Studies in Educational Evaluation 83 (2024) 101395

Contents lists available at ScienceDirect

Studies in Educational Evaluation

journal homepage: www.elsevier.com/locate/stueduc

Will generative AI replace teachers in higher education? A study of teacher and student perceptions

Cecilia Ka Yuk Chan *, Louisa H.Y. Tsi

The University of Hong Kong, Hong Kong

ARTICLE INFO

Keywords:
ChatGPT
Generative AI
AI Literacy
Social-emotional competencies
Holistic competencies

ABSTRACT

This paper evaluates the potential of generative artificial intelligence (AI) in higher education, specifically its capacity to replace or assist human teachers. By reviewing relevant literature and analysing survey data from students and teachers, this mixed-methods study provides a comprehensive perspective on the future role of educators in the face of advancing generative AI technologies. An online survey was conducted to explore the perceptions of 399 university students and 184 teachers across different disciplines in eight higher education institutions in Hong Kong concerning the use of generative AI technologies. Findings suggest that although some believed generative AI may eventually replace teachers, the majority of participants argued that human teachers possess unique qualities, including critical thinking and emotions, which make them irreplaceable. Similarly, findings also emphasized the importance of social-emotional competencies developed through human interactions, something which generative AI technologies cannot currently replicate. Crucially, this study further found that students value and respect their human teachers, even as generative AI becomes more prevalent. As such, the authors propose that teachers can seek to effectively integrate generative AI to enhance teaching and learning without viewing it as their replacement. To do so, they must understand how generative AI can work well with teachers and students, avoid potential pitfalls, develop AI literacy, and address practical issues including ethics and privacy. Recommendations are offered on how universities, teachers, and students can adopt generative AI technologies in an approach that balances the strengths of human educators with generative AI technologies. As the future of education lies in the synergy between human teachers and generative AI, teachers, students, and universities should all understand and refine their unique qualities in order to effectively navigate the integration of generative AI, ensuring well-rounded and impactful learning experiences.

1. Introduction

Artificial intelligence (AI) refers to technologies or systems that possess human-like capabilities such as problem solving, interpretation, and self-training (Koltsakis et al., 2023). In contrast to traditional AI that focuses on data analysis and interpretation, generative AI is able to respond to a prompt and create new content such as text, code, and images (Peres et al., 2023). There have been news and reports about generative AI replacing jobs. A report by Goldman Sachs (Briggs & Kodnani, 2023, para. 2) states that "[i]f generative AI delivers on its promised capabilities, the labor market could face significant disruption". With the launch of ChatGPT (OpenAI, 2023)—a generative AI software that can generate human-like responses to a wide range of topics—and the increasing capabilities of AI technologies, the question of whether generative AI can completely replace teachers is becoming more pressing. Scholars and researchers have raised concerns about how AI will impact the roles and functions of teachers (e.g., Bryant et al., 2020; Edwards et al., 2018; Zawacki-Richter et al., 2019). In particular, ChatGPT is expected to bring about unprecedented challenges to the field of education and teachers (Kasneci et al., 2023; Peres et al., 2023). With the anticipation that more than five million jobs will be replaced by AI, news media has been mulling the idea of whether teachers are next to be replaced (Cerullo, 2023).

With the mixture of curiosity, scepticism, and alarm towards the idea that generative AI might render teachers and educational institutions redundant in mind, this study aims to explore university teachers' and students' perceptions of and attitude towards generative AI, seeking to understand whether they believe that generative AI will replace teachers

* Correspondence to: Faculty of Education/Teaching and Learning Innovation Centre (TALIC), The University of Hong Kong, Room CPD-1.81, Centennial Campus, Pokfulam, Hong Kong.
E-mail addresses: ckchan09@hku.hk (C.K.Y. Chan), louisa94@connect.hku.hk (L.H.Y. Tsi).

https://doi.org/10.1016/j.stueduc.2024.101395
Received 1 April 2024; Received in revised form 10 August 2024; Accepted 21 August 2024
Available online 29 August 2024

highlighting the advantages and limitations. *Narra J, 3*(1), 1–14. https://doi.org/10.52225/narra.v3i1.103

Sapkota, B., & Bondurant, L. (2024). Assessing concepts, procedures, and cognitive demand of ChatGPT-generated mathematical tasks. *International Journal of Technology in Education, 7*(2), 218–238. https://doi.org/10.46328/ijte.677

Schiff, D. (2021). Out of the laboratory and into the classroom: The future of artificial intelligence in education. *AI & Society, 36*(1), 331–348. https://doi.org/10.1007/s00146-020-01033-8

Ţală, M. L., Müller, C. N., Năstase, I. A., State, O., & Georghe, G. (2024). Exploring university students' perceptions of generative artificial intelligence in education. *Amfiteatru Economic Journal, 26*(65), 71–88. https://doi.org/10.24818/EA/2024/65/71

Terzopoulos, G., & Satratzemi, M. (2019). Voice assistants and artificial intelligence in education. *Proceedings of the 9th Balkan Conference on Informatics*, 1–6. https://doi.org/10.1145/3351556.3351588

ThinkML Team. (2022, February 12). Potential use of Robotics in education system. ThinkML. https://thinkml.ai/potential-use-of-robotics-in-education-system/#:~:text=Anthony%20Sheldon%3B%20A%20British%20education,lead%20the%20transfer%20of%20knowledge.

Timms, M. J. (2016). Letting artificial intelligence in education out of the box: Educational cobots and smart classrooms. *International Journal of Artificial Intelligence in Education, 26*(2), 701–712. https://doi.org/10.1007/s40593-016-0095-y

UNESCO. (2021). *AI and education: Guidance for policy-makers*. UNESCO.

University Grants Committee. (n.d.). General statistics on UGC-funded institutions/programmes. ⟨https://cdcf.ugc.edu.hk/cdcf/searchUniv.action?lang=EN⟩.

Vu, H. T., & Lim, J. (2022). Effects of country and individual factors on public acceptance of artificial intelligence and robotics technologies: A multilevel SEM analysis of 28-country survey data. *Behaviour & Information Technology, 41*(7), 1515–1528. https://doi.org/10.1080/0144929X.2021.1884288

Watermeyer, R., Phipps, L., Lanclos, D., & Knight, C. (2024). Generative AI and the automating of academia. *Postdigital Science and Education, 6*, 446–466. https://doi.org/10.1007/s42438-023-00440-6

Wilson, H. J., & Daugherty, P. R. (2018). Collaborative intelligence: Humans and AI are joining forces. *Harvard Business Review, 96*(4), 114.

Wong, S. Y., & Surianshah, S. (2024). A review of the scholarly works on ChatGPT use in education: Bibliometric analysis. *International Journal of Technology in Education, 7*(3), 650–666. https://doi.org/10.46328/ijte.823

Yang, J., & Zhang, B. (2019). Artificial intelligence in intelligent tutoring robots: A systematic review and design guidelines. *Applied Sciences, 9*(10), 2078. https://doi.org/10.3390/app9102078

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education – Where are the educators? *International Journal of Educational Technology in Higher Education, 16*, 39. https://doi.org/10.1186/s41239-019-0171-0