

Ethical Exploration of ChatGPT in the Modern K-14 Economics Classroom

An Extension to our published paper in the International Journal of Ethics Education

Life of the Scholar Multi-Disciplinary Conference
Gardner-Webb University
March 22nd, 2024

Presented by:

Brad Scott, Doctoral Student (DBA - Economics)
Godbold College of Business, Gardner-Webb University

Mentor:

Dr. Sandra van der Poel
Associate Professor of Accounting
Godbold College of Business, Gardner-Webb University

Introduction

- Since the public gained access and knowledge of ChatGPT, educators have become interested in discovering more about the artificial intelligence. Educator's interests have been primarily focused on learning capabilities and fallacies of the software.
- This research can be found important to economics educators, education practitioners, and policymakers aiming to navigate the evolving technological landscape in the K-14 education settings.
- The aim of the work is to focus on providing knowledge on fallacies and benefits of utilizing the ChatGPT technology in the classroom, while also benefiting educational outcomes and teaching. The presentation today will also extend the work in examining Copilot, a new Microsoft artificial intelligence that is powered by ChatGPT technology.*

* Individuals can learn more about Microsoft's Copilot here: <https://support.microsoft.com/en-us/topic/chatgpt-vs-microsoft-copilot-what-s-the-difference-8fdec864-72b1-46e1-afcb-8c12280d712f>

Importance to Economics Educators

- Economics educators are known to operate within the frontier of research. This work showcases that economics educators are interested in student learning outcomes, as shown through measurables in assignments or assessments (Stock et al., 2013).
- Furthermore, economics educators have been conscious to expanding technology into the classroom, while also being observant to diversity and real-world applications (Al-Bahrani, 2022; Al-Bahrani et al., 2016; Geerling, 2012; Wooten et al., 2020).
- The aim of the paper is to address literature on supporting economics educators in maintaining classroom lesson relevance (Wooten et al., 2020). By finding an ethical approach to introduce ChatGPT in the classroom, the work aims to fill a gap seen in economics education literature.

Importance to Education

- ChatGPT sparked greater concern in the education community about potential misuses and plagiarism (Can & Honca, 2023; Lo, 2023).
- Furthermore, in the age of student's relying on Google to fact-check educators in lectures, this could impact classroom dynamics and learning environments (Hill, 2023; Mhlanga, 2023; Ray, 2023).
- There has been research in showing diminishing student achievement in pre-trained transformer (GPT) technology, raising concern in educational environments (Steele, 2023).
- Additionally, educators expressed concerns on biased behavior and if primary and upper-primary school-age children are appropriately ready to decipher fact from fiction (Yu, 2023).

Importance for Ethical Applications

- ChatGPT and Copilot feature statements of potential biased responses.* Therefore, educators need to become aware of ethical considerations and understanding knowledge gaps associated with the GPT model (Yu, 2023).
- Researchers have been cautious to introducing emerging technologies that could widen the disparities for underrepresented minority populations (Scott, 2023).
- Ackerly and Attanasi (2010) has shared that concerns focused on ChatGPT can be approached using the normative scope.
- Based on economics educators' trend on maintaining relevance (Wooten et al., 2020) and introducing technologies in a way that supports diversity and real-world applications (Al-Bahrani, 2022; Al-Bahrani et al., 2016; Geerling, 2012; Wooten et al., 2020), economics educators can approach this wholesome student aspect with virtue ethics (Scott & van der Poel, 2024).

Motivation

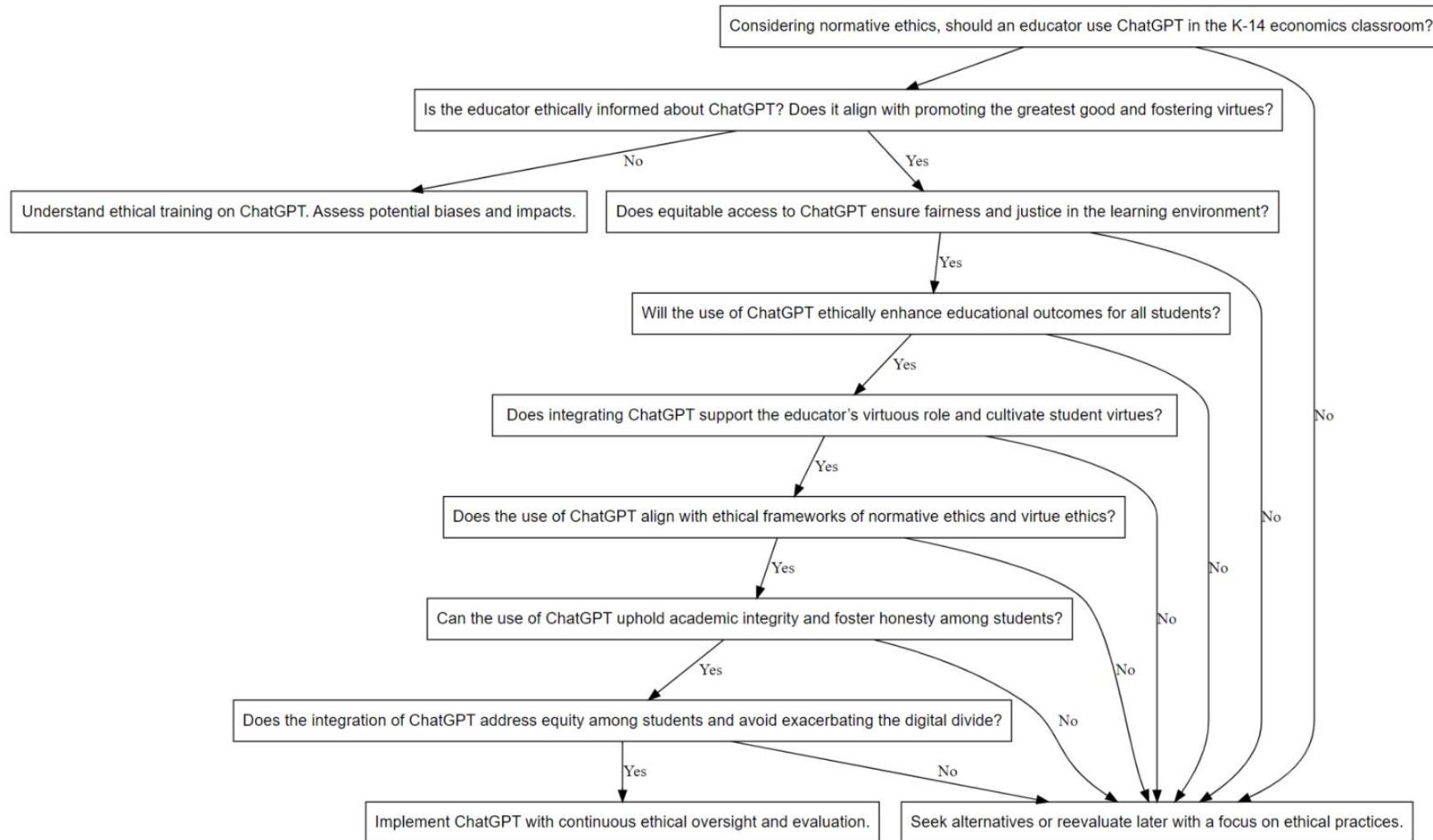
- Copilot is powered by ChatGPT frameworks, that have been designed by OpenAI. Copilot is trained on different material than OpenAI. However, users have access to ChatGPT-4 model, which is a pay-wall function for individual subscribers.
- Practitioners, scholars, and administrators have become interested in the developments of artificial intelligence and the emerging competitors to ChatGPT. These interests have intrigued scholars to discuss the strengths and opportunities of using the program in the classroom (Cotton et al., 2024; Sallam, 2023; Yu, 2023).
- In 2023, economists studied the Test of Understanding in College Economics (TUCE) with ChatGPT and discovered that in both macroeconomics and microeconomics, the application tested at the 99th and 91st percentile, respectively (Geerling et al., 2023).
- Researchers have shared ethical concerns and recognized biased behaviors from artificial intelligence applications (Uzun, 2023). Furthermore, research work has found that asymmetric information in emerging technologies can negatively impact underrepresented populations (Scott, 2023).

Literature Review - Gaps

- Instructors need to be familiar with AI technology and must undergo continued professional development to appropriately identify potential biased behavior (Yu, 2023).
 - How often should this knowledge-check be assessed?
- In doing so, the instructor could enhance learning exercises by having students participate in active learning to identify potential errors or biases within the generated texts (Hargreaves, 2008; Keles, 2023).
 - No general proposal was made on how to approach this with educators.
- With the rise and dominance of ChatGPT in the global community, it is critical for educators to introduce the application and be equipped with knowledge to assess risks (Longoni & Cian, 2020; The Wall Street Journal, 2023).
 - Much like Yu (2023), these works did not address a knowledge-check process and emphasized how quickly information could evolve.
- Researchers, generally, exercised caution with concerns for usage of ChatGPT in the classroom, due to misinformation, biased behaviors, and expanding inequalities in underrepresented populations (Khan & Paliwal, 2023; Sallam, 2023; Scott, 2023; Uzun, 2023; Yu, 2023).
 - How should educators evaluate their plan to introduce ChatGPT/AI?

Decision Tree

Decision tree analysis for instructors to use in determining ethical usage of ChatGPT in the economics classroom.



Discussion

- This presentation recognizes that Copilot uses a version of ChatGPT-4, which has now addressed concerns from Scott (2023) on pricing ranges creating greater disparities in underrepresented minority populations.
- Educators must evaluate, reflect, and check through an assurance process when using lesson involving ChatGPT, continuously reflecting based on the evolution of GPT models (Scott & van der Poel, 2024).
 - By introducing the decision-tree framework and using the “evaluate, reflect, and check” concepts, educators can have a basis to understand if their approaches are ethically sound.
 - It is important to note this research is to provide framework and is not all encompassing. This framework was not empirically tested and was presented to serve as a basis for educators to evaluate opportunities to familiarize and begin the evaluation of using ChatGPT in the classroom.
- Scott and van der Poel (2024) also addresses that educators should continue to undergo professional development workshops to assure they are staying current on GPT and artificial intelligence trends if they are considering applications in their classroom.

References

- Ackerly, B., & Attanasi, K. (2010). Global Feminisms: Theory and ethics for studying gendered injustice. *New Political Science*, 31(4), 543-555. <https://doi.org/10.1080/07393140903322604>
- Al-Bahrani, A., Holder, K., Patel, D., & Wooten, J. (2016). Art of econ: Incorporating the arts through active learning assignments in principles courses. *Journal of Economics and Finance Education*, 15(2), 1-16.
- Al-Bahrani, A. (2022). Classroom management and student interaction interventions: Fostering diversity, inclusion, and belonging in the undergraduate economics classroom. *The Journal of Economic Education*, 53(3), 259-272. <https://doi.org/10.1080/00220485.2022.2075507>
- Can, I.H. & Honca, M. (2023). Awareness of scientific publication ethics in higher education. *International Journal of Ethics Education*, 8, 67-84. <https://doi.org/10.1007/s40889-022-00154-6>
- Cotton, D.R.E., Cotton, P.A., & Shipway, J.R. (2024). Chatting and cheating: Ensuring academic integrity in the era of ChatGPT. *Innovations in Education and Teaching International*, 61(2), 228-239. <https://doi.org/10.1080/14703297.2023.2190148>
- Geerling, W. (2012). Bringing the 'dismal science' to life: Teaching economics through multimedia. *International Review of Economics Education*, 11(2), 81-90. [https://doi.org/10.1016/S1477-3880\(15\)30010-4](https://doi.org/10.1016/S1477-3880(15)30010-4)
- Geerling, W., Mateer, G.D., & O'Roark, B. (2020). Music then and now: Using technology to build a lyric animation module. *The American Economist*, 65(2), 264-276. <https://doi.org/10.1177/0569434519889063>
- Geerling, W., Mateer, G.D., Wooten, J., & Damodaran, N. (2023). ChatGPT has aced the Test of Understanding in College Economics: Now what? *The American Economist*, 68(2), 233-245. <https://doi.org/10.1177/05694345231169654>
- Hargreaves, J. (2008). Risk: the ethics of a creative curriculum. *Innovations in education and teaching international*, 45, 227-234. <https://doi.org/10.1080/14703290802176006>
- Hill, B. (2023). Taking the help or going alone: ChatGPT and class assignments. *HEC Paris - Economics & Decision Sciences*, forthcoming, <https://doi.org/10.2139/ssrn.4465833>
- Khan, I.A., & Paliwal, N.W. (2023). ChatGPT and digital inequality: A rising concern. *Scholars Journal of Applied Medical Sciences*, 11(9), 1646-1647. <https://doi.org/10.36347/sjams.2023.v11i09.010>
- Keles, S. Navigating in the moral landscape: analysing bias and discrimination in AI through philosophical inquiry. *AI Ethics*. Advanced online publication. <https://doi.org/10.1007/s43681-023-00377-3>

References

- Lo, C.K. (2023). What is the impact of ChatGPT on education? A rapid review of the literature. *Education Sciences*, 13(4), 410. <https://doi.org/10.2139/ssrn.4465833>
- Longoni, C., & Cian, L. (2020). Artificial intelligence in utilitarianism vs. hedonic contexts: The “word of machine” effect. *Journal of Marketing*, 86(1), 91-108. <https://doi.org/10.1177/0022242920957347>
- Mhlanga, D. (2023). Open AI in education, the responsible and ethical use of ChatGPT towards lifelong learning. *SSRN*, 1-19. <https://doi.org/10.2139/ssrn.4354422>
- Ray, P.P. (2023). ChatGPT: A comprehensive review on background, applications, key challenges, bias ethics, limitations and future scope. *Internet of Things and Cyber-Physical Systems*, 3, 121-154. <https://doi.org/10.1016/j.iotcps.2023.04.003>
- Sallam, M. (2023). ChatGPT utility in healthcare education, research, and practice: Systematic review on the promising perspectives and valid concerns. *Healthcare*, 11(6), 1-20. <https://doi.org/10.3390/healthcare11060887>
- Scott, B. (2023). Protecting vulnerable consumers within the metaverse. In R. Bansal, S.A. Qalati, & A. Chakir (Eds.), *Influencer marketing applications within the metaverse* (117-131). IGI Global. <https://doi.org/10.4018/978-1-6684-8898-0.ch008>
- Scott, B., & van der Poel, S. (2024). Ethical exploration of ChatGPT in the modern K-14 economics classroom. *International Journal of Ethics Education*. Advanced online publication. <https://doi.org/10.1007/s40889-024-00184-2>
- Steele, J.L. (2023). To GPT or not GPT? Empowering our students to learn with AI. *Computers and Education: Artificial Intelligence*, 5, 1-5. <https://doi.org/10.1016/j.caeai.2023.100160>
- Stock, W.A., Ward, K., Folsom, J., Borrenpohl, T., Mumford, S., Pershin, Z., Carriere, D., & Smart, H. (2013). Cheap and effective: The impact of student-led recitation classes on learning outcomes in introductory economics. *The Journal of Economics Education*, 44(1), 1-16. <https://doi.org/10.1080/00220485.2013.740368>
- The Wall Street Journal. (2023, July 26). Drive-thru AI chatbot vs. Fast-food worker: We tested the tech | WSJ [video]. YouTube. <https://www.youtube.com/watch?v=JJxBySZwBAI>
- Uzun, L. (2023). Are concerns related to artificial intelligence development and use really necessary: A philosophical discussion. *Digital Society*, 2(40), 1-11. <https://doi.org/10.1007/s44206-023-00070-2>
- Wooten, J., Al-Bahrani, A., Holder, K., & Patel, D. (2020). The role of relevance in economics education: A survey. *SSRN*, 1-13. <https://doi.org/10.2139/ssrn.3606301>
- Yu, H. (2023). Reflection on whether ChatGPT should be banned by academia from the perspective of education and teaching. *Frontiers in Psychology*, 14(1), 1-12. <https://doi.org/10.3389/fpsyg.2023.1181712>