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A Survey-Based Examination of UTAS Students Perceptions Towards ChatGPT: Key findings and Analysis

[1 *]Arwa AlSariri, [1]Dhiya AlSaqri, [1]Sudha Senthilkumar, [1]Asma AlBadi
[1]Faculty of Computing and Information System,
University of Technology and Applied Sciences,
Suhar, P.O. Box 135, Postal Code: 311,
Sultanate of Oman,
**Corresponding Author*: arwa.alsariri@utas.edu.om

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ABSTRACT: This research at the University of Technology and Applied Sciences in Oman focused on students' perceptions of ChatGPT and AI chatbots in education, aiming to assess their impact on engagement, comprehension, and academic performance while considering ethical and practical concerns. The study revealed that ChatGPT is widely used in academia, playing a significant role in various educational tasks. However, it also raised concerns about accuracy, potential bias, and plagiarism. Despite reservations, most students supported integrating ChatGPT into formal education. To address these findings, the research proposed recommendations: clear academic integrity policies, promoting responsible usage, supporting educators, conducting ongoing research, involving students in decision-making, and staying informed and adaptable in the face of AI's evolving nature. Responsible AI integration in education can enhance the learning experience, provided ethical considerations are balanced with the technology's potential benefits.

1. INTRODUCTION

AI and chatbots have become significant tools for students in education, offering a range of benefits. One notable advantage is their ability to provide personalized learning experiences, tailoring educational content to suit individual needs and learning styles [2]. Additionally, AI-driven adaptive testing ensures that assessments adjust in real-time, offering immediate feedback to students and enhancing their overall learning experience [2]. Chatbots play a crucial role in delivering prompt support by answering questions, providing explanations, and offering additional resources when needed. Furthermore, these digital assistants can function as virtual teaching aides, supporting educators in various capacities [4]. Language learning, in particular, has seen a practical boost through AI-based chatbots, aiding students in honing their linguistic skills [1]. Moreover, AI chatbots facilitate effective communication, thereby enhancing student engagement and providing timely support [5]. However, it is essential to address concerns such as privacy, cultural differences, language proficiency, and ethical implications. Despite these challenges, the responsible and critical use of AI chatbots holds the potential to revolutionize education and make it an integral part of the modern educational system.

ChatGPT, an AI-based chatbot developed by OpenAI, is widely utilized to improve learning for both students and educators [7]. It aids in language learning, provides immediate support, and acts as a virtual teaching assistant, facilitating personalized learning experiences [6]. Studying students' perceptions of ChatGPT is crucial for enhancing the technology's educational utility and addressing its impact on the learning experience. Nevertheless, it's essential to address concerns related to privacy, cultural

disparities, and ethical implications. This research into students' perceptions of ChatGPT offers valuable insights into its influence on engagement, understanding, and academic performance. These insights are invaluable for educators and policymakers when making informed decisions about integrating AI into the classroom. Understanding how students receive and utilize this technology in educational settings is a critical step in refining AI tools for education, ultimately aiming to enhance the overall educational experience.

The objectives of the research regarding ChatGPT and AI chatbots in education at the University of Technology and Applied Sciences in Oman can be outlined as follows:

1) Assess the impact of ChatGPT on student engagement, knowledge, and academic performance at the University of Technology and Applied Sciences in Oman.
2) Provide actionable recommendations for the responsible integration of ChatGPT and similar AI chatbots in the higher education system in Oman, considering the institution's unique needs and requirements.
3) Offer insights that can guide educators and policymakers in Oman when implementing AI chatbots in classrooms and online learning environments.
4) Support the University of Technology and Applied Sciences in realizing the potential of AI chatbots to enhance the overall educational experience for both students and educators, considering specific context and requirements of the institution.

2. LITERATURE REVIEW

3. AI and chatbots have revolutionized education, offering personalized learning, 24/7 support, automated grading, enhanced accessibility, and virtual assistants for administrative tasks [9]. These AI-powered tools enhance the learning experience by providing explanations, resources, and assistance with assignments, especially for remote or non-traditional students [4][8]. In language education, chatbots like ChatGPT improve linguistic skills through conversational practice, vocabulary building, and grammar instruction [8].
4. Nevertheless, drawbacks include limited understanding of complex topics, technical issues, privacy concerns, and implementation costs [9]. To maximize benefits, responsible and ethical use is essential without replacing human interaction. Ethical considerations include privacy, cultural differences, and biases in AI systems [10]. Protecting personal information and adhering to data protection laws is vital. Addressing language proficiency and biases within AI systems is crucial for fairness and effectiveness across diverse student populations [10][13]. Developing ethical guidelines, policies, and conducting regular system evaluations are essential to mitigate these ethical concerns.
5. ChatGPT, an AI chatbot created by OpenAI, has go through extensive training on an enormous dataset [14]. The use of ChatGPT in academic contexts is currently a significant subject of debate and exploration. A study suggests that integrating ChatGPT into educational environments can have a positive impact on students' perceptions and foster improved learning [15]. However, opinions on ChatGPT's role in education are divided, with some recognizing its potential for enhancing learning and reducing teachers' workloads, while others view it as a potential ethical and academic misconduct concern [15]. Research indicates that academics predominantly utilize AI tools and ChatGPT for tasks like text correction, translation, simplification, and meaning discovery [16]. While scholars may not yet be inclined to incorporate ChatGPT as a formal component of their research processes, they are more open to using it in non-research settings [16]17]. Researchers have raised concerns about ChatGPT's reliability and precision, which can make its implementation in educational settings challenging [17]. With the introduction of custom GPTs, OpenAI is now in competition with other AI bot platforms such as Character.AI and Meta, which have recently introduced their own AI personas on platforms like WhatsApp, Instagram, and Messenger.

6. METHODOLOGY

This section provided a detailed overview of the methodology employed in our study, which aimed to explore students' perceptions of ChatGPT at the University of Technology and Applied Sciences in Oman. The use of a comprehensive survey with six sections allowed us to investigate various aspects of students' interactions with ChatGPT, and the subsequent application of quantitative methods, including descriptive statistics and Likert scale analysis, facilitated a complete understanding of their views. The findings presented in this paper stem from the careful analysis of this data, offering insights into the utilization and impact of ChatGPT in an educational context.

1.1. PARTICIPANTS

The research participants consisted of 206 students. The age distribution of the participants was as follows: 36.41% of respondents were between the ages of 18 and 20. The 21-23 age group accounted for 58.74% of all respondents, making it the study's most dominant age group. Only 4.85% of students were between the ages of 24 and 26. The survey contained 43.69% male respondents and 56.31% female respondents in terms of gender distribution. This shows that both genders are fairly represented among the participants. They represented various academic levels: 15.05% were in their first year, 15.53% in their second year, 23.79% in their third year, and 20.87% in their fourth year.

1.2. SURVEY DESIGN

The survey design employed in this study to examine students' perceptions of ChatGPT was composed of six distinct sections. The first part gathered demographic information such as age, gender, academic level, and other criteria. The second section assessed students' familiarity with and usage frequency of ChatGPT. The third core section looked into students' overall perceptions, satisfaction, and concerns related to ChatGPT. The fourth part examined specific usage scenarios, including academic and personal contexts. The fifth part explored the impact of ChatGPT on students' learning experiences, while the final section inspected ethical concerns associated with the system's use. This comprehensive survey structure allowed for a detailed investigation into various aspects of students' interactions with ChatGPT and its implications for learning and ethics.

1.3. SURVEY ANALYSIS

We utilized quantitative methods for the analysis of the survey data. Specifically, we conducted the following analyses to gain a deep understanding of the participants' experiences and viewpoints:

1) Descriptive Statistics: This method was employed to generate an overview of participant characteristics, focusing on demographic variables such as age, gender, and academic level refer to participants' section.
2) Frequency Distributions: In the "Usage and Familiarity" section, we bound these distributions to examine the occurrence of specific responses. This allowed us to estimate the frequency of students' interactions with ChatGPT and their degree of familiarity with the Chatbot.
3) Likert Scale Analysis: Within the "Perceptions of ChatGPT" section, we undertook this analysis to assess responses related to overall satisfaction, perceived usefulness, and concerns regarding the ChatGPT.

This quantitative approach facilitated a systematic exploration of the survey data, enabling a thorough quantitative understanding of students' perspectives on ChatGPT.

7. RESULTS AND ANALYSIS

investigation into students' perceptions of ChatGPT. The survey design, as outlined in the methods section, included six distinct parts, each serving a unique purpose in assessing students' experiences and views regarding ChatGPT. As we move into the results section, it is essential to understand that these facts allowed us to obtain a deep understanding of students' interactions with ChatGPT, the potential influence on their academic journey, and their ethical considerations. To analyze the survey data, we primarily employed quantitative methods as mentioned in the survey analysis. The presented results have been extracted from these analytical techniques, as well as shedding light on its usage frequency and potential impact on their academic pursuits.

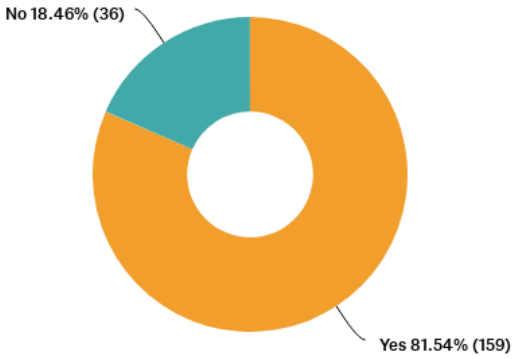

Figure 1 Familiarity with ChatGPT or Similar AI-powered Chatbots

Referring to figure 1, out of 206 participants, 195 responded to questions about their familiarity with ChatGPT, while 11 chose not to answer. Particularly, 81.54% (159 participants) indicated their knowledge of ChatGPT, and they will continue with the survey. In contrast, 18.46% (36 participants) acknowledged their lack of familiarity with ChatGPT, and they will not proceed with the questionnaire, as we aim to gather insights from respondents knowledgeable about ChatGPT.

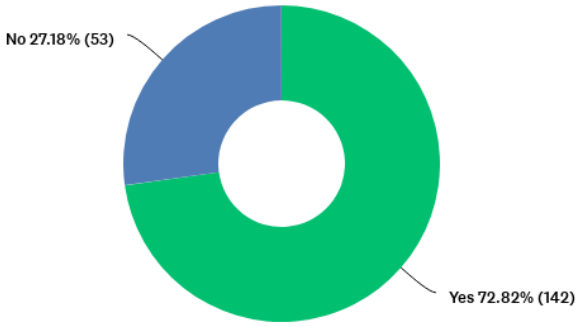

Figure 2 The use of ChatGPT for Academic Purposes

Investigating how participants use ChatGPT for academic tasks, we gathered responses from 195 individuals, while 11 chose to skip this query. Among those who provided responses, 72.82%(equivalent to 142 participants) affirmed their usage of ChatGPT for academic referred to figure 2.

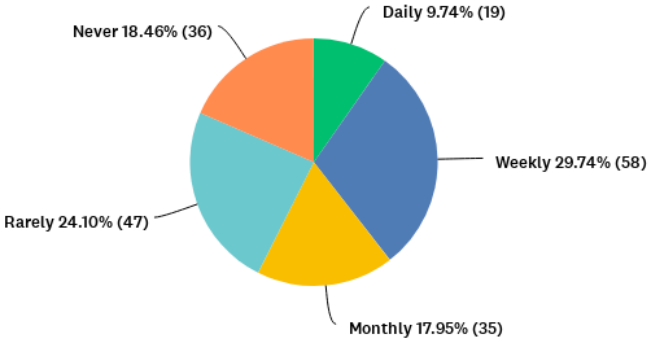

Figure 3 Frequency of ChatGPT Usage for Academic Tasks

Participants were asked regarding their utilization of ChatGPT for academic purposes. The key findings of the question indicate a diverse range of engagement: 9.74% use ChatGPT daily, 29.74% use it weekly, and 17.95% use it monthly. Additionally, 24.10% use ChatGPT rarely, and 18.46% never use it for academic tasks. These results showcase varying patterns of interaction with ChatGPT in education, underlining its integration into academic routines for a considerable number of respondents.

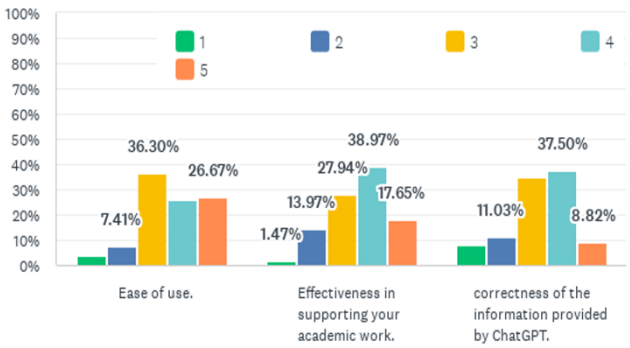

Figure 4 Satisfaction Ratings for ChatGPT in Academic Tasks (Scale: 1 to 5)

Based on the Likert Scale Analysis, the participants' satisfaction levels with ChatGPT for academic tasks were assessed across three key aspects. For "Ease of use," most participants fell within the mid-range satisfaction levels (36.30% at level 3), with a weighted average satisfaction score of 3.64, suggesting a moderately positive perception of ChatGPT's usability. In terms of "Effectiveness in supporting academic work," a

substantial portion of respondents expressed higher satisfaction levels (38.97% at level 4), yielding a weighted average satisfaction score of 3.57, signifying a favorable perception of ChatGPT's support in academic tasks. Lastly, the "Correctness of information provided by ChatGPT" received mixed feedback, with 34.56% at level 3, indicating moderate satisfaction, and a weighted average satisfaction score of 3.28. These findings highlight varied perceptions of ChatGPT's performance in different aspects of academic use, with usability and support effectiveness receiving relatively higher satisfaction ratings refer to figure4.

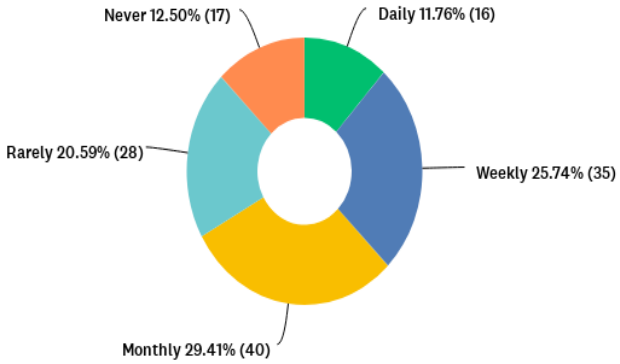

Figure 5 Satisfaction Ratings for ChatGPT in Academic Tasks

The responses to the question about the frequency of using ChatGPT for non-academic purposes reveal a varied pattern of engagement among the participants. Approximately 11.76% use ChatGPT daily, highlighting its regular integration into non-academic activities. Another 25.74% use it on a weekly basis, showing substantial weekly engagement. Additionally, 29.41% utilize ChatGPT monthly, indicating intermittent but significant reliance for non-academic tasks. About 20.59% use it rarely, suggesting occasional use, while 12.50% never employ ChatGPT for non-academic purposes. These findings emphasize the versatility of ChatGPT, as users integrate it into various non-academic contexts, with usage patterns ranging from regular to sporadic.

Regarding the recommendation of ChatGPT to peers for academic purposes, 41.91% would recommend it, 8.09% would not, and 50.00% were uncertain. In terms of ChatGPT's effect on academic performance, 60.15% reported a positive impact, 8.27% said it had no positive effect, and 31.58% remained unsure about its influence. These responses offer valuable insights into the diversity of students' opinions regarding ChatGPT's suitability for academic tasks and its impact on their academic success.

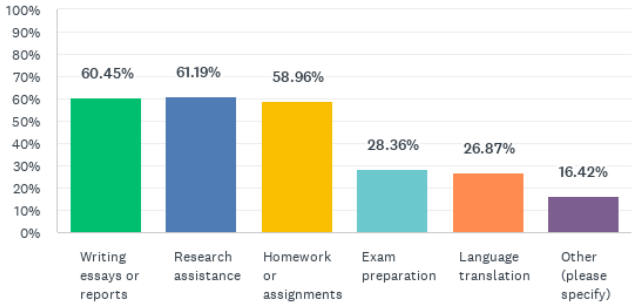

Figure 6 Utilization of ChatGPT in Academic Scenarios

Figure 6 represents how the respondents utilized ChatGPT in their academics. It is evident that ChatGPT is actively engaged in a range of academic scenarios, with remarkable percentages of respondents utilizing its capabilities for different purposes. Most users, approximately 60.45%, rely on ChatGPT for drafting essays and reports, highlighting its role as a valuable writing tool. Additionally, over 61% of respondents turn to ChatGPT for research assistance, underscoring its utility in aiding scholarly inquiries. Homework or assignments also feature obviously, with close to 59% of respondents utilizing ChatGPT for these tasks. While a smaller proportion of users, at 28.36%, use it for exam preparation, it still indicates its significance in this context. Furthermore, language translation, selected by around 26.87% of respondents, showcases ChatGPT's usefulness. The data reflects ChatGPT's diverse applications in academia, offering support across multiple educational scenarios.

Participants were asked about the impact of ChatGPT on their study habits, and the data reveals a primarily positive influence, with 69.92% reporting that ChatGPT has positively affected their study habits. On the other hand, a smaller percentage (10.53%) mentioned a negative influence, suggesting that a few users encountered challenges or distractions. About 19.55% stated

that ChatGPT had no influence on their study habits, indicating that some users have not fully integrated it into their academic routines. However, most users find ChatGPT to be a valuable study aid, positively affecting their study habits.

In addition to assessing the impact of ChatGPT on study habits, it's essential to consider the ethical concerns surrounding its usage in the same context. The data reveals that a substantial majority of respondents, approximately 65.65%, express concerns about potential biases in the responses generated by ChatGPT. This indicates an intensified awareness among users about the possibility of biases in AI-generated content. Conversely, 34.35% of respondents report no concerns regarding biases in ChatGPT's responses. The division in responses emphasizes the importance of addressing and mitigating bias in AI models, underlining the need for transparency and fairness in AI-generated content to maintain user confidence in the technology. Overall, the data highlights the significance of addressing bias concerns in the field of AI and natural language processing.

In response to a question regarding the use of ChatGPT for writing assignments without proper citation, the data shows that 41.98% of respondents admit to having used ChatGPT in this manner, while 58.02% state that they have not engaged in such practices. This highlights a substantial proportion of users who acknowledge using ChatGPT for writing assignments without proper citation, potentially raising concerns about academic integrity. In response to another question concerning issues related to plagiarism or cheating involving ChatGPT or similar tools, 45.80% of respondents affirm having witnessed or experienced such issues, while 54.20% report not encountering such problems. These findings suggest that plagiarism and cheating, possibly facilitated by AI tools like ChatGPT, remain relevant concerns within educational contexts, necessitating efforts to address and prevent academic misconduct.

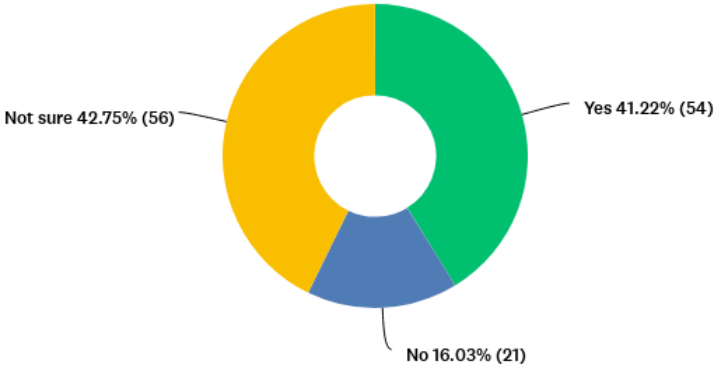

Figure 7 Participants' Opinion on Stricter Regulations for AI-Powered Tools in Education (Scale: Strongly Agree to Strongly Disagree)

The survey findings reveal a diverse perspective regarding the implementation of stricter regulations or guidelines for AI-powered tools like ChatGPT within academic institutions. Notably, 41.22% of respondents express their support for such measures, highlighting a perceived need for more structured policies. However, 16.03% are opposed, indicating a concern about potential restrictions. It is stimulating to observe that nearly half of the participants (48.85%) have already received formal guidance from their educational institutions on using AI tools, which suggests proactive steps by some institutions to address this emerging technology. These results underscore the complex and evolving nature of AI integration in education, and the challenge of striking a balance between fostering innovation and maintaining ethical standards, which warrants further consideration from both educators and policymakers.

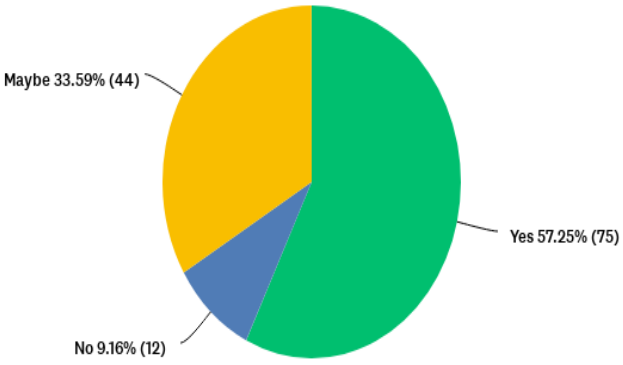

Figure 8 Surveying Public Opinion on Integrating ChatGPT into Formal Education as a Learning Aid

The survey results reveal a strong inclination among respondents toward the integration of ChatGPT into formal education as a learning aid, with 57.25% expressing support for this idea. A significant portion (33.59%) falls into the "Maybe" category, indicating an openness to the concept but potential reservations. Only 9.16% of respondents oppose its integration. These findings suggest a broad interest in leveraging AI-powered tools like ChatGPT to enhance the educational experience, primarily as supplementary aids. However, it also highlights the need for careful planning and consideration of concerns, such as data privacy, algorithmic bias, and the preservation of essential human interaction in the learning process, as institutions contemplate the implementation of such technologies in educational settings.

The survey results offer a comprehensive insight into students' views on ChatGPT in education. They show strong support for integrating ChatGPT as a learning aid, alongside concerns about bias and academic integrity. This highlights the need for a balanced approach to AI in education, emphasizing both its potential advantages and ethical considerations.

8. DISCUSSION

In this section, we will thoroughly examine the results of our investigation into students' perceptions of ChatGPT. Our study had a broader objective: to explore the complex dynamics between students and ChatGPT, including its impact on their academic journey and the ethical considerations it raises. By employing a range of quantitative methods, we have garnered valuable insights into these facets, shedding light on students' interactions with this AI-powered tool.

The survey indicated that most participants were already familiar with ChatGPT and primarily used it for academic purposes. Students engaged with the tool to support various aspects of their education, including drafting essays and reports, research assistance, homework or assignments, and exam preparation. They exhibited varying usage frequencies, with some using it daily, weekly, or monthly, while others used it rarely or not at all. This versatile role of ChatGPT in academia showcases its flexibility in supporting a wide range of academic scenarios and tasks, aligning with the perception that it serves as a valuable academic aid for students with diverse educational needs.

Satisfaction ratings for ChatGPT in academic tasks revealed varying perceptions among users, with participants expressing moderately positive views on ease of use and effectiveness in supporting academic work. However, satisfaction with the correctness of information provided by ChatGPT showed mixed feedback, indicating room for improvement in ensuring accuracy and reliability. The impact of ChatGPT on students' study habits is primarily positive, with most users reporting improved study routines. However, a smaller percentage noted negative effects or no influence on their study habits. This suggests that while ChatGPT is generally seen as a valuable study aid, there is still room for enhancing its accuracy and reliability to further support students' academic success.

Students express strong support for integrating ChatGPT into formal education as a learning aid, finding value in its assistance for tasks like essay writing, research, and assignments. However, ethical concerns are significant, with worries about potential biases in AI-generated content and issues related to plagiarism and cheating. Many students have used ChatGPT for academic writing without proper citations, raising questions about academic integrity. Opinion on stricter regulations for AI-powered tools in education varies, with some advocating for structured policies and others expressing concerns about potential restrictions. These findings highlight the complexity of AI integration in education, emphasizing the need to balance innovation with ethical standards and the importance of addressing bias concerns and promoting responsible AI use in educational settings.

9. CONCLUSION

In summary, our research reveals that ChatGPT and AI chatbots are actively used in education. Students find value in these tools for various academic tasks. However, concerns about accuracy, potential bias, and ethical issues, such as plagiarism, are significant.

While opinions on regulations vary, most students support the integration of ChatGPT as a learning aid. This highlights the potential benefits of AI in education while emphasizing the need for addressing ethical and privacy concerns.

In conclusion, AI and chatbots offer transformative potential in education, provided that responsible and ethical use remains a priority. Educators and policymakers should carefully balance innovation with ethical considerations in the evolving field of AI in education.

10. RECOMMENDATIONS

Considering our research findings, we offer the following recommendations for educators, policymakers, and institutions:

1) Implement Clear Academic Integrity Policies: Establish and communicate transparent policies on academic integrity and the ethical use of AI-powered tools.
2) Promote Responsible Usage: Provide guidance and training to educate students on the responsible use of AI technology in education.
3) Support Educators: Offer training and resources to help educators effectively integrate AI tools into teaching practices.
4) Conduct Ongoing Research and Evaluation: Continuously assess the impact and effectiveness of AI tools in educational settings.
5) Engage Students in Decision-Making: Include students in discussions and decision-making processes concerning AI integration.
6) Stay Informed and Adapt: Stay updated on AI advancements, best practices, and ethical considerations in education.
7)

By following these recommendations, educational institutions can tackle the potential of AI chatbots like ChatGPT while addressing the ethical and practical challenges that arise.

REFERENCES

[1] Yang, J. (2022). Perceptions of preservice teachers on AI chatbots in English education. International Journal of Internet, Broadcasting and Communication, 14(1), 44–52. https://doi.org/10.7236/IJIBC.2022.14.1.44

[2] Wang, T., Lund, B. D., Marengo, A., Pagano, A., Mannuru, N. R., Teel, Z. A., & Pange, J. (2023). Exploring the Potential Impact of Artificial Intelligence (AI) on International Students in Higher Education: Generative AI, Chatbots, Analytics, and International Student Success. doi:10.20944/preprints202305.0808.v1

[3] Park, J., & Lee, H. (2021). Ai Chatbot Builders Utilizaion plan to develop AI Chatbots for korean language education. *Teaching Korean as a Foreign Language*, *63*, 51–91. doi:10.21716/tkfl.63.3

[4] Labadze, L., Grigolia, M., & Machaidze, L. (2023). Role of AI Chatbots in education: Systematic literature review. *International Journal of Educational Technology in Higher Education*, *20*(1). doi:10.1186/s41239-023-00426-1

[5] Antony, S., & Ramnath, R. (2023). A phenomenological exploration of students' perceptions of AI chatbots in higher education. *IAFOR Journal of Education*, *11*(2), 7–38. doi:10.22492/ije.11.2.01

[6] Kulkarni, R., & Jaiswal, Dr. R. (2023). A survey on AI Chatbots. *International Journal for Research in Applied Science and Engineering Technology*, *11*(9), 1738–1744. doi:10.22214/ijraset.2023.55911

[7] Farrokhnia, M., Banihashem, S. K., Noroozi, O., & Wals, A. (2023). A SWOT analysis of CHATGPT: Implications for educational practice and Research. *Innovations in Education and Teaching International*, 1–15. doi:10.1080/14703297.2023.2195846

[8] Okonkwo, C. W., & Ade-Ibijola, A. (2021). Chatbots applications in education: A systematic review. *Computers and Education: Artificial Intelligence*, *2*, 100033. doi:10.1016/j.caeai.2021.100033

[9] Essel, H. B., Vlachopoulos, D., Tachie-Menson, A., Johnson, E. E., & Baah, P. K. (2022). The impact of a virtual teaching assistant (chatbot) on students' learning in ghanaian higher education. *International Journal of Educational Technology in Higher Education*, *19*(1). doi:10.1186/s41239-022-00362-6

[10] Akgun, S., & Greenhow, C. (2021). Artificial Intelligence in education: Addressing ethical challenges in K-12 settings. *AI and Ethics*, *2*(3), 431–440. doi:10.1007/s43681-021-00096-7

[11] Nguyen, A., Ngo, H. N., Hong, Y., Dang, B., & Nguyen, B.-P. T. (2022). Ethical principles for artificial intelligence in education. *Education and Information Technologies*, *28*(4), 4221–4241. doi:10.1007/s10639-022-11316-w

[12] Klimova, B., Pikhart, M., & Kacetl, J. (2023). Ethical issues of the use of AI-driven mobile apps for Education. *Frontiers in Public Health*, *10*. doi:10.3389/fpubh.2022.1118116

[13] ISACA. (2022). Bias and Ethical Concerns in Machine Learning. ISACA Journal. https://www.isaca.org/resources/isaca-journal/issues/2022/volume-4/bias-and-ethical-concerns-in-machine-learning

[14] Mohamadi, S., Mujtaba, G., Le, N., Doretto, G., & Adjeroh, D. A. (2023). ChatGPT in the Age of Generative AI and Large Language Models: A Concise Survey. [Submitted on 9 Jul 2023 (v1), last revised 15 Jul 2023 (this version, v2)].

[15] Hasselqvist Haglund, J. (2023). Students' Acceptance and Use of ChatGPT in Academic Settings (Master's thesis). Uppsala Universitet, Department of Informatics and Media.

[16] Gill, S. S., Xu, M., Patros, P., Wu, H., Kaur, R., Kaur, K., … Buyya, R. (2024). Transformative effects of CHATGPT on modern education: Emerging era of AI Chatbots. *Internet of Things and Cyber-Physical Systems*, *4*, 19–23. doi:10.1016/j.iotcps.2023.06.002

[17] Wen, J., & Wang, W. (2023). The future of chatgpt in academic research and publishing: A commentary for *clinical and Translational Medicine*. *Clinical and Translational Medicine*, *13*(3). doi:10.1002/ctm2.1207