

Perceptions of Algerian PhD Students towards ChatGPT in Higher Education: An Innovative Educational Approach in the Generative Artificial Intelligence Era at Batna2 University

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Abstract

ChatGPT, an artificial intelligence language model developed by OpenAI, has gained significant attention for its potential applications in higher educational contexts. This article aims to present the findings of a questionnaire conducted to explore the perceptions of PhD students at Batna 2 University across various departments regarding ChatGPT. Addressing this study could enhance our understanding of how emerging AI tools, particularly ChatGPT, are influencing academic attitudes and practices. It explores the potential impacts on the future role of technology in research and learning. The researchers used a combination of quantitative and qualitative methods to gather data. A questionnaire, validated for its psychometric properties, was utilized in this study and comprised three sections: knowledge about ChatGPT, students' attitudes toward ChatGPT, and students' concerns regarding its use as a learning tool. The study was conducted with a random sampling of 70 PhD students representing various disciplines and educational backgrounds. The results obtained via Google Forms reveal that, while students generally acknowledge ChatGPT's value for academic support, they have significant concerns about its accuracy, privacy implications, and potential effects on traditional learning methods. The findings indicate a nuanced perspective among students, revealing that they have concerns about the extent to which GPT is used ethically, particularly within a restricted framework. The researchers recommended undertaking a more comprehensive study to explore its applications in greater detail.

Keywords: Artificial Intelligence, ChatGPT, Higher Education, Natural Language Processing, PhD students' perceptions

ملخص

لقد اكتسب ChatGPT ، وهو نموذج لغة ذكاء اصطناعي طورته شركة OpenAI ، اهتمامًا كبيرًا لتطبيقاته المحتملة في سياقات التعليم العالي. يهدف هذا المقال إلى عرض نتائج استبيان تم إجراؤه لاستكشاف تصورات طلاب الدكتوراه بجامعة باتنة 2 عبر مختلف الأقسام فيما يتعلق بـ ChatGPT. إن معالجة هذه الدراسة يمكن أن يعزز فهمنا لكيفية تأثير أدوات الذكاء الاصطناعي الناشئة، لا سيما ChatGPT ، على المواقف والممارسات الأكاديمية. كما تستكشف التأثيرات المحتملة على الدور المستقبلي للتكنولوجيا في البحث والتعلم. استخدم الباحثون مزيجًا من الأساليب الكمية والكيفية لجمع البيانات. تم استخدام استبيان، الذي تم التحقق من صحة خصائصه السيكومترية، في هذه الدراسة الذي يتكون من ثلاثة أقسام: المعرفة حول ChatGPT، ومواقف الطلاب تجاه ChatGPT، ومخاوف الطلاب فيما يتعلق باستخدامه كأداة تعليمية. أجريت الدراسة على عينة قصدية مكونة من 70 طالب دكتوراه يمثلون مختلف التخصصات والخلفيات التعليمية. تكشف النتائج التي تم الحصول عليها عبر نماذج جوجل أنه على الرغم من أن الطلاب يعترفون عمومًا بقيمة ChatGPT للدعم الأكاديمي، إلا أن لديهم مخاوف كبيرة بشأن دقته وأثاره على الخصوصية وتأثيراته المحتملة على طرق التعلم التقليدية. تشير النتائج إلى وجود منظور دقيق بين الطلاب، مما يكشف عن أن لديهم مخاوف بشأن مدى استخدام GPT بشكل أخلاقي، لا سيما ضمن إطار مقيد. وأوصى الباحثون بإجراء دراسة أكثر شمولاً لاستكشاف تطبيقاته بمزيد من التفصيل.

الكلمات المفتاحية: الذكاء الاصطناعي، ChatGPT، التعليم العالي، معالجة اللغات الطبيعية، تصورات طلاب الدكتوراه.

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Introduction

Artificial Intelligence (AI) is controversial and our knowledge of the field is growing rapidly. It has been used in several applications; autonomous robots (Azar & Koubaa, 2023); applications in medicine (Davenport & Kalakota, 2019) and manufacturing (Stackpole, 2023). AI has become an important aspect of the future. This applies equally as well to the Information Technology (IT) Internet of Things (IoT) (Deng, et al., 2018), and composes a new compound technology, AIoT (artificial intelligence of things) (Ghosh et al., 2018). One of the most advanced AI-powered chatbots is ChatGPT (Generative, Pre-TrainedTransformer), which was created by the Microsoft-backed company OpenAI and released in 2022 (Duhigg, 2023).

In the context of higher education's influence on technology, Gacem and Senouci (2024) found that the ChatGPT technology takes an especially important place by simulating conversations with students to provide feedback, answering questions, and providing support. It is designed to allow users to have human-like conversations to complete various tasks (Huang et al., 2022). ChatGPT has the potential to revolutionise the way students and educators interact and learn, with its ability to realistically mimic human conversation opens a new and exciting avenue in learning. ChatGPT also has particular challenges in modifying our daily lives as communities and individuals (Cotton et al., 2024). We aimed, in this article, to present an outline of chatGPT, to identify and analyze the *perception* of Algerian *PhD students* towards chatGPT usage in higher education at Batna 2 University.

This study explores how emerging AI tools, particularly ChatGPT, are influencing academic attitudes, practices, and the future role of technology in research and learning. It aims to offer insights into current research on ChatGPT, focusing on how PhD students perceive its role in their research and academic activities, including its benefits and limitations. The study seeks to inform educators and institutions about the integration of AI in academic training, highlighting areas where additional support or guidance may be required. It also examines the ethical and practical implications of ChatGPT, addressing concerns about ethics, dependency, and the impact of AI on the quality and originality of academic work. Overall, this research contributes to a broader understanding of ChatGPT's role in higher education and its influence on the academic landscape. To achieve these objectives, the study addresses the following research question:

- How do PhD students perceive the effectiveness of ChatGPT in assisting with their research-related tasks?

Literature Review

The AI chatbot's advanced conversational capabilities continue to generate a pipeline of revolutionary technologies by offering powerful tools, such as ChatGPT, the latest breakthrough in natural language processing technology. It has been used in a variety of fields due to its potential applications for researchers, scholars and users (Strzelecki, 2024).

ChatGPT: An Overview

ChatGPT is an innovative technology that uses advanced artificial intelligence techniques to generate human-like text based on the input, queries, feedback, and prompts it receives. (Gilson, et al., 2023). It is a Natural Language Processing (NLP) system developed by OpenAI. ChatGPT is derived from a deep learning model called GPT-3, which is designed to produce a large dataset of natural language interaction by helping users to understand the

context of a conversation, get appropriate answers, provide explanations, generate creative content, find inspiration and to be more productive (Jianyang & Yijia, 2022).

Chatgpt in Higher Education

In the contemporary academic world, a growing number of scholars, researchers, and students are utilizing ChatGPT for academic purposes, which can be highly beneficial when done responsibly (Zeb et al., 2024). It can assist with diverse academic tasks (Bin-Nashwan et al., 2023). The usage of ChatGPT for academic context includes a wide range of uses, as well as research assistance for gathering preliminary information on a topic, identifying key concepts, and getting summaries of complex ideas (Rahman, Terano, Rahman, Salamzadeh, & Rahaman, 2023).

This technology can also serve as a study aid to help explain difficult concepts, provide examples, and answer questions on a wide range of subjects, making it a valuable study tool. (Araji MD & D. Brooks MD, 2024) ChatGPT is defined as a useful language practice tool for students learning new languages, assisting with grammar, vocabulary, and conversational practice (Sallam, 2023). Additionally, this AI platform fulfills academic purposes by providing writing support, assisting in problem-solving, and offering revision, proofreading, and translation services (Wang, 2023).

ChatGPT's in Scientific Research at Algerian Universities

As of now, OpenAI's ChatGPT is available to users worldwide, including Algeria through the ChatGPT website, mobile apps, or integrated platforms. It finds various applications to enhance communication, education, and access to information. ChatGPT has emerged as a pivotal tool in advancing scientific research at Algerian universities. Its integration into various academic disciplines has catalyzed new avenues of exploration and discovery. By leveraging ChatGPT's capabilities, researchers in Algeria can streamline data analysis, generate hypotheses, and explore complex scientific inquiries more efficiently than ever before (Hamdis, 2024).

In the field of higher education, ChatGPT has been utilized to develop intelligent tutoring systems and virtual learning environments tailored to Algerian students. By interacting with ChatGPT, one notable impact lies in its ability to process vast amounts of data and provide insightful interpretations, thereby accelerating the pace of research projects across disciplines such as computer science, linguistics, and environmental studies. Its role extends beyond mere data processing; ChatGPT also serves as a collaborative partner, offering researchers in Algeria a virtual assistant capable of synthesizing information, suggesting research methodologies, writing essays and academic papers, providing language translation assistance, and even generating preliminary drafts of academic papers (AlZu'bi et al., 2024).

Moreover, ChatGPT's accessibility and adaptability contribute significantly to its adoption within Algerian academia. It bridges gaps in knowledge and enhances the productivity of researchers, enabling them to focus more on the creative aspects of their work rather than on routine tasks. This empowerment fosters a dynamic research environment where innovation thrives (Yilmaz et al., 2023).

Overall, ChatGPT's integration into Algerian scientific research reflects its versatility and impact across diverse disciplines, fostering innovation and advancing knowledge in the country's academic and research communities (HAMDIS, 2024). As its capabilities continue to

evolve, ChatGPT is expected to play an increasingly pivotal role in shaping the future of scientific inquiry and technological advancement in Algeria.

Methods and Materials

The researchers employed a descriptive survey method, gathering both quantitative and qualitative data through the distribution of an online questionnaire. The questionnaire (Appendix A) was structured around three key axes: the first axis assessed students' knowledge of the ChatGPT system, the second axis examined their behavior and attitudes related to ChatGPT, and the third axis addressed their concerns about this AI model.

Participants

The researchers used a simple random sampling technique to ensure accurate statistical inferences about the population and minimize the impact of confounding variables. The sample comprised 70 doctoral students from the Department of French and English, the Institute of Science and Technology of Physical Activities and Sports, and the Department of Biology at Mustafa Ben Boulaid University, Batna 2, for the academic year 2023-2024 (as detailed in Table One).

Table 1. Demographic details of the sample of students

variable	N	d.French	d.English	Sports	biology
Sample	70	26	12	19	13
%	100	33.76	17.14	27.14	18.57

Table One provides demographic details of the student sample, including their distribution across different variables. It shows the distribution of students across different categories: Department of French, Department of English, Sports, and Biology. The sample size is 70 students, which is represented in the distribution percentages for each category. 26 students (33.76%) are involved in d. French, making it the largest category in this sample. 12 students (17.14%) are engaged in d. English. This is the smallest percentage among the categories listed. 19 students (27.14%) are involved in sports, which is the second largest category after d. French. 13 students (18.57%) are involved in Biology, slightly higher than d. English but lower than d. French and d. Sports.

Research Instruments

The researchers employed a descriptive approach to collect both quantitative and qualitative data through a questionnaire (Appendix A). This perceptual questionnaire included a variety of question types, including semi-open and primarily closed-ended questions. The purpose of collecting data was to understand doctoral students' perspectives on the use of the ChatGPT system at the University of Batna 2. The questionnaire is organized into three main axes: the first assesses in-depth knowledge of ChatGPT, the second examines attitudes towards its use, and the third addresses students' ethical concerns regarding its applications.

Research Procedures

The study targeted four groups of doctoral students: those in French, English, Physical Education and Sports, and Biology. Data was collected via a survey distributed through Google Forms. The survey was distributed via email and widely used social media platforms such as Facebook, WhatsApp, and Telegram. This approach promoted broad participation and ensured

a smooth submission process, thereby increasing engagement. Participants were assured that their responses would remain confidential and anonymous.

Results

PhD Students' Questionnaire

This section provides an in-depth analysis of the questionnaire, detailing participants' responses on various aspects of using ChatGPT. The table includes basic statistics such as the number of respondents (N), mean scores, and Standard Deviations (SD) for each topic. This information offers valuable insights into participants' perceptions and experiences with ChatGPT.

Axis One: Knowledge

Table 2. *Awareness of ChatGPT prior to the study*

Answer	Freq	Perc	Chi-square	Sig
Yes	40	57.1	1,429 ^a	,232
No	30	42.9		
Total	70	100		

Table Two reveals that over 57% of the surveyed students are familiar with ChatGPT, while 42.9% are not. The chi-square value of 1.429 with a significance level of 0.232 indicates that the difference in awareness is not statistically significant. This data suggests that despite ChatGPT being available for some time, a notable portion of students remain unaware of it.

Table 3. *Prior usage of ChatGPT*

Answer	Freq	Perc	Chi-square	Sig
Yes	50	71.4	11,200 ^a	,001
No	20	28.6		
Total	70	100		

Table Three shows that over 71% of the surveyed students have used ChatGPT, compared to 28.6% who have not. The chi-square value of 11.200 with a significance level of 0.01 indicates that this distribution is statistically significant. This suggests that although a significant minority of students may not view ChatGPT as essential to their university experience, the majority actively use it for various purposes.

Table 4. *Device used to connect to ChatGPT*

Answer	Freq	Perc	Chi-square	Sig
Cell phone	30	42.9	11,429 ^b	,003
Tablet	00	00		
Laptop or notebook computer	30	42.9		
Desktop computer	10	14.3		
Total	70	100		

Table Four illustrates that 42.9% of the surveyed students use cell phones to access ChatGPT, which matches the percentage of those who use laptops or notebook computers. Additionally, 10% of students use desktop computers, while no students use tablets. The chi-square value of 11.429 and a significance level of 0.03 indicate that these findings are statistically significant. This data highlights that cell phones and laptops or notebook computers are the preferred

devices for accessing ChatGPT among the surveyed students, likely due to their convenience and accessibility.

Table 5. *Frequency of ChatGPT Use for academic purposes*

Answer	Freq	Perc	Chi-square	Sig
Several times a week	20	28.6	20	,000
Once a week	00	00		
A few times a month	10	14.3		
Rarely	40	57.10		
Total	70	100		

Table Five summarizes the frequency of ChatGPT use for academic purposes among the surveyed students. It indicates that “Rarely” is the most common frequency, with 57.1% of students falling into this category. This suggests that a significant majority use ChatGPT infrequently for academic purposes. The next most common response is “Several times a week,” reported by 28.6% of students. “A few times a month” accounts for 14.3% of responses. Notably, no students reported using ChatGPT “Once a week”. The chi-square value of 20 and a significance level of 0.00 indicate that this concern is statistically significant. This data highlights that, despite the importance of ChatGPT in educational settings, our students use it infrequently.

Table 6. *Types of academic activities for which ChatGPT Is used*

Answer	Freq	Perc	Chi-square	Sig
Writing assignment	20	28.6	4,286 ^c	,232
Summarizing orparaphrasing text	20	28.6		
Taking notes	20	28.6		
ConductingResearch	00	00.0		
Other	10	14.3		
Total	70	100		

Table Six highlights the frequency of different activities and tasks related to ChatGPT usage. It reveals that the most frequently reported activities are writing, summarizing, and note-taking, each with an equal frequency of 20% among the surveyed students. The “Other” category, accounting for 10%, includes activities not specified in the other categories and may warrant further exploration. Notably, no students reported using ChatGPT for “Conducting Research.” The chi-square value of 4.286 and a significance level of 0.232 indicate that this concern is not statistically significant. This data indicates that ChatGPT is used in various academic activities, particularly for writing assignments, summarizing or paraphrasing text, and taking notes.

Table 7. *Reliance on ChatGPT as the primary source of information for academic tasks*

Answer	Freq	Perc	Chi-square	Sig
Always	00	00	1,429 ^a	,232
Sometimes	30	42.9		
Rarely	40	57.1		
Total	70	100		

Table Seven summarizes responses to the question of whether ChatGPT is the primary source of information for academic tasks. It shows that “Sometimes” is the most common response, with 42.9% of the total. “Always” and “Rarely” both have no occurrences, indicating that none

of the respondents consider ChatGPT as their primary or infrequent source of information. The chi-square value of 1.429 and a significance level of 0.232 indicate that this concern is not statistically significant. This data suggests that a significant portion of respondents rely on ChatGPT for academic tasks at least occasionally.

Table 8. *The usefulness of ChatGPT for academic purposes*

Answer	Freq	Perc	Chi-square	Sig
Very unhelpful	10	14.3	38,571 ^c	,000
Somewhat unhelpful	10	14.3		
Neither helpful nor unhelpful	10	14.3		
Somewhat helpful	40	57.1		
Very helpful	00	00		
Total	70	100		

Table Eight represents responses on the perceived helpfulness of using ChatGPT for academic purposes. It reveals that “Somewhat helpful” is the most common response representing 57.1% of the total. While “Very unhelpful”, “Somewhat unhelpful”, and “Neither helpful nor unhelpful” each have 10 occurrences (14.3%). “Very helpful” has no occurrences, indicating that no respondents consider ChatGPT to be extremely beneficial. The chi-square value of 38.571 and a significance level of 0.00 indicate that this concern is statistically significant. This data suggests that a majority of respondents find ChatGPT to be somewhat beneficial for academic purposes.

Table 9. *Time Spent Using ChatGPT for academic purposes*

Answer	Freq	Perc	Chi-square	Sig
<10 Minutes	30	42.9	15,714 ^c	,001
10-30 Minutes	10	14.3		
30 to 1 hr	10	14.3		
1-2 hrs	20	28.6		
More than 2hrs	00	00		
Total	70	100		

Table Nine summarizes the amount of time respondents spend using ChatGPT for academic purposes. It shows that “<10 Minutes” is the most common time range, with 30 respondents (42.9%) spending less than 10 minutes using ChatGPT for academic purposes. “1-2 hrs” is the second most common category, with 28.6%. “10-30 Minutes” and “30 to 1 hr” each account for 10 respondents (14.3%). Notably, no students reported spending more than two hours using ChatGPT for academic tasks. The chi-square value of 15.714 and a significance level of 0.01 indicate that this concern is statistically significant. This data indicates that a significant portion of users engage with ChatGPT briefly.

Table 10. *Proficiency in using ChatGPT for academic tasks*

Answer	Freq	Perc	Chi square	Sig
Beginner	20	28.6	3,800 ^b	,150
Intermediate	30	42.9		
Advanced	20	28.6		
Expert	00	00		
Total	70	100		

Table Ten presents the proficiency levels of respondents in using ChatGPT for academic tasks. It indicates that “Intermediate” is the most common proficiency level, with 42.9% of the surveyed students identifying themselves as having an intermediate level of proficiency. Both

the “Beginner” and “Advanced” categories each have 20 respondents, representing 28.6% of the total. Notably, none of the students consider themselves experts in using ChatGPT for academic tasks. The chi-square value of 3.800 and a significance level of 0.150 indicate that the distribution of responses is not statistically significant. This data indicates that a significant portion of users feel reasonably skilled but not at an advanced or expert level.

Table 11. Accuracy of ChatGPT in understanding and responding to user inquiries

Answer	Freq	Perc	Chi-square	Sig
Yes	40	57.1	1,429 ^a	,232
No	30	42.9		
Total	70	100		

Table Eleven provides an overview of responses to whether ChatGPT is accurate in understanding and responding to user inquiries. It reveals that “Yes” is the more common response, with 40 respondents (57.1%). While “No” has 30 respondents (42.9%), reflecting that a substantial portion of users do not believe ChatGPT is accurate in its responses. The chi-square value of 1.429 and a significance level of 0.232 indicate that the distribution of responses is not statistically significant. This data indicates that a majority of users view ChatGPT positively in terms of its accuracy.

Axis Two: Attitude

Table 12. Ethical and legal considerations related to the use of ChatGPT

Answer	Freq	Perc	Chi-square	Sig
Yes	50	71.4	11,200 ^a	,001
No	20	28.6		
Total	70	100		

Table Twelve illustrates responses to whether respondents believe there are ethical or legal considerations related to the use of ChatGPT. It highlights that “Yes” is the predominant response, with 50 respondents (71.4%). While “No” has 20 respondents (28.6%), reflecting that a smaller portion of users do not believe that such considerations are relevant. The chi-square value of 11.200 and a significance level of 0.000 indicate that this concern is statistically significant. This data indicates that a significant majority of respondents are aware of or concerned about potential ethical or legal issues associated with ChatGPT.

Table 13. The potential of ChatGPT to reduce academic workload (Assignments, Exams, and Projects)

Answer	Freq	Perc	Chi-square	Sig
Yes	60	85.7	35,714 ^a	,000
No	10	14.3		
Total	70	100		

Table Thirteen outlines responses to whether respondents believe ChatGPT can help reduce their academic workload, including assignments, exams, and projects. It shows that “Yes” is the overwhelmingly dominant response, with 60 respondents (85.7%). However, “No” has 10 respondents (14.3%), reflecting a smaller segment who do not believe ChatGPT will reduce their workload. The chi-square value of 35.714 and a significance level of 0.000 indicate

statistical significance. This data indicates a strong perception that ChatGPT is a valuable tool for managing assignments, exams, and projects.

Axis Three: Student's Concerns

Table 14. *Concerns about ChatGPT undermining the purpose of education*

Answer	Freq	Perc	Chi-square	Sig
Yes	40	57.1	20	,000
No	10	14.3		
I don't know	20	28.6		
Total	70	100		

Table Fourteen responds to the question of whether reliance on ChatGPT could undermine the purpose of education. It indicates that "Yes" is the most common response, with 40 respondents (57.1%) expressing concern that reliance on ChatGPT could potentially undermine the purpose of education. While "No" has 10 respondents (14.3%) and "I don't know" accounts for 20 respondents (28.6%). The chi-square value of 20 and a significance level of 0.000 indicate that this concern is statistically significant. This data indicates that a significant portion of respondents worry that using ChatGPT might detract from the core educational goals, such as critical thinking and learning.

Table 15. *Impact of ChatGPT dependence on students' critical thinking abilities*

Answer	Freq	Perc	Chi-square	Sig
Yes	60	85.7	35,714 ^a	,000
No	10	14.3		
Total	70	100		

Table Fifteen summarizes responses regarding whether dependence on ChatGPT can negatively affect students' critical thinking abilities. It shows that "Yes" is the predominant response, with 60 respondents (85.7%) agreeing that reliance on ChatGPT could negatively impact students' critical thinking skills. In contrast, "No" has 10 respondents (14.3%), who do not believe that ChatGPT will hinder critical thinking. Additionally, the chi-square value is 35.714 with a significance level of 0.000. This statistically significant result highlights a strong concern among the majority about the potential for ChatGPT to adversely affect the development of critical thinking skills.

Table 16. *Impact of ChatGPT on students' creative writing skills*

Answer	Freq	Perc	Chi-square	Sig
Yes	60	85.7	35,714 ^a	,000
No	10	14.3		
Total	70	100		

Table Sixteen presents responses to whether ChatGPT can negatively affect students' creative writing skills. The data reveals that "Yes" is the predominant response, with 60 respondents (85.7%) expressing concern that ChatGPT might impair students' creative writing abilities. In contrast, 10 respondents (14.3%) do not believe that ChatGPT will hurt creative writing. The chi-square value of 35.714 and a significance level of 0.000 indicate that this concern is statistically significant. This suggests a strong apprehension among the majority about the potential detrimental effects of ChatGPT on the development and quality of creative writing skills.

Discussion

The findings indicate that PhD students generally view ChatGPT as a valuable tool for research-related tasks. They appreciate its efficiency in providing quick access to information and streamlining administrative processes. However, there are concerns about ethical issues, dependency on AI, and its impact on the quality and originality of academic work. While ChatGPT is recognized for its convenience and utility, these concerns highlight the need for careful consideration of how AI tools are integrated into academic practices.

Our study reveals a notable preference for ChatGPT among doctoral students at the University of Batna 2, suggesting a growing interest in this technology. The data indicates that students predominantly use their mobile phones to access ChatGPT, highlighting a positive perception of the technology's convenience and accessibility for information retrieval. The research also illuminates how this IA system is integrated into students' university and personal lives for academic purposes. It highlights that ChatGPT is employed in a range of academic activities, particularly for tasks such as writing and rewriting, among other functions.

Chinonso et al. (2023) characterize the ChatGPT system as a comprehensive tool designed to assist researchers in accessing information and delivering high-quality educational materials. This assessment aligns with students' responses about their primary sources of information and their opinions on the system's applications. Consistent with the findings of Firat (2023) and Nash and Cooper (2023), which emphasize ChatGPT's potential benefits in academic research and the reliability of its information, our study revealed that students place significant trust in the system, facilitating their work. Specifically, 57.1% of students expressed strong confidence in ChatGPT's usefulness.

Our results indicate that most students use ChatGPT for less than 10 minutes at a time. This limited usage may reflect their difficulty in mastering the technology. In response to questions about their proficiency with ChatGPT, most students identified themselves as either beginners or intermediate users, which aligns with their brief usage patterns. At the same time, the majority of respondents expressed high confidence in ChatGPT, consistent with the findings of Krügel et al. (2023). Regarding ethical and legal considerations, our results show that 71.4% of students believe there should be regulatory controls to govern the use of this technology.

Additionally, students believe that ChatGPT significantly reduces academic workload, including assignments, exams, and projects, with 85.7% supporting this view. They also find it highly effective in facilitating independent learning through tools like tests and assignments. This aligns with Zhai's (2022) suggestion that students require more support and resources from educators to fully leverage technology. Our study indicates that 57.1% of students are concerned that relying on ChatGPT could undermine the purpose of education, echoing Rahman and Watanobe's (2023) concerns. Moreover, Kooli (2023) highlights the importance of interactive elements in e-learning environments, which aligns with our findings. Regarding the potential negative impact of ChatGPT on critical thinking, 85.7% of students expressed anxiety about its effect on their intellectual abilities. This substantial figure underscores their fear that ChatGPT could adversely affect their creative writing skills.

Pedagogical Implications

In this study, the researchers explore how ChatGPT is perceived and understood within the academic environment of the university, highlighting its significant impact on both

education and research. Doctoral students must appreciate the value of ChatGPT, a technology that is increasingly prevalent across various disciplines and particularly in modern educational contexts. The study showed that although students use ChatGPT, they believe there are no legal or ethical barriers that limit its effective use in transferring knowledge. However, the doctoral students in the study are concerned about the potential negative impact on their thinking and creative abilities, despite considering ChatGPT to be a very reliable source.

Conclusion

Our research aimed to explore doctoral students' perceptions of using ChatGPT as a tool to support educational research and pedagogical work at the University of Batna 2 Mustafa Ben Boulaid. Our research reveals doctoral students' concerns, attitudes, and perceptions towards the use of ChatGPT. Key findings include: First, ChatGPT usage among students is moderate, with adoption slightly above average. Additionally, some students avoid using ChatGPT due to ongoing debates about its benefits and drawbacks, which have led to reluctance among certain individuals.

Furthermore, the duration of ChatGPT use is relatively brief, averaging less than 10 minutes per day, indicating that students do not heavily rely on it for research and academic tasks. While many students do use ChatGPT, they have concerns about its moral and legal implications, despite acknowledging that the information it provides is reliable and accurate. The primary concern among doctoral students is the potential negative impact of ChatGPT on their critical thinking and creativity.

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Statement of Absence of Conflict of Interest

The authors mentioned above hereby solemnly declare that they are not and shall not be in any situation that could give rise to a conflict of interest in what concerns the findings and recommendations contained in this academic article.

Statement of AI Use

The authors declare that they did not use AI tools to write or refine the text.

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Appendices

Appendix A

PhD students' Questionnaire

Dear Participants,

We are pleased to invite you to participate in a research study titled *“Perceptions of Algerian PhD Students Towards ChatGPT in Higher Education: An Innovative Educational Approach in the Era of Generative Artificial Intelligence”* at Batna2 University. Your involvement will require completing a questionnaire. Please rest assured that all responses will remain anonymous and will be used solely for research purposes. We are committed to ensuring your privacy and confidentiality throughout the study.

Thank you for your participation and valuable contribution.

1. In which faculty do you study?

- Department of French
- Department of English
- Department of Business Economics and Management Sciences
- Department of exact sciences and natural and life sciences
- Department of Science and Technology
- Department of Rights and Political Sciences
- Department Sciences and Techniques of Physical and Sports Activities

2. Have you heard about ChatGPT before the study?

- Yes
- No (with an answer of “No” resulting in submission of the response and closure of the survey).

3. Have you used ChatGPT before the study?

- Yes
- No (with an answer of “No” resulting in submission of the response and closure of the survey).

4. What device do you use to access ChatGPT?

- Cell phone
- Tablet
- Laptop or notebook computer
- Desktop computer

5. How often do you use ChatGPT for academic purposes?

- Several times a week
- Once a week
- A few times a month
- Rarely

6. For which academic activities do you use ChatGPT?

- Writing assignment
- Summarizing or paraphrasing text
- Taking notes
- Conducting Research
- Other

7. Is relying on ChatGPT your primary source of information for academic tasks?

- Always
- Often
- Sometimes
- Rarely

- Never
- 8. How helpful or unhelpful is using ChatGPT for academic purposes?**
- Very unhelpful
 - Somewhat unhelpful
 - Neither helpful nor unhelpful
 - Somewhat helpful
 - Very helpful
- 9. How much time do you spend using ChatGPT for academic purposes?**
- <10 Minutes
 - 10-30 Minutes
 - 30 to 1 hr
 - 1-2 hrs
 - More than 2hrs
- 10. How proficient are you in using ChatGPT for academic tasks?**
- Beginner
 - Intermediate
 - Advanced
 - Expert
- 11. Do you think ChatGPT accurately understands and responds to user inquiries?**
- Yes
 - No
- 12. Do you believe there are ethical or legal considerations related to using ChatGPT?**
- Yes
 - No
- 13. Do you think ChatGPT can help reduce your academic workload (e.g., assignments, exams, and projects)?**
- Yes
 - No
- 14. Do you worry that reliance on ChatGPT could undermine the purpose of education?**
- Yes
 - No
 - I don't know
- 15. Can dependence on ChatGPT negatively affect students' critical thinking abilities?**
- Yes
 - No
- 16. Can ChatGPT negatively affect students' creative writing skills?**
- Yes
 - No

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