Competition or Complementarity between ChatGPT and University Libraries: Perceptions of Higher Education Students about the support in academic tasks

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Abstract: In this study, we analyze the use of ChatGPT in activities that take place in the academic community. This research investigates how this Chabot has been used by university students in Portugal and Brazil, and what impact this tool has had on their university libraries. The instrument used was a survey of students from different universities. The objectives of this survey were to obtain: data on the perception of the use of ChatGPT, its usefulness in fulfilling academic tasks, and how it affects the frequency or use of university libraries.

1. Introduction

It is widely acknowledged that artificial intelligence (AI) is here to stay. Since the end of 2021, companies, organizations, governments, and individuals have increasingly recognized the opportunities and threats posed by new technologies, especially those designed to expedite and automate tasks, such as automatic text generation. ChatGPT, an impressive AI tool developed by OpenAI, made its public debut in November 2022. This tool, along with other chatbots, has sparked global debate due to its ability to quickly and efficiently generate natural language text, making it useful for creating various texts and scientific articles. Its rapid adoption has prompted discussions about its role in learning and teaching and has raised questions about its impact on higher education libraries.

This study examines the use of ChatGPT within the academic community, specifically focusing on its utilization by higher education students in Portugal and Brazil, and its influence on their university libraries. A survey was conducted among students from different universities to gather data on their perceptions of ChatGPT, its utility for academic tasks, and its impact on library usage. The outcomes offer insights into students' viewpoints and aid in the development of strategies for libraries to adapt to this new context.

The study explores various crucial issues, such as the accuracy of information, limitations of knowledge, ethics, plagiarism, and training. Additionally, it examines the influence of AI tools on higher education libraries. As librarians and information managers, addressing topics such as information literacy training, copyright issues, and plagiarism in light of these advancements is essential. The research involved administering a questionnaire at several Portuguese and Brazilian universities to gather current perceptions of using ChatGPT. The questionnaire comprises the following sections: 1) Respondent identification; 2) Use and Frequency of the use of ChatGPT; 3) Benefices; 4) Limitations; 5) Ethical concerns; and 6) Impact on university libraries.

This research is crucial for understanding and facilitating decision-making related to the choice of information resources and the creation of comprehensive strategies to aid teaching and research. Instead of completely abandoning a library-centric reference model, it is feasible to enhance current methods by finding ways to more effectively integrate AI, thus fostering the academic development of library users.

2. Literature review

Integrating tools like ChatGPT into the higher education environment represents a significant opportunity to enhance student learning and support. However, this integration must be approached with caution, considering potential ethical challenges and the need for robust policies against misuse (Jisc, 2023). Information professionals play a crucial role in this process, helping to develop curricula and contents that foster skills, and working closely with educators to ensure these technologies are used effectively and ethically.

Librarians and information professionals in general, have the function of identifying fundamental ideas in the field of knowledge and facilitating student learning with several tools, and ChatGPT is no exception

(Adetayo, 2023; Alonso Arévalo & Quinde, 2023; Frederick, 2023; Oyelude, 2023; Vargas-Murillo et al., 2023). However, with all the functions they perform regarding academic support to find sources of information, select information, and work on it, librarians may feel their functions are threatened since ChatGPT is a strong competitor in these matters. Is there a possibility of complementing academic work between these two types of responses?

IFLA's Artificial Intelligence (AI) Special Interest Group has focused on how libraries can strategically respond to the growing presence, and impact of AI technologies. In a recent document (IFLA Special Interest Group Artificial Intelligence, 2023) the importance of libraries developing strategic plans to integrate AI technologies to improve their services, is emphasized. However, a significant part of its focus is on the ethical implications of using AI in libraries, not only ensuring data privacy, checking biases in AI algorithms, and promoting transparency in how AI tools are used in library systems, as well as promoting the training and development of professionals in its use. The most important idea in this context, which IFLA recommends, is that libraries take the risk of using AI to improve the user experience, personalize services and make access to information more efficient and easier to use. These points reflect a comprehensive approach to integrating AI into library services, ensuring this is done ethically, strategically, and in a way that benefits both library staff and users.

The Association of Research Libraries (ARL) has developed a set of guiding principles to help research libraries navigate the integration of artificial intelligence (AI) into their operations and services. A recent document (Association of Research Libraries, 2024) emphasizes the importance of ethical considerations in AI technology use, in line with IFLA considerations. It also highlights, in a more specific context, that libraries need to promote AI literacy (Association of Research Libraries et al., 2024). This involves providing education and training to understand AI technologies, their applications, and their implications. Libraries should facilitate learning opportunities to help users critically interact with AI. The text emphasizes the importance of libraries being flexible and creative in their adoption of AI. This involves exploring new methods of learning, incorporating AI tools into library services, and consistently assessing the influence of AI on library functions. The document suggests that by following these guidelines, academic libraries can successfully incorporate AI into their settings, achieving a balance between leveraging

technological progress and safeguarding the library's fundamental principles, such as access, privacy, and intellectual freedom.

This idea is also supported by the "Living Guidelines on the Responsible Use of Generative AI in Research" (European Commission, 2024) which aims to ensure that the use of generative AI in research is conducted responsibly and ethically, and emphasizes the importance of maintaining research integrity while leveraging the advantages of AI, such as increased efficiency and accelerated discovery. Additionally, EDUCAUSE does not specifically mention libraries in the context of integrating AI and educational initiatives (Pelletier et al., 2024; Robert & Muscanell, 2023). However, is understood that libraries can certainly play a crucial role in supporting higher education initiatives in several ways, contributing significantly to these efforts by providing essential resources, support services, and expertise in information management and access.

Currently, there is still no consensus on whether or how generative AI should be integrated into higher education, nor in particular academic libraries. Some members of academia are vehemently against the use of generative AI in educational environments, fearing that these tools could undermine their core mission of promoting independent and critical thinking in students (Yu, 2023). However, other educational actors enthusiastically support generative AI, seeing it as the most disruptive and transformative technology the educational community has ever encountered. Most of the academic community falls somewhere in between, eagerly recognizing the potential of generative AI while approaching its adoption both with enthusiasm and cautious scrutiny (Robert & Muscanell, 2023).

ChatGPT includes a wide range of characteristics and functionalities that can be applied in higher education (Baidoo-Anu & Owusu Ansah, 2023). Some of the key features and functionalities include advanced natural language processing capabilities, making it proficient in understanding and generating human-like text, which can facilitate communication and collaboration between students, educators, and researchers (UNESCO, 2023). ChatGPT can also assist students and researchers by answering questions, providing explanations, and offering suggestions related to various academic topics and fields of study. This tool can function as a virtual tutor, helping students with homework, assignments, and exam preparation. Additionally, it can explain complex concepts, solve mathematical problems, and provide guidance on writing essays and reports. At the same time, ChatGPT can aid language learners by engaging in conversation, providing vocabulary and grammar explanations, and assisting with language practice exercises. Although it doesn't have enough historical, encyclopedic, or always reliable information, it can access and provide up-to-date data from a wide range of academic sources, journals, and educational websites, making it a valuable tool for staying informed about the latest developments in various fields (Jisc, 2023; UNESCO, 2023). ChatGPT is equipped to suggest textbooks, articles, research papers, and online courses tailored to the specific needs and interests of students or educators. Its accessibility is a significant advantage.

Being available 24/7 makes it a readily accessible resource for students and educators at any time, regardless of their location (European Commission, 2024) But are all these characteristics enough to make higher education students completely autonomous and independent? Could ChatGPT therefore force a reconfiguration of library service offerings or will it just be another fashionable tool that libraries don't necessarily need to pay attention to? Although ChatGPT offers numerous advantages in the field of higher education, we believe it cannot be seen yet as a substitute for human educators or even librarians. The hypothesis for this study is that it should be used as a complementary tool to enhance learning and research experiences, and its responses should be critically evaluated, especially when addressing complex or controversial topics. Therefore, we will have to pay attention to the challenges presented to us, trying to gather the best possible experiences, together with our users in libraries.

3. Methods

In this context, this study aims to analyze behavioral trends in the use of ChatGPT and observe how higher education students use this AI tool, with a focus on its impact on the use of other information resources, namely libraries. To this end, a quantitative analysis and statistical approach was used, based on a questionnaire survey aimed at higher education students and teachers. The survey was created using Google Forms and students were invited to take part by librarians and professors in the classroom. To perfect the questionnaire, a pre-test was carried out with some students to improve data collection. The questionnaire was disseminated at the Faculty of Dental Medicine of the University of Lisbon, the Faculty of Psychology and the Institute of Education of the University of Lisbon, as well as the Polytechnic Institute of Viana do Castelo, during the period from December 12, 2023 to April 2, 2024, and at FESPSP - Fundação Escola de Sociologia e Política de São Paulo, during March and April 2024, obtaining a current perception of the use of ChatGPT in these higher education institutions. The form consists of the following parameters: 1) Characterization of the respondent; 2) Frequency of use and purpose of ChatGPT; 3) Perceived benefits; 4) Challenges and limitations; 5) Ethics and responsibility; 6) Integration with library services and future of ChatGPT in university libraries.

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4. Results
4.1. Characterization of the sample
The data was obtained from 195 responses to a survey of students and professors, 81 responses from Brazil, and 114 responses from Portugal. The sample comprises 22% females and 76% males, and 2% did not want to answer this question. The distribution of the sample by age group is shown in Figure 1. Most of the respondents (135) were between 18 and 25 years old, which reflects the aim of finding out the opinions of higher education students who are mostly young.

There was no concern about distinguishing between institutions since the study focused on the academic population. However, it is important to remember that the schools where the study took place are not very dedicated to teaching Science, Informatics, and Technology. Figure 2 shows the distribution by scientific area. Health Sciences accounted for 89 responses. This is followed by Social Sciences (47 respondents), other matter (20), Human Sciences (47), Arts (12), Science and Technology, Engineering (9) and finally Exact and Natural Sciences (2).
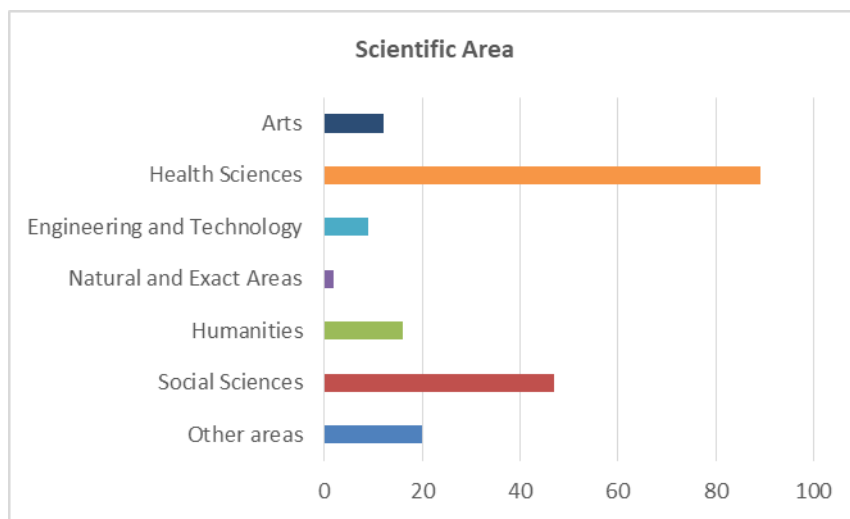

Figure 1. - Distribution of respondents by scientific area

Figure 2 shows the distribution of the sample by education degree. Many of the students are 1st cycle students (74%), i.e. they are studying for a degree with 3 years of higher education. On the other hand, 21% of respondents are master's students and 5% are doctoral students.
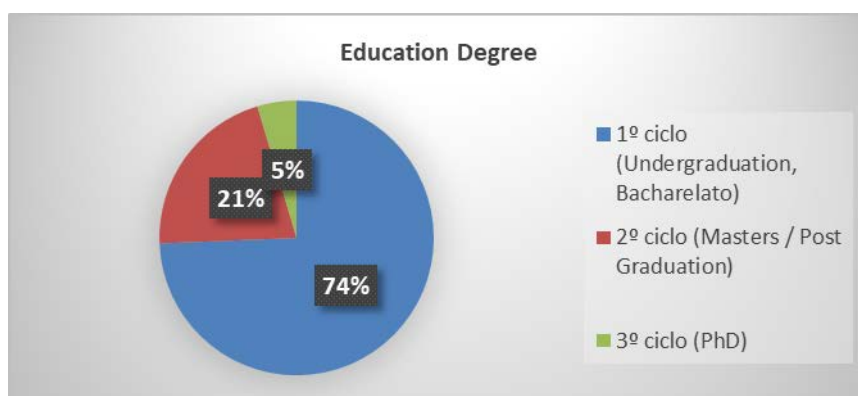
Figure 2. - Distribution of respondents by education degree

4.2. Usage frequency and purpose

In the survey, 99.5% of participants reported being familiar with ChatGPT or similar AI assistants, while only 0.5% weren't used to them. When asked about their registration status on ChatGPT, 77.4% confirmed they were registered users, while 22.5% said they were not. A significant number of users have already signed up, especially considering that this tool is now available for free on November 30, 2022. This data highlights the widespread recognition of ChatGPT within the academic community and indicates a significant number of students are already utilizing it. Figure 3 shows the distribution by Brazil and Portugal.
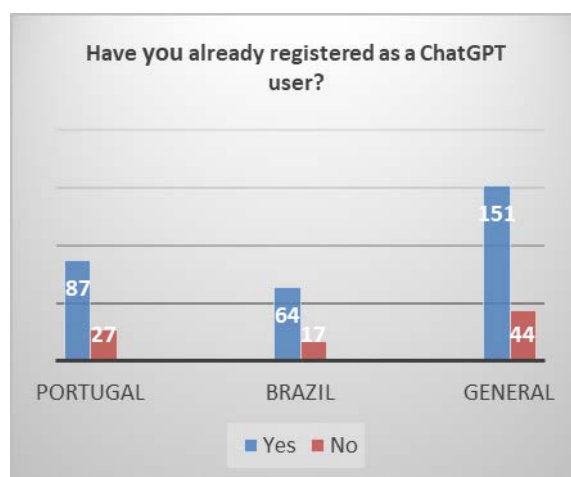
Figure 3. – Distribution by country when asked about their registration status on ChatGPT

When questioned about their usage of ChatGPT, which includes purposes such as translation, summarization, text exploration, general information searches, and academic research, the respondents provided the results shown in Figure 4.
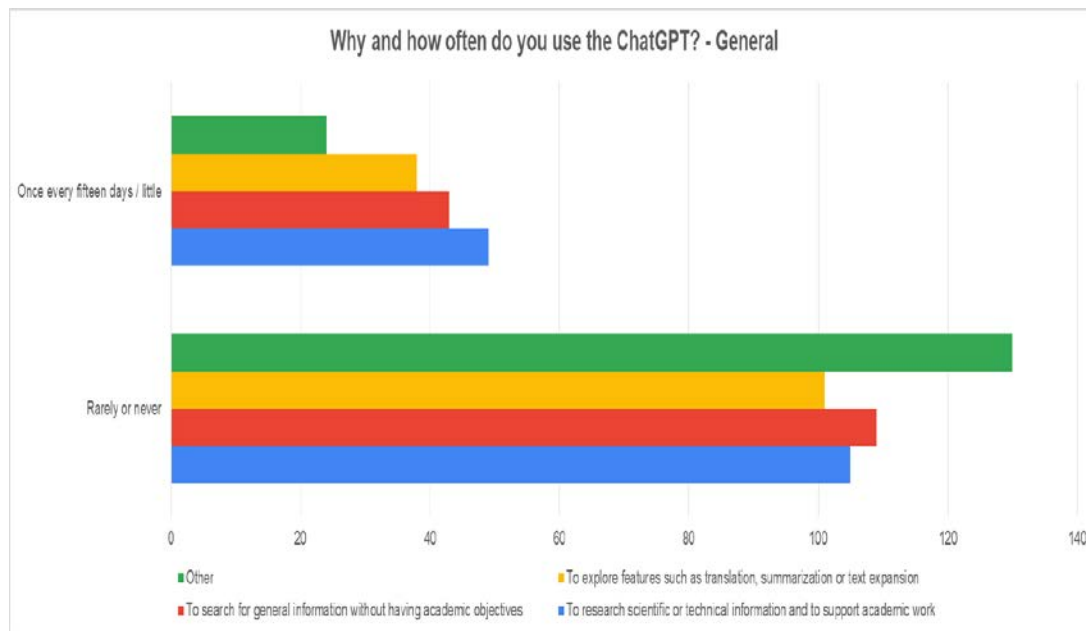

Figure 4 – Data obtained regarding the frequency of ChatGPT usage and its purposes

Most indicated they use ChatGPT "rarely" or "once every fifteen days". Specifically, 49 respondents use it for "researching scientific or technical information and supporting academic work," 43 use it for "searching for general information without academic objectives," 30 use it for "exploring features such as translation, summarization, or text expansion," and 24 use it for various other purposes.

4.3. Benefits of use
When asked about the following benefits of using ChatGPT, "scope of results regardless of the subjects in question", "support in formatting citations and references", "ease of finding specialized information", "24/7 virtual support", and "quick answers to common questions", the results in Table 1 were obtained.

Table 1 – Data obtained regarding the benefits of use of ChatGPT

Bennefits using the ChatGPT	Portugal			Brazil
Never used	1,3%	3	2	1,2%
I couldn't determine	5,7%	13	16	9,8%
Scope of results regardless of the subjects in question	**17,9%**	41	36	**22,1%**
Support in formatting citations and references	6,1%	14	15	9,2%
Ease on finding specialized information	17,0%	39	22	13,5%
24/7 virtual support	17,9%	41	24	14,7%
Quick answers to common questions	**34,1%**	78	48	**29,4%**

These results show that the "quick answers to common questions "is the greatest benefit among those considered, for 34.1% of Portuguese respondents and 29.4% of Brazilian respondents. The second biggest benefit mentioned is "scope of results regardless of the subjects in question" with 17.9% of Portuguese and 22.1% of Brazilian respondents. It is interesting to note that Portuguese and Brazilian academic community members chose the same benefits.

4.4. Limitations of use
The challenges and limitations of using ChatGPT are summarized in Table 2. Portuguese and Brazilian respondents have similar views on "inaccurate or incorrect answers," with 33% and 26% respectively expressing this concern. Although ChatGPT is a powerful tool, it can sometimes produce "hallucinations" that include significant scientific and grammatical errors. It is essential to have the knowledge and critical thinking skills to analyze your answers effectively. Immediately following this, respondents mentioned "difficulty dealing with technical or specific questions," with 22% of Portuguese respondents and 24% of Brazilian respondents noting this issue.

Table 2 – Data obtained regarding the limitations of the use of ChatGPT

Challenges and Limitations using the ChatGPT	Portugal	Brazil
Never used	1,0%	2,0%
I couldn't determine	8,0%	7,0%
Lack of temporal coverage in reporting results	**9,0%**	**17,0%**
Difficulty in interpreting the questions asked	16,0%	15,0%
Lack of ability to provide personalized assistance	11,0%	9,0%
Difficulty dealing with technical or specific questions	**22,0%**	**24,0%**
Inaccurate or incorrect answers	**33,0%**	**26,0%**

As we discussed, it is essential to have knowledge and verify information from other sources provided by ChatGPT, since there are many reported

inconsistencies in the information provided by this tool, it is important to keep this in mind.

4.5. Ethics and responsibility

The results of our study, shown in Figure 4, consider the ethical and responsible behaviour that students exhibit when using ChatGPT. The study addresses the question, "Should students receive instruction on using ChatGPT responsibly to prevent ethical issues like plagiarism?"
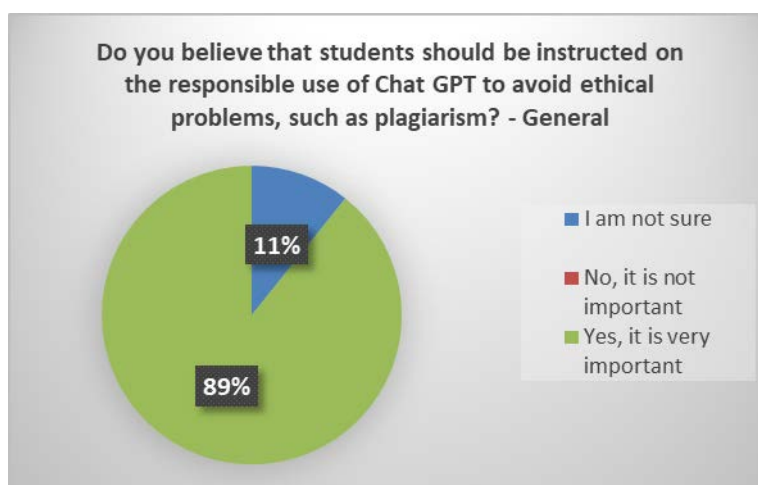
Do you believe that students should be instructed on the responsible use of Chat GPT to avoid ethical problems, such as plagiarism? - General

- I am not sure
- No, it is not important
- Yes, it is very important

11%

89%

Figure 4 - Data on the consider the ethical and responsible behaviour that students exhibit when using ChatGPT

Students are aware of the ethical issues and plagiarism concerns when using ChatGPT. Around 89% of the survey respondents believe that is important to receive training on this topic.

4.6. Integration with library services

The following question was asked to understand the impact of AI resources in higher education libraries: "Do you think it is important for ChatGPT or similar resources to be made available by university libraries?" The data presented in Figure 5 shows that 55% of respondents answered "Yes, it is important", 38% answered "No, it is not important" and 7% were not sure. A significant number of respondents are aware of the new AI tools and consider it necessary to integrate these resources into academic library services.

Librarians and information service managers cannot ignore these results and must develop means for this integration.
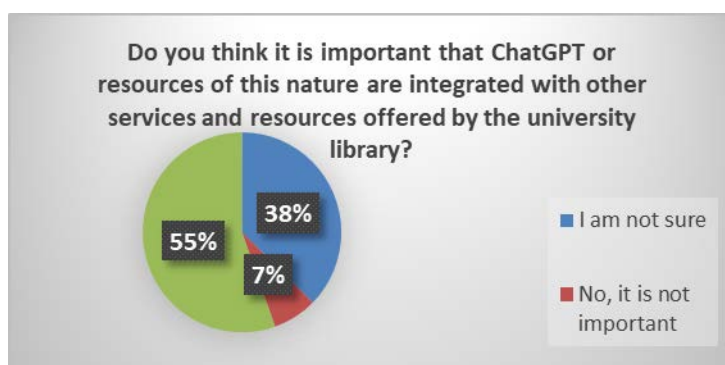
Figure 5 – Results about the importance that ChatGPT or resources of this nature are integrated with other services and resources offered by the university library

To understand what resources could be incorporated, two more questions were asked: "What do you think of the role of ChatGTP in the provision of services and resources that the university library currently offers and could offer in the future?"; and, "What types of resources do you use or could you use in the library independently of your use of ChatGPT?", the results are showed in Table 3 and 4.

Table 3 – Data obtained regarding the role of ChatGPT in the provision of services and resources that the university library offers

	What do you think of the role of ChatGPT about the provision of services and resources that the university library offers now and could offer in the future?
I'm not sure	21
Libraries offer services and resources that ChatGPT does not replace	**85**
It will be essential to obtain information, replacing library services	13
It will evolve to more advanced versions, gaining more users	**119**
It is a fashion that will be replaced by others	14
It is and will be a useful and valuable tool	**96**

The data shows that ChatGPT has the potential to greatly improve the services and resources provided by university libraries. It can offer efficient, personalized, and easily accessible support. However, to fully take advantage of its benefits, we need to carefully consider the ethical and practical challenges. Out of 119 respondents, the majority agree that ChatGPT will evolve into more advanced versions and attract more users. Additionally, 96 respondents believe

it will be a useful and valuable tool. However, 85 respondents stated that libraries provide services and resources that ChatGPT cannot replace.

Table 4 – Data obtained about the resources that could be used in a library, regardless of the use of ChatGPT.

	What types of resources do you use or could you use in the library, regardless of your use of ChatGPT?
I'm not sure	0
Training in the area of resources and information research	14
Support in carrying out academic work	48
Support in making citations and references	32
Searches in thematic databases and obtaining scientific articles	**84**
Consultation and access to theses and dissertations	**73**
Consultation of printed and electronic periodicals and newspapers	**74**
Consultation and request of printed and electronic books	**134**

The data in Table 4 shows that many respondents still rely on paper and electronic formats for their information needs. Specifically, 134 respondents indicated they would continue to consult and request books in these formats, 84 would use thematic databases and scientific articles, and 74 would search for journals. These findings highlight the enduring value of academic libraries' paper collections and various media, they are essential for supporting the academic community's teaching, learning, and research activities.

5. Discussion

The respondents bring up several important concerns about the use of ChatGPT and similar AI tools in education. They emphasize the need for careful and conscious use of these technologies to prevent issues like plagiarism and the potential negative impact on critical thinking skills. While they acknowledge the potential benefits of ChatGPT in education, such as assisting with research, writing, and creativity, they caution against overreliance on the technology.

Their concerns also extend to the ethical implications of using AI for academic purposes. They believe it is crucial to educate students about the appropriate and responsible use of ChatGPT, emphasizing that it should be used as a reference point rather than a primary source of information. There is a concern that considering ChatGPT as a regular academic research tool could lead to a decline in critical thinking and genuine intellectual inquiry among students.

Additionally, the respondents recognize the limitations of AI, particularly in terms of data reliability and integrity. They suggest that while ChatGPT can assist with structuring research projects, it should be supplemented with human expertise and traditional library resources to ensure comprehensive and accurate knowledge acquisition.

In summary, their views underline the necessity of a balanced approach to integrating AI into teaching. They advocate for leveraging the capabilities of ChatGPT to enhance learning experiences while preserving the fundamental values of academic integrity and critical thinking.

The data obtained from this study this study seems to be aligned with the current concerns of the authors and organizations addressed in the literature review. To give an example, UNESCO (Shnurenko et al., 2020) states:

> *The key to responsible AI systems operation for the benefit of society is education. Ordinary people should be able to understand not only the basics of AI systems operation but also its impact on their lives, their information environment, and the choices they are to make. AI narrative should be neither cheerleading nor technophobic, instead, it should give an honest picture of the field and be accessible to a general audience. The public should be aware not only of the benefits of automation but also of its risks and challenges. Society at large, states, businesses, and communities should encourage and support the initiatives promoting such education, media and information literacy, and public awareness of AI-related issues.*

6. Conclusions

As in similar studies, Portuguese and Brazilian students expect AI-based technologies to complement traditional libraries in terms of providing personalized information support. ChatGPT is a means, not an end, meaning that ChatGPT should be seen as a tool for achieving specific objectives, such as obtaining information, solving problems, or creating content, and not as the end goal in itself. To use it effectively, it is essential to be critical and knowledgeable about the subject. Preliminary results make it possible to observe students' perceptions to devise a strategy for adapting libraries to this reality.

The following important issues were addressed: the accuracy of information, the limitations of knowledge, ethics and plagiarism, and training. It has been acknowledged that according to user perception, ChatGPT is unable to meet accurate demands because it relies on incomplete and sometimes unreliable pre-existing data and lacks the comprehensive interaction that a librarian can provide. While ChatGPT can help with basic issues, it is no substitute for human interaction and expertise in addressing more complex questions or concerns. Libraries must focus on efficient and individualized service to better meet the demands of their users. These issues necessarily lead us to address topics that should and can be worked on training in information and digital literacy, copyright issues, or plagiarism.

Acknowledgments

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