Impact of ChatGPT on Academic Writing at Moroccan Universities

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Abstract
The new wave of buzzword technology has launched the Chat Generative Pre-Trained Transformer (ChatGPT). The ChatGPT application, besides its benefits, has created a worldwide heated debate about its impact on quality and the future of education. Artificial intelligence and other computing technology advancements have dominated the academic scene. The main aim of this paper is to map out the impact of the use of ChatGPT on academic writing at Moroccan universities. The researchers have designed a questionnaire for the purpose of this study. The research targets university students and educators for their possible expertise in academic writing. The distribution intends to ensure representation across levels of education, age, and gender. One hundred and eighty volunteers participated by providing insightful data about the investigation. The results of the study revealed that participants confirm the value and efficacy of ChatGPT as a tool; Moroccan respondents admit that ChatGPT can be both beneficial and harmful to students. Students at different educational levels venture into the use of ChatGPT without guidance and training. They are at a crossroads without direction signs in implementing ChatGPT appropriately, so they are astray about whether to use ChatGPT academically, how, and where. The educators, though they are provided with accounts in iThenticate plagiarism detector, stay aloof and claim training in their turn, but the educational authorities, ministry, and universities continue to keep taciturn.

Keywords: Academic writing, ChatGPT application, detectors, Generative AI, impact, Moroccan universities, OpenAI, plagiarism, perceptions

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Introduction

Since November 2022, when ChatGPT launched its first version, a new period of Artificial Intelligence (AI) has started, opening new opportunities for students and teachers to access this application to check or improve their work or to find fast answers to their questions. OpenAI, which was established in 2015, owns ChatGPT. ChatGPT has raised many concerns, debates, discussions, worries, and even fears among educators and official educational authorities about students' work's reliability, ingenuity, and originality while doing their assignments. The significance of the study is to outline the impact of the ChatGPT on academic writing at Moroccan universities,

The largest two school districts in the United States, New York and Los Angeles, banned access to ChatGPT. A spokeswoman for the New York City Department of Education criticized the tool and cleared it will not sport lifelong learning skills such as problem-solving and critical thinking. A spokesman in Los Angeles also announced that all District networks and devices are blocked access to the OpenAI website to protect academic honesty. (Rosenzweig-Ziff, 2023. para.4)

Although all these official steps against using ChatGPT have been taken, it remains to attract broad engagement, and finally, in May 2023, New York City public schools removed the ChatGPT ban (Rosenblatt, 2023).

Despite the pan imposed on ChatGPT by schools and universities worldwide, some schools and universities allow ChatGPT within “strict limits.” They believe the tool provides information that can used.  (Lewis & Mukherjee, 2023, para3).

Less than a year from the start, the controversial debate had continued and reached the top leader of OpenAI when Sam Altman, the founder of Open AI, was fired (Danner, NOV. 22, 2023). However, his ouster did not take long; he is back after hundreds of OpenAI, including the cofounder, signed a letter that would resign if the Open AI board remained in office.

On the other hand, the heated discussions and arguments about the impact of the ChatGPT on public publication reached the courts when The New York Times, on December 27, 2023, filed a lawsuit against OpenAI, claiming to abuse its intellectual property (Browne, 2023) It is worth mentioning the lawsuit filed against Microsoft for investing in OpenAI.  Furthermore, the Times retreated most of its property data “used to train GPT” (Cho, 2023).

With the widespread use of large ChatGPT, there are growing tensions among educators about the future of academic publications and their reliability, originality, and integration into different ethical standards. Bogost (2022) believes that ChatGPT cannot understand the “complexity of human language.” It is just trained to use and rearrange the given information. it is unable to understand and recognize the real meaning. Bogost (2022) Bogost (2022) sees the responses are “ lacking depth and insight” (para.2). Meanwhile the heated debate among educators continues Toppo (2023) emphasizes that Americans and teachers see

While the heated debate among educators continues, Toppo (2030) emphasizes, according to the researcher and survey, that Americans and teachers are seeing the “potential of incorporating AI tools like ChatGPT into K-12 education” (Toppo, 2023, para1)

On the other hand, according to leading OpenAI investors, CNBC (November 22, 2023.) reported that “OpenAI has the potential to be one of the most consequential companies in the history of computing.” CNBC added: OpenAI has employee shares for investors at a valuation of $86 billion. It has emerged as the hottest startup on the planet after releasing its ChatGPT chatbot in late 2022.
Literature Review

The artificial intelligence theme, the emergence of the ChatGPT role, and its impact on academic life have attracted many researchers around the globe. In the last year, much has been written about the use of ChatGPT, including its benefits, limitations, and ethical issues. Despite the richness of the published works, what is the potential negative impact of ChatGPT on academic writing at Moroccan universities? This particular question remains abundantly open to exploration. Hence, this article aims to fill this gap by investigating the impact of ChatGPT on academic writing at Moroccan universities.

ChatGPT Benefits

ChatGPT has become an important tool in a plethora of domains including education. Meyer et al. (2023) trace the inception of ChatGPT to November 2022, when the release of this technology resulted in a heated debate over its use in education. Since its genesis, ChatGPT has generated controversies that vacillate between exultation and criticism. Oranga (2023) cites fifteen benefits of ChatGPT, each of which reflects the importance of using artificial intelligence in education. Among the manifold advantages of ChatGPT are reducing time and work, answering questions, giving feedback, writing cogent prose and verse, analyzing data, solving science and math problems, language translation, designing tests, and personalized learning.

Reducing Time and Work

Since its inception, ChatGPT has significantly contributed to enhancing learners’ effective time management due to its obvious contribution to reducing both time and work resulting in substantial benefits. ChatGPTers seem to spend less time on assignments. Mazhara & Melnychuk (2023) argue that using ChatGPT “can help users save time” making it “a valuable tool for a range of applications” (p. 583). Karunaratne and Adesina (2023) confirm this advantage, for they demonstrate that using ChatGPT reduces “the time needed to search for information” and, therefore, “the anxiety associated with seeking information” (p. 152). In using ChatGPT, users gain more time for other activities that do not involve the assistance of artificial intelligence.

Answering Questions

The second benefit pertains to answering questions. Though answers generated by ChatGPT differ greatly, they give detailed answers to ChatGPTers’ questions whose level of accuracy is noticeable. Pin-Hui Li et al. (2023) affirm that ChatGPT generates answers that have “a relatively high degree of accuracy” (p. 83). Likewise, Davidson (2023) states that these answers can be “quite academic, including how what might initially seem to be a non-academic topic” can, in fact, “be discussed and debated with an academic mindset and in academic terms” (p. 248). Oranga (2023) also identifies answering questions as one of the main benefits of ChatGPT. Though ChatGPT’s answers might sometimes lack accuracy and depth, they can very often function as appetizers for ChatGPT users since they pave the way for a more rigorous exploration.

Giving Feedback

ChatGPT’s help is not limited to answering questions, but also giving feedback. Lee (2024) and Oranga (2023) advocate using ChatGPT by people seeking feedback. Oranga (2023) also avers that ChatGPT can offer users instant feedback on “assignments,” “quizzes,” and “questions.” This service sheds light on the learners’ mistakes and helps them correct them “promptly” (Oranga, 2023). As Oranga elucidates, this remains one of the manifold benefits of ChatGPT. ChatGPT can provide instant feedback on a plethora of topics that range from humanities and social sciences to mathematics and physics.
Writing Cogent Prose and Verse

Though writing is one of the most challenging tasks that can face authors, ChatGPT has made this arduous task a matter of a click. In *From Idea to Bestseller: Writing a Book with ChatGPT’s Help*, Pardeep Patel suggests using ChatGPT to write. Pardeep (2023) confesses that ChatGPT can inspire and suggest book topics in various ways, such as “topic-based prompts,” “genre-specific prompts” and “character-based prompts” (p. 7). These prompts can be considered as a background to develop the prompts further.

C. P. Kumar (2023) expounds four tips to make ChatGPT generate cogent writing prompts. These include being specific, using multiple prompts, editing the response, and relying on other tools apart from ChatGPT, for writers “should still take the time to brainstorm and develop their own ideas, and not rely solely on ChatGPT to do the work for them” (p. 17). It is true that ChatGPT can be an assiduous assistant, yet writers need to take part in the writing process.

ChatGPT can also provide help to poets. C. P. Kumar (2023) contends that technology “has made it possible to find inspiration” for poetry in various ways including “the use of writing prompts generated by artificial intelligence (AI) models like ChatGPT” (p. 19). Thanks to its ability to generate “human-like” texts, ChatGPT can provide poets with prompts for poetry that are “unique,” “thought-provoking” and “inspiring” (p. 19). Kumar (2023) exhorts poets suffering from writer’s block to seek the help of ChatGPT that can generate writing prompts that can inspire poets to create new poems or unlock the poet’s “creative potential” (p. 19). A “well-crafted writing prompt can provide a poet with a starting point, a theme, or a direction for their poem, allowing them to create a piece that is unique, thoughtful and engaging” (pp. 19-20). Overall, research has shown that ChatGPT is an important writing facility. Users can rely on this tool to write prose and verse through the multitudinous prompts it generates.

Analyzing Data

ChatGPT’s benefits are not limited to the aforementioned ones since it can help in data analysis. Data analysis is a comprehensive method that relies on numerous techniques to interpret statistics and draw conclusions. Evidently, ChatGPT can analyze data related to multifarious fields such as anthropology, sociology, psychology, engineering and business. As far as online marketing is concerned, Scholl (2023) asserts that in order to optimize “online marketing strategies,” ChatGPT can “analyze data and adjust campaigns in real-time to ensure maximum effectiveness” (p. 114). ChatGPT can also analyze data “across different platforms” and determine “the most effective” ones to reach the “target audience” (Scholl, pp. 114-115). In the field of human resources, Baker (2023) confirms that ChatGPT can analyze “a candidate’s qualifications based on a resume and other data, comparing that information to the job description and job requirements and providing a better list of matched candidates” (p. 106). ChatGPT can also help in data analysis in business (Kent, 2023), media (Albarran, 2024), and finance (Bryant & Mukherjee, 2023).

Solving Science and Math Problems

Both students and teachers can rely on ChatGPT to seek help in solving difficult science and math problems. Valentina Alto (2023) contends that ChatGPT can solve complex math problems that “require multi-step reasoning and problem-solving abilities” (p. 74). Likewise, Ashley S. Love, Joan Labay-Marques & Ruben Valadez (2023) underscore students’ augmenting reliance on ChatGPT to deal with math problems. This reliance stems from the conspicuous efficiency of employing artificial intelligence in scientific subjects. Similarly, Pin-Hui Li et al. (2023) point out that ChatGPT has the potential “to improve math education in junior high school” as it can help teachers “in tutoring and provide detailed problem-solving steps to enhance students’ learning outcomes” (p. 84). The same thing applies to science, for ChatGPT can help in solving science-related problems. Kieser and Wulf (2024) confirm that science education researchers have shown that ChatGPT can solve physics problems. For this reason, science problem-solving “is among the primary competencies for the twenty-first century, and played a major role in science education research throughout the years” (p. 294). Hence, solving science and math problems is
among the manifold advantages of ChatGPT. Though problems related to math and science tend to be a bit complicated, ChatGPT can erase such complications and turn them to clarity.

Language Translation

Translation has always been considered a challenging task. Though Google and other Search Engines have simplified the task of translators, ChatGPT has made the task easier. Kurban & Sahin (2024) report ChatGPT’s translation abilities such as translating interviews and surveys from one language to another. Kurban and Sahin highlight the difference in translation between Google and ChatGPT. They argue that while Google Translate performs a “literal translation, leaving behind the real meaning” of an idiom, ChatGPT has proven to be “very precise at translating between languages” and also “keeping the jargon and language-specific expressions intact” (pp. 97-98). According to Kurban & Sahin (2024), another significant advantage of using of ChatGPT’s translation features is its contribution to “leveling the playing field and reducing language-based inequalities in academic settings” through “providing access to translated scientific articles” (p. 117). Similarly, Babu & Akshara (2023) argue that ChatGPT’s translation abilities break language barriers. Accordingly, ChatGPT’s models “excel in their ability to comprehend the nuances of one language and convert it into another while maintaining context and meaning” (p. 235). Evidently, in the presence of a multitude of machine translation models, ChatGPT remains an efficient and trustworthy tool that can make a huge difference to translators or people who lack proficiency in the target language.

Designing Tests

Another noticeable benefit of ChatGPT is designing tests. Aslam & Nisar (2023) point out that ChatGPT may be useful to academics that need to create quizzes. For example, academics can simply send ChatGPT a prompt that describes the subject they plan to cover in their quizzes. After that, and based on the prompt, ChatGPT “will produce a set of questions that might be quite helpful when developing multiple-choice or short-answer questions” (Aslam & Nisar, 2023, p. 88). West (2023) and Yanev (2023), in addition to Oberer and Erkollar (2023) also reinforce the fact that ChatGPT can be a valuable tool for designing quizzes and that users seem satisfied with the quizzes ChatGPT generates.

Personalized Learning

Personalized Learning refers to an educational approach whose objective is to adjust teaching methods to meet the needs of each student. Oranga (2023) argues that ChatGPT can equip users with personalized learning experiences through “tailoring content and explanations to the individual’s needs and pace” (p. 47). The learner’s level of “understanding” is therefore taken into consideration by offering difficult questions or simplifying concepts when required (Oranga, 2023). ChatGPT addresses the learner’s learning patterns by identifying areas of strength and weakness.

Santosh Kumar (2023) shares Oranga’s standpoint as he believes that ChatGPT enables personalized learning. According to him, personalized learning is beneficial for both students and educators. On the one hand, it enhances students’ motivation, facilitates long-term retention of knowledge, paves the way to confidence, reduces stress, and improves outcomes (Kumar, 2023). On the other hand, personalized learning provides numerous benefits for educators since it addresses diverse needs, saves time, fosters creativity, enables data-driven insights and allows professional growth (Kumar, 2023).

ChatGPT Limitations

Adopting generative artificial intelligence through ChatGPT has rendered traditional learning methods obsolete due to the numerous benefits it provides. In spite of the aforementioned benefits that explain the exponential increase in users’ augmenting reliance on ChatGPT, a plethora of disadvantages and limitations are identified. These encompass but are not limited to, limited knowledge, no citing of sources, lack of human touch, inability to understand sarcasm and irony, and cheating.
Limited Knowledge

The major obstacle that faces ChatGPT is limited knowledge of events after 2021. When asked about the events that took place after September 2021, ChatGPT cannot respond (Bouchoux, 2024). For this reason, the answers it generates may sometimes lack accuracy (Adarkwah, et al., 2023). Oranga (2023) adds that while ChatGPT has access to “a wide range of information,” it “may lack expertise in specialized or niche subjects” (p. 48). The lack of updated knowledge emanates from the fact that ChatGPT provides information that is stored in the application itself; therefore, it cannot access what took place after the application was released. This leads ChatGPT to provide “outdated and inaccurate” responses (Linda, 2024, p. 13). Thus, while ChatGPT has access to a wide variety of information, its inability to generate updated knowledge remains this application’s ongoing nightmare.

No Citing of References

Another limitation is ChatGPT’s inability to cite references which results in numerous problems, the most important of which is obviously lack of trust. ChatGPT’s colossal amount of information enables it to create answers to users’ questions; yet, it does not provide the source of information. This results in the inability “to verify the accuracy of that information” (Oranga, 2023, p. 48). This inability hinders research and questions the credibility of the information despite its accuracy. Spair (2023) elucidates that ChatGPT “does not inherently possess the ability to cite or attribute specific sources” (p. 51). This shortcoming “raises concerns about the proper acknowledgement of external content” and “the potential for the misuse of copyrighted material” (Spair, p. 51). Such worries blur the distinction between plagiarism and originality.

Lack of Human Touch

While ChatGPT provides answers to a myriad of questions, it can generate machine-like responses. While these responses show that ChatGPT is technically limited, they reflect the importance of the human touch. Linda (2024) argues that ChatGPT “may produce illogical, inconsistent, and unconscious responses” (p. 13). Likewise, C. P. Kumar (2023) avers that while ChatGPT can generate content that is “undistinguishable” from the one written by human beings, this content lacks “the human touch that can make a description truly compelling” (p. 48). The difference between ChatGPT’s generated responses and human beings’ answers is definitely enormous. For this reason, human-like answers often result in satisfaction whereas machine-like ones prove ineffective since they cannot totally quench users’ thirst for knowledge. An essential part of dissatisfaction originates from the frequent inconsistencies ChatGPT generates.

Inability to Understand Sarcasm and Irony

Another shortcoming related to the lack of human touch is ChatGPT’s inability to understand sarcasm and irony. Ciesla (2024) contends that ChatGPT’s large language models often lack “common sense reasoning abilities” and for this reason they may endeavor hard to understand irony or sarcasm” which can result in generating “literal or nonsensical responses when faced with such instances” (p. 87). Likewise, Hart-Davis (2023) asserts that ChatGPT seems to experience the same difficulty in order to identify irony and sarcasm. Rainer & Prince (2023) confirm the same idea reinforcing that ChatGPT’s lack of common sense “may generate nonsensical or inappropriate responses” (p. 439). Hence, ChatGPT’s inability to understand sarcasm and irony is a further manifestation of the lack of human touch that very often results in inconsistencies.

Cheating and AI Plagiarism

Cheating has become one of the major concerns of teachers and researchers since the inauguration of artificial intelligence. ChatGPT can generate comprehensive essays, speeches, or analyze poems. This
may lead some students to rely on this technology in their assignments. Ventayen (2023) thinks of this as a burden and avers that ChatGPT “might change the academic community’s methodology in assessment” and could put an end to essays “as an assignment” (p. 215). Thanks to ChatGPT and other Artificial Intelligence applications, AI plagiarism seems to have replaced plagiarism since students seem to be easily tempted by ChatGPT’s services that prioritize ChatGPTers’ needs. To overcome this limitation, Creek and Patekar (2023) advise universities and educators to reach a decision on the use of artificial intelligence in education and provide students with “clear guidelines” pertaining to the ethical use of ChatGPT.

Further Limitations
Mahmood, Khan and Hameed (2023) report ample evidence concerning ChatGPT’s limitations in medical research. The prominent limitations they mention are “lack of domain-specific knowledge,” “limited ability to interpret visual data,” “difficulty in managing complex data sets,” “restricted capacity to handle causation vs. correlation,” “dependence on data quality,” and the “need for significant computing power” (p.500). Apart from limitations in medical research, Oranga (2023) also mentions further limitations, the most important of which are “lack of critical thinking,” “limited context awareness,” “vulnerability to bias,” “inability to verify information,” “risk of misinformation,” “privacy concerns,” “lack of emotional intelligence,” “overreliance on technology,” and “security risks”. These limitations, and others, have contributed to ignite a storm of controversy over ChatGPT’s ethical standards.

ChatGPT and Ethical Issues
Since its inception in 2022, ChatGPT has raised ethical issues over its use. Most issues are related to misinformation, bias and discrimination. This has led many higher education institutions in the USA to launch “Ethics in AI” classes that have attempted to minimize the negative impact artificial intelligence may have on students who rely on this tool. Also, some academic journals asked authors to disclose the use of generative AI and AI-assisted technologies by adding a statement at the end of their manuscript before publication.

Misinformation
One of the most alarming examples of how artificial intelligence could endanger research is misinformation. Agadi and Chintha (2023) write that reliance on ChatGPT and other facilities that employ artificial intelligence has resulted in an increasing concern over “the proliferation of fake news, misinformation, and disinformation” (p. 30). Agadi and Chintha elucidate that ChatGPT has been trained on “vast amounts of data from the internet” that is loaded with a “great deal of misinformation and disinformation” (p. 30). This could be harmful as ChatGPT might generate “inaccurate” or “misleading” content (Agadi & Chintha, 2023). Shin (2024) and Li et al. (2023) have expressed the same concern over ChatGPT’s participation in the dissemination of misinformation. This potential remains one of the most terrifying outcomes of relying on ChatGPT without checking authoritative sources to verify the accuracy of the information.

Bias and Discrimination
Another terrifying ethical question is ChatGPT’s potential to proliferate and reinforce bias and discrimination. Spair (2023) expounds that ChatGPT’s biases and discriminatory attitudes originate from the fact that the information ChatGPT generates is derived from a variety of sources, including those that “may contain biases or stereotypical portrayals” and may unintentionally “generate biased responses, reinforcing stereotypes or perpetuating social biases” (p. 21). He asserts that students who rely solely on ChatGPT’s answers “may absorb and internalize these biases” that may lead to “the perpetuation of discrimination and prejudice” (p. 21). Mhlanga (2023) advocates Spair’s perspective when he states that ChatGPT can display bias, “particularly in the language that it was trained on” (p. 399). Bias and discrimination seem to remain an ongoing issue for ChatGPT (Lipizzi, 2024). Therefore, educators should
take drastic measures in order to put an end to, or at least minimize, the storage and dissemination of data that generates biases and discriminatory attitudes via ChatGPT’s responses.

**ChatGPT and Detection**

Reliance on ChatGPT in different domains has made it obligatory to develop and come up with innovative methods and techniques to effectively detect plagiarism and other AI-generated writing pieces.

**GPTZero**

GPTZero, designed by Edward Tian from Princeton University, is an AI-powered tool whose primary role is detecting plagiarism. The tool is enabled to decide whether a text is written by a human being or a language model such as ChatGPT. The people in charge of the website gptzero.me claim to “bring transparency to humans navigating a world filled with AI content” and aver that GPTZero is “the gold standard in AI detection, trained to detect ChatGPT” and other artificial intelligence models (More than an AI detector). Lorenz Mindner, Tim Schlippe, and Kristina Schaaff (2024) confirm this fact; yet, they assert that GPTZero, in addition to others such as AI Content Detector and GPT2-Output Detector, “still have limitations in terms of the detection accuracy” (p. 154). Such limitations have paved the way for various artificial intelligence content detectors to emerge.

**AI Content Detectors**

Though AI detection tools are meant to identify whether a piece of writing is an artificial intelligence generated work, it remains quite impossible to come up with an accurate detection. Among these detectors are Copyleaks, DetectGPT, GPT-2 Output Detector, AI Detector Pro, Corrector AI-content detector, Content at Scale AI detector, Writer AI-content detector, Turnitin, Crossplag™, and AI Classifier.

Copyleaks is a plagiarism checker that can be used to check whether a text is generated by AI. It “lets users check their research against a library of millions of scholarly articles” and also “flags any similarities” (Vihol et al., 2023, p. 170). Bixuan Li et al. (2024) write that it is “one of the most accurate AI detectors, known for its accuracy in identifying AI-generated text” (p. 173). Selvakumar et al. (2024) also assert that Copyleaks gives “accurate results” (p. 33).

DetectGPT is another tool developed by a research team from Stanford University. Behrens (2024) clarifies that this tool employs a “novel zero-shot machine-generated text detection approach” (p. 113). DetectGPT has shown effectiveness in different domains and languages (Behrens, 2024).

GPT-2 Output Detector is another effective detector. Martinez et al. (2023) contend that it was able to identify 99.98% of “fake abstracts” (p. 767). AI Detector Pro, Corrector AI-content detector, Content at Scale AI detector, Writer AI-content detector, Turnitin, Crossplag™ and AI Classifier are other tools that have been used to detect AI-generated content. Although these detectors have contributed to identifying AI-generated pieces of writing, it remains compulsory to carry out further research that investigates the inaccuracy of AI content detectors.

**Method**

The present inquiry aims to map out the impact of the use ChatGPT on Academic Writing at Moroccan Universities. To ensure accurate measurement of the attitudes of the Moroccan university students and faculty towards the use and impact of the ChatGPT on their academic writing a mixed-method approach is implemented to probe and understand the various facets of the phenomenon in focus. For this reason, this section is crucial for providing a clear and detailed account of how the research was designed and conducted. Accordingly, this section exhibits information about the participants involved in the inquiry, the different instruments and procedures employed to reach the sample of the participants and the analytical process to guarantee the study's validity and reliability. In fact, the participants, instruments, and procedures involved in the
research are so interrelated that it is hardly possible to refer to one component without mentioning the other. Finally, meticulous results of the inquiry receive paramount importance in the process of the study which offers fertile ground for discussion to draw pertinent conclusions.

**Participants**

The present research study intends to collect data from a specific sample population. In relevance to the study objectives, the participants are selected on the basis of their characteristics, experience, demographics, and educational background. The participants’ availability and willingness to contribute is respected through the anonymity of the participants’ identity. The research targets university students and educators for their possible expertise in the subject, which is academic writing. The distribution intends to ensure representation across levels of education, age, and gender. Hence, 180 individuals volunteered to participate by providing insightful data on the phenomenon under investigation. Research targets university students and educators for their possible expertise in the subject, which is academic writing. The distribution intends to ensure representation across levels of education, age, and gender. Hence, 180 individuals volunteered to participate by providing insightful data on the phenomenon under investigation.

![Figure 1. Gender and age groups of the participants](image1)

Figure 1 represents categorical data with heights proportional to gender and age groups of the participants having responded to the questions in the investigation questionnaire. The first pair of columns relates that the female participants outnumber the male category with 100/180 and

![Figure 2. Academic roles of the participants](image2)

Figure 2. Academic roles of the participants
80/180 respectively. The four last columns concern the age groups of the respondents. 80 out of 180 belong to the age group under 25 while 20 participants are over 45 years old. The chart reflects that much of the measured data is most common in the youngest age group and the female demographic group.

Figure 2 displays the distribution of the participants according to their academic roles. The sample encompasses a range of educational backgrounds; from undergraduate and graduate levels to in-service experienced faculty. The value representing the faculty member group is significantly the lowest among the participants in contrast with the undergraduate students group who has the highest amount of research data. Equally significant is the participants’ distribution basis on affiliation to academic disciplines (Figure 3). A great discrepancy is clearly apparent between the number of participants affiliated with humanities and social sciences and those belonging to the business and applied sciences schools. The first group studying humanities and social sciences stands out with the count of 138 respondents. It is obvious that in humanities and social sciences, students are more regularly and extensively required to produce academic writings in English, namely descriptive, narrative, expository and argumentative essays.

From the data displayed in Figure 4, a notable majority of the participants reaching up to

Figure 3. Academic disciplines of the participants

Figure 4. The participants’ registration in ChatGPT accounts
124/180 have accounts with ChatGPT. However, a significant minority of fifty respondents have no account, whereas six participants only own premium accounts. Generally, 130 over 180 confirm registration with ChatGPT and it is this majority who will provide experience-based data for valid analysis. The fifty respondents without accounts surely used ChatGPT in its trial plan which does not have much functionality to exploit.

**Instruments**

To reach the participants in different Moroccan institutions, an electronic questionnaire is designed and shared through academic WhatsApp discussion groups and professional email contacts. The questionnaire designed is structured in a way to collect quantitative and qualitative data. The choice of GoogleForm questionnaire is dictated by the need to gather efficiently quantified data from a large sample of respondents located over dispersed territorial parts in Morocco in a limited frame of time. The survey’s diverse questions allow a comprehensive analysis of the assumptions of respondents from various academic disciplines and levels. Likert scale questions are employed to record straightforward correlations with the respondents’ experience with ChatGPT in academic writing. In the same line, open-ended questions are devised to incite the participants to express profound qualitative insights in their own words.

The questionnaire consists of 17 multiple-choice questions displayed on only one page. The objective is to reduce the respondent worry about the time constraint imposed by the length of the survey, increase the key variable of interest, and hence ensure efficient data collection. The first five questions focus on collecting demographic information on the participants, namely gender, age, nationality, affiliation, and institutional occupation. The remaining 12 questions are so diverse in perspective, addressing the respondents’ expertise for the purpose to boost the depth and breadth of the findings.

**Procedure**

The questionnaire was disseminated online on 18 January, 2024, exploiting the affordability of WhatsApp groups created previously by the local research team at Cadi Ayyad University in Morocco to facilitate the organization of national conferences, cultural and professional training activities. Email contacts were also efficient medium to reach a wide and diverse study-relevant audience, namely professors and administrative officials to invite their students to fill in the questionnaire. The Participants, mainly the students, were recruited through academic community WhatsApp groups, ensuring a heterogeneous mixture of educational backgrounds aimed to capture a wide-range of attitudes to the phenomenon under examination. In addition, the invitation to fill in the questionnaire was sent to over 100 professors by working emails followed by some phone calls to check the reception but the answers were that the professors have not yet have ample experience with ChatGPT to come with substantial assumptions. However, the teachers contacted were willing to share the the questionnaire link with their students to fill in.

Each time a professor is contacted in person about the investigation, new participants register and inform the study with new data. Responses are automatically downloaded in the form of Google Excel Sheets. Then the data are converted into charts, graphs to be displayed in the analysis section below.

The following section detail the data collected through the questionnaire to identify relationships, patterns, and tendencies in the stance of university students and educators towards the usage of ChatGPT in academic writing. The discussion is meant to facilitate a thorough
navigation of the intricacies of the topic under scrutiny for the purpose to helping and pave the way for future investigations.

**Results**

The present section exhibits objectively the empirical findings from the completed survey grounded in a mixed-methods strategy. The results are oriented to answer systematically the investigation inquiries. Hence, following statistically rigorous analysis, the experiment will elucidate the impact of ChatGPT on academic writing at Moroccan universities, and trace the perception of the students and professors engaged in the study. The examination of the issue will be simultaneously consolidated by qualitative data in order to reveal and highlight insightful discoveries for a better understanding of the topic.

The remaining questions dig further for experience-related data from the surveyed individuals. As for the inquiry whether they enjoy using ChatGPT, a large portion of the respondents expressed their satisfaction compared with a small number of the participants, 20 out of 180, who claimed dissatisfaction. The neutral portion of the participants who cannot decide and opt for neutral reaches the value of 72 out of 180. We may find the reason for their indecisiveness in the following answers. For example, in Figure 6, 93 out 180 rarely use ChatGPT in their academic writing compared to 53 participants who use it regularly.

**Figure 5.** The participants’ enjoyment of ChatGPT

**Figure 6.** The participants’ frequency of using ChatGPT
academic writing, which appears to have a connection with the neutral portion who may not have enough experience with ChatGPT.

The same portion, that is about 1/3 of the surveyed with a neutral attitude, continues to appear with the same stance to using ChatGPT in writing. However, once the questionnaire requires details on their experience with ChatGPT in writing assignments, the portion of the respondents develops from 59 in Figure 6 to 84 in Figure 7 while the neutral portion from 70 to 49. Additional comments on the previous questions seem to add more clues to the distribution of the participants between neutral and agree items. The majority of the 25 comments reveal that some participants use ChatGPT for rephrasing and summarizing articles but never for generating and copying ideas.

Very illuminating is the constant value, 70/180, related to the neutral category of the participants. This is also true concerning the inquiry of whether academic writing develops with the use of ChatGPT (Figure 9). The majority of the participants cannot decide. 57/180 disagree and 53/180 agree, but 70/180 are neutral. The last portion is uncertain about the impact of using ChatGPT on their writing competence.

Figure 7. The participants’ perception of using ChatGPT in writing

Figure 8. Part of the comments submitted by some participants
In the free commentary slot, 17 participants submitted the following comments

Table 1. The participants free comments on using ChatGPT

<table>
<thead>
<tr>
<th></th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Je suis contre (Fr.)</td>
</tr>
<tr>
<td>2</td>
<td>It may decrease the skill of writing</td>
</tr>
<tr>
<td>3</td>
<td>I used Chatgpt when I need to correct the grammatical mistakes</td>
</tr>
<tr>
<td>4</td>
<td>Agree</td>
</tr>
<tr>
<td>5</td>
<td>I do not use it to write, only for information</td>
</tr>
<tr>
<td>6</td>
<td>Yes! The professors are so impressed by my writing. little do they know I’m not the one writing anything 😂😂</td>
</tr>
<tr>
<td>7</td>
<td>I find it difficult to it.</td>
</tr>
<tr>
<td>8</td>
<td>I have never use it for writing so I cannot decide on this.</td>
</tr>
<tr>
<td>9</td>
<td>I don't use the app for proofreading or writing</td>
</tr>
<tr>
<td>10</td>
<td>Since I do not have a high level in English, I use AI CHATBOT, but always with moderation and precaution, because as Open AI company mentioned, the answers given may not be true.</td>
</tr>
<tr>
<td>11</td>
<td>One should first try his own best, and then use ChatGPT. We should not be addicted to it but as human being who created it, so our writing will always remain the best I mean our production so we should consider it as a means of help not as means of escaping from our responsibilities.</td>
</tr>
<tr>
<td>12</td>
<td>not really</td>
</tr>
<tr>
<td>13</td>
<td>...</td>
</tr>
<tr>
<td>14</td>
<td>How can a person answer the questions that follow if he or she does not have a ChatGPT account while it is obligatory to answer all of them you submit?</td>
</tr>
<tr>
<td>15</td>
<td>It helps in pointing out grammatical errors, and the structure of the writing, so we can say that it is good in assisting.</td>
</tr>
<tr>
<td>16</td>
<td>I use ChatGPT to help me correct grammar and typing errors as well</td>
</tr>
<tr>
<td>17</td>
<td>Agree</td>
</tr>
</tbody>
</table>
Responses 1, 2, 5 6, 8, 9, 10, 11, 12, 13, 14, are not in favour of the impact of ChatGPT on academic writing for different reasons. Some participants admit being unable to decide because of lack of experience with ChatGPT in writing. Some take precautions for not falling in plagiarism. However, the participants acknowledge (Figure 10) four main areas they find ChatGPT most helpful; they are sentence and structure development (87/180), paraphrasing (81/180), basic knowledge search (72/180), and grammar (81/180). Translation and summarizing are areas suggested by some participants in the free comments box. The 13 different comments are as follows:

Table 2. The participants free comments on ethical guidelines

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>translate</td>
</tr>
<tr>
<td>2.</td>
<td>In fact, I prefer Copilot ChatBot integrated to Edge Browser because gives more customer options</td>
</tr>
<tr>
<td>3.</td>
<td>I think it does not help to develop student’s competencies, yet it serves to be lazy and empty of any research abilities.</td>
</tr>
<tr>
<td>4.</td>
<td>you forgot to add cheating option</td>
</tr>
<tr>
<td>5.</td>
<td>None</td>
</tr>
<tr>
<td>6.</td>
<td>since I don't have a ChatGPT account my answers are arbitrary</td>
</tr>
<tr>
<td>7.</td>
<td>I think for someone who wants to write in another language and has doubts about if he is writing correctly, he can use ChatGPT to correct his mistakes.</td>
</tr>
<tr>
<td>8.</td>
<td>CHATGPT IS 💩.</td>
</tr>
<tr>
<td>9.</td>
<td>It improved vocabulary also</td>
</tr>
<tr>
<td>10.</td>
<td>.</td>
</tr>
<tr>
<td>11.</td>
<td>Summarizing</td>
</tr>
<tr>
<td>12.</td>
<td>Because I find it difficult to understand some rules so I resort to ChatGPT</td>
</tr>
<tr>
<td>13.</td>
<td>Grammar</td>
</tr>
</tbody>
</table>

It is notable that some participants go further to suggest alternatives to ChatGPT, such as Copilot ChatBot, a conversational AI platform embedded in Microsoft Edge and Teams. Once again, the majority of the participants refer to the reality that they do not know whether ChatGPT is allowed at the Moroccan university. Figure 11 shows that 21 participants (11, 7%) say that...
ChatGPT is allowed in contrast with 29 (16%) disagree; that is 130 who don’t know added to 21 who disprove resulting in 151 participants lacking any update concerning the permission to use ChatGPT at the university.

In relation to this fact, 152/180 (Figure 12) think that the universities should provide ethical guidelines about using ChatGPT, though a minimal number of the participants are against. Some of the participants submitted the following comments

**Figure 11. ChatGPT at the Moroccan universities**

**Figure 12. The participants views about ethical guidelines**

| 1. | I Strongly agree |
| 2. | Not only for postgraduates but also undergraduates |
| 3. | Yes |
| 4. | Never ChatGPT can be creative as a human can be. |
| 5. | No, never. I plan on going for masters and cheating my way up the ladder until I get a PhD. They better not restrict its usage or I will be mad. |
| 6. | It should not be a disguised form of plagiarism. |
| 7. | I think so. |
| 8. | The use of ChatGPT by students is still not well understood |
| 9. | Some rules should be established to limit plagiarism |

**Table 3. The participants free comments on ethical guidelines.**
Great

12. I think students should be aware of using ChatGPT but not to rely on it 100%
13. I think nowadays everybody know about it, but it will be useful for the future of our traditional way of studying.

The comments are pasted in this table with their provided spellings. The comments are self-explanatory.

The final series of free comments counts about 56 entries summarizes the assumptions displayed in the present research. Figure 13 illustrates a sample of these comments. The language of the final series of comments is sustained and more appropriate than the first two lists of comments.

These comments are well thought and reasoned. A considerable number of participants have contributed to it as a final step in the questionnaire summarizing the whole of the experience with ChatGPT in academic writing. It is noteworthy that it is recurrent in the participants’ comments that ChatGPT is beneficial in many ways though it may hurt the students who rely fully on it in their writing assignments. Because it is “double-edged sword”, it should be used with moderation and guidance by the institutions and faculty.

Discussion

The data collected by the present investigation confirms the value and efficacy of ChatGPT as a tool. The students surveyed with their different academic backgrounds confirm that ChatGPT is “a valuable tool for a range of applications” (Mazhara & Melnychuk, 2023, p. 583). It lessens time constraints and alleviate information seeking anxiety, making available instantly a plethora of information, keys to assignments and academic framing with “a relatively high degree of accuracy” (Pin-Hui Li et al., 2023, p. 83).

Indeed, the Moroccan respondents admit that ChatGPT can be both beneficial and harmful to the students. One of the respondents, a master student aged between 25 and 35, claim that ChatGPT is a “double-edged sword”. On one hand, the use of ChatGPT as an AI to retrieve far-reached data to accomplish effort and time demanding tasks foster the inclusivity of less proficient or disabled students for whom traditional research methods of navigating information resources can be challenging. Similarly, an undergraduate student between 25-35 years old reveals that ChatGPT is of good use to her; in a comment, she acknowledges that “ChatGPT was helpful for me during my exams preparation period; it corrected me whenever I am confused with the answers of some exercises.”

However, the Moroccan respondents are fully aware that ChatGPT as a tool bears its own inherent flaws. In the free comment slot (Table 3, row 4) a respondent states that “Never ChatGPT can be creative as a human can be”. For this reason, ChatGPT productions need human touch as the master student resumes in the comment that “It can save some of our time, but it is not to be fully depended on. Human intervention
is always needed when using this App.” For illustration, ChatGPT “does not inherently possess the ability to cite or attribute specific sources” (Spair, 2023, p. 51). For this reason, this particular master student, though he is registered with an account on ChatGPT, he uses just for paraphrasing and editing. Furthermore, in line with Agadi & Chinthia (2023) statement that ChatGPT is loaded with too much data that it may retrieve “great deal of misinformation and disinformation” (p. 30), an undergraduate business student reveals that ChatGPT “invents the answers when he doesn't have the information to answer”.

More appalling to some of the respondents is the risk of destroying both the creativity and integrity of the students. An undergraduate student confesses the dark side of the game saying “yes! The professors are so impressed by my writing. Little do they know I’m not the one writing anything 😆”. The student added the laughing emoji with big grin as a sign of something funny. More comments refer to the students’ dependency on the application and kill their creativity.

The Moroccan users consciously figure out the next step needed in their experience with ChatGPT. The respondents are fully aware of the benefits and risks of using ChatGPT in their academic writing. Both professors and students claim professional training for deeper understanding of ChatGPT software and its functionalities of processing, storing, and retrieving data. Accordingly, in the final commentary slot, an undergraduate female applied-sciences student under 25 recommends “Universities should provide ethical guidelines for students of all levels about using ChatGPT because the future needs creative minds.”

**Conclusion**

The outcomes of the present study reveal very significant conclusions. Though the number of participants in the study is limited to 180 individuals, the number of the adherents in WhatsApp students’ discussion groups invited to contribute is far larger, but only a few could participate due to lack of experience with ChatGPT and an important portion of those who have answered the questionnaire voice neutral attitudes if not hesitation. Still, the results are illuminating and instructive. The students at different educational levels venture into the use of ChatGPT without guidance and training. They are at a crossroads without direction signs in implementing ChatGPT appropriately, so they are astray about whether to use ChatGPT academically, how, and where. The educators, though they are provided with accounts in iThenticate plagiarism detector, stay aloof and claim training in their turn. It is true that some initiatives appear here and there as conferences on AI in general, but the educational authorities, ministry, and universities continue to keep taciturn.

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