22) Justify.

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23) Do you have any additional feedback or comments about your experience using ChatGPT as a research assistance tool?

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**Thank you!**

**Appendix B: Teachers' Questionnaire**

Dear teachers of the University of 8 May 1945 Guelma. Prior to our research, we would appreciate it if you answered the following questionnaire for us, which is part of a research paper entitled "Students Attitudes Towards Using ChatGPT as a Research Assistance Tool". The aim of the questionnaire is to assess students' perceptions, experiences, and attitudes towards using ChatGPT as a research assistance tool. Please answer by ticking (✔) the appropriate option or provide a concise response as needed. Your participation in completing this questionnaire will greatly contribute to our study. Rest assured that any information you provide is confidential and will only be used for research purposes. Thank you in advance for your cooperation.

**Djoudi Razane and Faci Aya**

**Department of Letters & English Language**

**University of 8 Mai 1945 Guelma**

**Section one: Personal Information:**

1) Age: ……….

2) Gender: a- male ☐　　　　　　　　b- Female ☐

3) Academic level

a- Magister ☐　　　　b-Phd ☐　　　c- Professor ☐

**Section two: ChatGPT**

4) Are you familiar with ChatGPT

a-Yes ☐　　　　b-No ☐

5) If yes, how can you define it?

…………………………………………………………………………………………………………

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……………………

6) Have you ever used ChatGPT in conducting academic research?

a- Yes ☐                    b- No ☐

7) Whether yes or no, why?

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8) What are the potential challenges of incorporating ChatGPT as a research assistance tool

for students in conducting academic research?

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9) How does the use of ChatGPT contribute to the enhancement of your students'

work/research?

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10) Do you advise your student to use ChatGPT as a research tool?

a-Yes ☐                    b-No ☐

11) Justify:

…………………………………………………………………………………………………………

…………………………………………………………………………………………………………

……………………

12) How do you think that ChatGPT has the potential to revolutionize the conduction of

research?

…………………………………………………………………………………………………………

…………………………………………………………………………………………………………

……………………

**Section Three: Academic Research**

13) Which of the following digital tools do you recommend your student to use in conducting

Academic Research? (Select all that apply)

    a- ChatGPT

    b-Other AI-powered tools

    c- Reference management software (e.g., EndNote, Zotero)

    d-Search engines (e.g., Google Scholar, PubMed)

    e-Data analysis software (e.g., SPSS, R)

    f-Online databases (e.g., JSTOR, ScienceDirect)

    g-Other (please specify): ……………………………………………

14) Ethical considerations are crucial in conducting academic research.

a-Strongly agree ☐                    b- Agree ☐

c- Neutral ☐                          d-Disagree ☐

e- Strongly disagree ☐

**Section Four: The Influence of ChatGPT on Academic Research**

15) How often do you use ChatGPT to assist in your academic research work?

a-Never ☐              b-Rarely ☐              c-Sometimes ☐

d-Often ☐              e- Always ☐

16) How would you compare ChatGPT's assistance in research tasks to traditional methods or other digital tools you've used?

a) Quick responses ☐                 b) Diverse sources ☐

c) Idea generation ☐                 d) Equal usefulness ☐

f) Other (specify): ……………….………...….

17) Do you have any additional feedback or comments about your experience using ChatGPT as a research assistance tool?

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**Thank you!**

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# ملخص

إنّ ظهور المُحول المُولّد مسبق التدريب (شات جي بي تي) -وهو روبوت يستخدم تكنولوجيا الذّكاء الاصطناعي قامت بتطويره منظمة -(OpenAI) قد أحدث تغييرات جوهرية في مختلف المجالات، خاصة في مجالي التّعليم والبحث. ولذا تناولت هذه المذكرة دّراسة تصوّرات طلاب السّنة الأولى ماستر حول استخدام (شات جي بي تي) كأداة مساعدة في البحث. وقد انطلقنا في بحثنا هذا من فرضية أساسيّة أنّ الطّلاب يُظهرون موقفًا إيجابيًا تجاه دمج (شات جي بي تي) في عمليات البحوث الخاصة بهم. وتمّ اعتماد المنهج الوصفي الكمّي باستخدام الاستبانة كأداة للبحث، حيث جمعت البيانات باستبانتين تمّ توزيعهما على طلبة السّنة الأولى ماستر وكذا أساتذة من قسم اللغة الإنجليزية بجامعة 8 ماي 1945 ـ قالمة. وقد خلُص تحليل البيانات المجموعة إلى صحّة الفرضية، إذ أظهرت أنّ الطلاب لديهم توجّه إيجابي كبير نحو تبني ChatGPT كأداة مساعدة في البحث. وهذه النتائج تنوّه بإمكانات الأدوات المعتمدة على الذكاء الاصطناعي في تعزيز البحث الأكاديمي، وتُسلِّط الضّوء على القبول المتزايد للتّطورات التّكنولوجية في البيئات التّعليمية.

**الكلمات المفتاحية:** تصورات الطلاب، ChatGPT، OpenAI، مساعدة البحث، التكنولوجيا التعليمية.

**Résumé**

L'émergence du transformeur génératif pré-entraîné (ChatGPT), un robot qui utilise la technologie d'intelligence artificielle développée par l'organisation OpenAI, a apporté des changements substantiels dans divers domaines, notamment dans l'éducation et la recherche. Ce mémorandum portait donc sur l'étude des perceptions des étudiants de première année master concernant l'utilisation du (ChatGPT) comme outil auxiliaire de recherche.et Dans notre recherche, nous sommes partis de l'hypothèse de base selon laquelle les étudiants font preuve d'une attitude positive envers l'intégration (ChatGPT) dans leurs processus de recherche. Une méthodologie descriptive quantitative a été employée en utilisant des données recueillies à partir de deux questionnaires complets distribués aux étudiants de première année master ainsi qu'aux enseignants du département d'anglais de l'Université du 8 Mai 1945 - Guelma. L'analyse des données collectées a conclu que l'hypothèse était correcte, car elle a montré que les étudiants avaient une attitude très positive à l'égard de l'adoption de ChatGPT comme outil auxiliaire de recherche. Ces résultats mettent en évidence le potentiel des outils basés sur l'IA pour améliorer la recherche académique et mettent en évidence les innovations avancées pour les développements technologiques dans les milieux éducatifs.

*Mots-clés :* ChatGPT, Perceptions des étudiants, OpenAI, Assistance à la recherche, Technologie éducative.