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Reversing the threat of artificial intelligence to opportunity: a discussion of ChatGPT in tourism education

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ABSTRACT

The role of artificial intelligence (AI) in the education sector has received considerable attention from scholars; however, its potency and application among tourism learners are yet to be discerned. Accordingly, this research note articulates the potential impact and limitations of the AI chatbot, ChatGPT, in tourism education practices. In particular, the paper aims to raise awareness among tourism educators regarding the disruptive potential of ChatGPT and its impact on academic integrity and ethics. This paper contributes to tourism education practices on AI and robotics by critically discussing ChatGPT from a cognitive science perspective and providing recommendations on how to minimise AI plagiarism in tourism education. This research argues for adapting novel pedagogies as technology evolves and raises the need for AI ethical use guidelines in tourism education.

Introduction

AI has permeated many aspects of higher education such as automated grading systems, adaptive assessments, and data-driven evaluation of students' engagement with the learning material (Swiecki et al., 2022). AI has also been used to generate assessment tasks with a function of AI-assisted writing which is a public tool using natural language processing (NLP) and artificial intelligence to produce written content (Lund et al., 2023). AI-assisted writing is defined as "a form of content writing that uses natural language processing and machine learning algorithms to generate written content" (George, 2023). Currently, there are several AI-assisted writing programs available including Grammarly, ProWritingAid, LanguageTool, and Jasper. The majority of AI writing assistants have similar functions and normally include AI paraphrasing, sentence structure and grammar check, spelling, and punctuation correction functionality.

On 30 November 2022, OpenAI released a new beta version of ChatGPT-3, an AI chatbot that uses the Generative Pre-trained Transformer 3.5 (GPT-3/ChatGPT) language model (OpenAI, 2022). Currently, ChatGPT is the largest and most advanced language model publicly available (Shanahan, 2022) with a newest version GPT-4 released on 14 March 2023. What makes ChatGPT different and unique compared to other AI writing assistant programs? ChatGPT is a highly sophisticated chatbot which is capable of

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performing complex text-based requests and generating content in nearly natural human language (Lund et al., 2023). This chatbot generates text that cannot be distinguishable from content created by humans (Rudolph et al., 2023). The program has been trained for more complex tasks such as writing prompts, summarising text, and answering specific questions in a human-like manner. Thus, ChatGPT can generate coherent and contextually appropriate syntaxis.

The new chatbot has raised integrity concerns within the academic community due to its ability to produce texts that cannot be detected by the current plagiarism detection tools such as Turnitin (Haque et al., 2022; Susnjak, 2022). This was further demonstrated in a recent experiment available on YouTube that was conducted by an Australian educator, where 20 assignments written by the most recent version of ChatGPT on the same topic were uploaded to Turnitin for plagiarism check. It was found that Turnitin was ineffective in detecting plagiarism, with text match percentages ranging from 7% to 13%, all within the acceptable percentage (times on the same prompt, 2022).

Access to ChatGPT is straightforward; anyone can sign up to the OpenAI website and start using ChatGPT (Sharples, 2022). The beta version of ChatGPT is currently free to use, user-friendly, and interacts with the user in a conversational manner, which requires no training. This paper argues that the capabilities of the newly released ChatGPT will have an immediate significant impact on tourism education due to its ability to produce an exceptional level of generated responses that are clearly expressed, accurately using examples, relevant to the requests, and logically coherent (Susnjak, 2022).

With every new and upgraded version, ChatGPT is getting more advanced and expanding its capabilities; however, it also raises ethical concerns surrounding AI-assisted writing in different academic contexts, particularly with regard to plagiarism and cheating. The purpose of this research note is to discuss the key limitations of the newly released ChatGPT in order to better understand its potential impact on relevant tourism education practices. This paper also provides some important recommendations to alleviate the potential negative effects of AI-assisted writing in tourism higher education. The following section provides a cognitive science perspective on ChatGPT to better understand its capabilities and limitations.

Cognitive science perspective on ChatGPT

Cognitive science is an interdisciplinary study that examines human cognition and its processes with input from linguistics, psychology, neuroscience, computer science/artificial intelligence, and other fields (Dawson, 2013). In addition, language is a complex cognitive function that involves a number of brain regions and processes (Carruthers, 2002). From a cognitive and neuroscience perspective, ChatGPT can be seen as a simplified model of how the human brain processes language. ChatGPT uses NLP and machine learning techniques (OpenAI, 2022) to understand and respond to a query in a way that is similar to how a human might respond. Language is the medium of all human conceptual thinking (Carruthers, 2002); however, it is important to distinguish between the appearance of language and the capacity to think and reason.

As ChatGPT has no actual experience of the world (OpenAI, 2022), according to the Input-Output model of information processing (Shagrir, 2018); if the "input" is language, the "output" is the language too. Thus, ChatGPT "digests" large databases of language

content (input) to produce synthesised language content (output) (Thierry, 2020). Thus, ChatGPT cannot reconstruct the thinking that is at the origin of the language content as it has no actual experience of the world and cannot have any human-like internal representation or experience. Although recent studies express the concerns that the most recent version of ChatGPT "demonstrates impressive capabilities of . . . its ability to reason critically" (Susnjak, 2022, p. 13), from a cognitive science perspective, language models like ChatGPT are not capable to replicate the full complexity of human language processing. What GPT is capable to do is producing excellent syntax and a wide range of vocabulary but is unable to reason or show any sign of actual "thinking" (Thierry, 2020).

As previously mentioned, ChatGPT has limited knowledge of the world post-2021 (OpenAI, 2022), as its training (input) stopped in 2021. Being aware of this limitation might be important for tourism educators, as ChatGPT will be unable to generate accurate "output" on the events or inquiries post-2021. This provides tourism educators with an opportunity to restructure and redesign assignments to minimise AI-assisted writing and plagiarism. The following section discusses the key limitations of the newly released ChatGPT relevant to tourism education and some recommendations for detecting AI-generated texts.
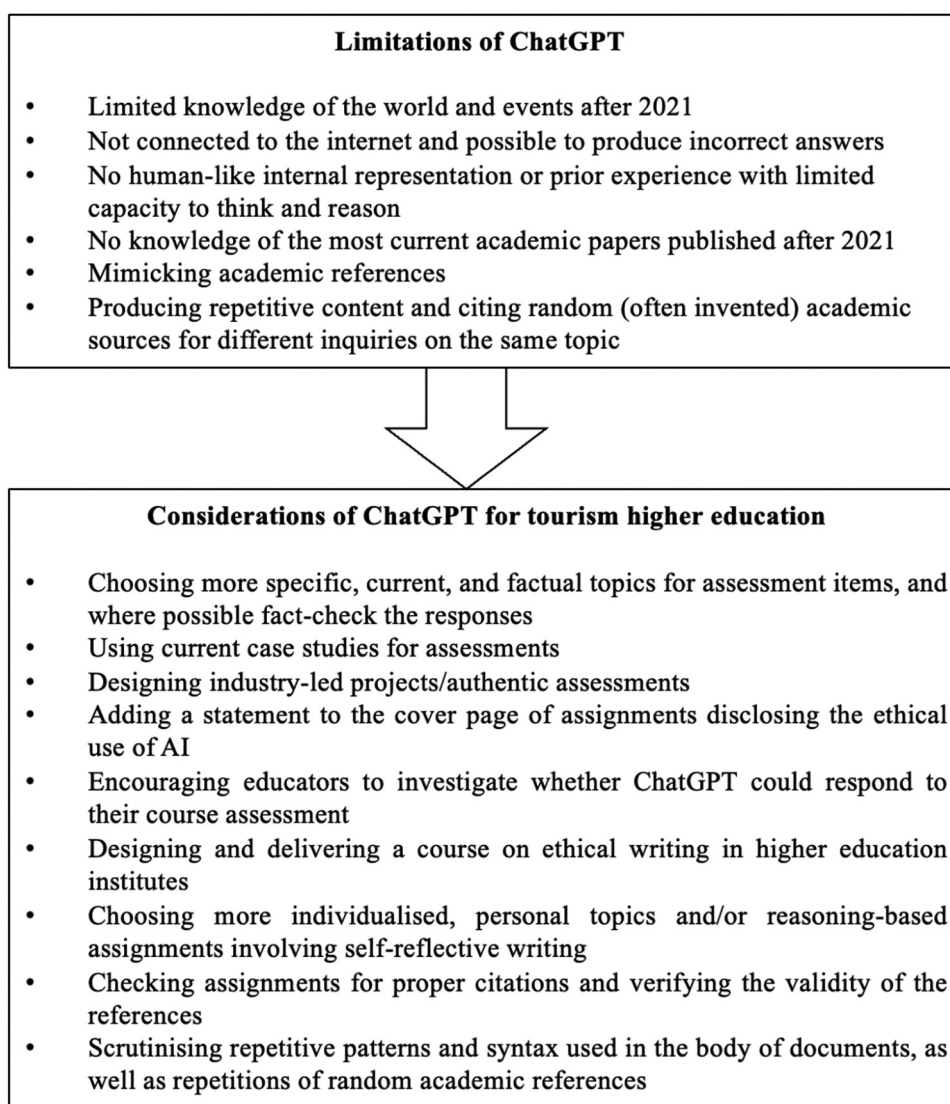
Limitations of ChatGPT and considerations for detecting AI-generated texts

As an AI-assisted writing tool, ChatGPT has some limitations. Figure 1 provides an overview of ChatGPT limitations that might be relevant for teaching practices in tourism and other social science fields. Based on the outlined limitations, a series of considerations is provided that might be useful to ensure examinations and assessment integrity among the tourism teaching community and beyond. One of the core limitations of ChatGPT includes constrained knowledge of the current events after 2021 and the fact that it is not connected to the Internet. Therefore, it is often incapable to provide adequate factual and/or real-time information regarding the most recent events. However, OpenAI is training the program based on user feedback using advanced machine learning algorithms, potentially enabling newer versions to expand their knowledge beyond the previous cutoff data of 2021.

As outlined earlier in this paper, AI chatbot like ChatGPT has no human-like internal representation or prior experience with limited capacity to think and reason and therefore incapable to provide individualised responses and a high level of reasoning that required some self-reflection on prior personal experiences. This AI tool is also unable to get scholarly information available in journal articles after 2021. ChatGPT tends to mimic references and produce repetitions in the body of the assessment.

Recommendations for tourism education

A number of recommendations are presented that might assist in mitigating the risks of AI-associated plagiarism in tourism higher education. It is recommended to select specific and current topics for assignments and fact-check the responses within the assessment item. Tourism educators are advised to use current case studies or industry-led projects which reduce the chance of using AI to fully prepare the report. Furthermore, a disclosure statement might be added to the academic integrity declaration with every submission to

Limitations of ChatGPT

- Limited knowledge of the world and events after 2021
- Not connected to the internet and possible to produce incorrect answers
- No human-like internal representation or prior experience with limited capacity to think and reason
- No knowledge of the most current academic papers published after 2021
- Mimicking academic references
- Producing repetitive content and citing random (often invented) academic sources for different inquiries on the same topic

Considerations of ChatGPT for tourism higher education

- Choosing more specific, current, and factual topics for assessment items, and where possible fact-check the responses
- Using current case studies for assessments
- Designing industry-led projects/authentic assessments
- Adding a statement to the cover page of assignments disclosing the ethical use of AI
- Encouraging educators to investigate whether ChatGPT could respond to their course assessment
- Designing and delivering a course on ethical writing in higher education institutes
- Choosing more individualised, personal topics and/or reasoning-based assignments involving self-reflective writing
- Checking assignments for proper citations and verifying the validity of the references
- Scrutinising repetitive patterns and syntax used in the body of documents, as well as repetitions of random academic references

Figure 1. ChatGPT limitations and considerations for tourism education.

ethically disclose AI-assisted writing. Another recommendation for tourism educators might be the development of a course on ethical writing aiming to reverse the existing policy from threat to training in order to improve the ethical side of students' interaction with AI chatbots. Educators need to design assessments that are more individualised that require students to present self-reflective writing. It is suggested that tourism educators check for unusual patterns or repetitions in the assignments, as well as verify the originality of citations, as ChatGPT often mimics academic references.

While Turnitin considers embedding AI components, it is also crucial for tourism educators to rely on the teaching expertise in order to ensure consistency in style and quality of submitted documents with the student's previous work. It needs to be noted that ChatGPT is especially attractive for English as a Second Language

(ESL) students, and more research is required in order to assess the risks and potential opportunities for engagement. Finally, in order to gain a deeper understanding of ChatGPT's latest capabilities and limitations, it is recommended to engage with the chatbot directly via the website https://chat.openai.com. It is also might be useful for educators to investigate whether ChatGPT could respond to their course assessment, i.e., testing the ChatGPT to see if their assessment is easy to create. Identifying a way in which ChatGPT can be useful for members of the tourism academic community will not only assist in detecting AI-generated texts but also improves the overall understanding of the AI technology's impact on classroom learning and research practices in tourism and other related fields.

Conclusion

The aim of this paper was to address an emerging problem of the disruptive potential of AI chatbot technology, and its impact on tourism education. This was achieved by considering ChatGPT capabilities and limitations from a cognitive science perspective, observing and interacting with ChatGPT, as well as reviewing the most recent literature. Based on the limitations of ChatGPT, this research note provides important recommendations for the tourism academic community on how to respond and adapt up-to-date higher education practices. The paper contributes to the body of knowledge in the tourism literature on artificial intelligence and robotics.

AI technology is rapidly evolving, with the newest version of ChatGPT released in March 2023 with an advanced reasoning, complex instructions, and more creativity functions. This research note argues that ongoing nuanced assessment and ongoing stream of research are required to evaluate the AI impact on education practices across different disciplines, as well as its overall impact on higher education sector. This will allow educators to stay informed with the newest AI capabilities in order to update their pedagogical practices accordingly in a timely manner. While returning to invigilated and oral examinations could form a part of the short-term response to the AI-assisted plagiarising problem, future studies should focus on developing comprehensive guidelines for the ethical use of AI in tourism education as technology evolves. Some of the recommendations include clearly disclosing the use of chatbots in these contexts, training students, and promoting the responsible use of AI chatbots.

Disclosure statement

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References

Carruthers, P. (2002). The cognitive functions of language. *The Behavioral and Brain Sciences*, *25*(6), 657–674. https://doi.org/10.1017/S0140525X02000122

Dawson, M. R. (2013). *Mind, body, world: Foundations of cognitive science*. Athabasca University Press.

George, N. (2023, March 8). ChatGPT: AI-Assisted Writing Pros, Cons, and tips to 3x... *Anaconda*. Retrieved March 15, 2023, from https://www.anaconda.com/blog/chatgpt-ai-assisted-writing-pros-cons-and-tips-to-3x-content-production

Haque, M. U., Dharmadasa, I., Sworna, Z. T., Rajapakse, R. N., & Ahmad, H. (2022). "I think this is the most disruptive technology": Exploring sentiments of ChatGPT early adopters using twitter data. *ArXiv Preprint*. https://arxiv.org/pdf/2212.05856.pdf

Lund, B. D., Wang, T., Mannuru, N. R., Nie, B., Shimray, S., & Wang, Z. (2023). ChatGPT and a new academic reality: Artificial Intelligence-written research papers and the ethics of the large language models in scholarly publishing. *Journal of the Association for Information Science and Technology*, 1–12. https://doi.org/10.1002/asi.24750

OpenAI. (2022, November 30). *ChatGPT: Optimizing language models for dialogue*. https://openai.com/blog/chatgpt/ https://openai.com/blog/chatgpt/

Rudolph, J., Tan, S., & Tan, S. (2023). ChatGPT: Bullshit spewer or the end of traditional assessments in higher education? *Journal of Applied Learning & Teaching*, *6*(1), 1–22.

Shagrir, O. (2018). The brain as an input–output model of the world. *Minds and Machines*, *28*(1), 53–75. https://doi.org/10.1007/s11023-017-9443-4

Shanahan, M. (2022). Talking about large language models. *ArXiv Preprint*. https://arxiv.org/pdf/2212.03551.pdf

Sharples, M. (2022). Automated essay writing: An AIED opinion. *International Journal of Artificial Intelligence in Education*, *32*(4), 1119–1126. https://doi.org/10.1007/s40593-022-00300-7

Susnjak, T. (2022). ChatGPT: The end of online exam Integrity? *ArXiv Preprint ArXiv: 221209292*. https://arxiv.org/pdf/2212.09292.pdf

Swiecki, Z., Khosravi, H., Chen, G., Martinez-Maldonado, R., Lodge, J. M., Milligan, S., Selwyn, N., & Gašević, D. (2022). Assessment in the age of artificial intelligence. *Computers and Education: Artificial Intelligence*, *3*, 1–10. https://doi.org/10.1016/j.caeai.2022.100075

Thierry, G. (2020). GPT-3: New AI can write like a human but don't mistake that for thinking – neuroscientist. *AI & ML Learning*. https://www.mylifemydecisions.in/Articles/GPT3/GPT3-%20AI%20can%20write%20like%20human.pdf

Turnitin vs Chat GPT: I ran the chat bot 20 times on the same prompt [Video]. (2022, December 18). *YouTube*. https://www.youtube.com/watch?v=ksKgv3Dbeno