Generative AI and the Shift Towards Learner-Centered Teaching: Challenges and Opportunities

Martha Ravola, Ph.D.
Professor & Director ASU SNAP-Ed program
Department of Human Sciences
Alcorn State University
1000 ASU Drive#839
Alcorn State, MS 39096-7500
mravola@alcorn.edu

Babu George, Ph.D.
Professor
School of Business
Alcorn State University
1000 ASU Drive
Alcorn State, MS 39096-7500
bgeorge@alcorn.edu

Madhu Manthati.
Research Associate
Department of Human Sciences
Alcorn State University
1000 ASU Drive #839
Alcorn State, MS 39096-7500
mmanthati@alcorn.edu

Generative AI and the Shift Towards Learner-Centered Teaching: Challenges and Opportunities

Introduction & Need for LCT Strategy

AI plays a key role in the creation of immersive and interactive learning environments by providing personalized learning experiences, real-time feedback, and adaptive learning pathways (Owan, 2023). AI chatbots have emerged as valuable tools in academic settings, providing opportunities for interactive learning experiences (Hultberg, 2024). Moreover, AI technologies can be integrated into educational measurement and assessment processes, resulting in more efficient evaluation methods (Chen & Lin, 2023). Using AI tools like intelligent chatbots and voice assistants, students can engage in interactive and productive learning environments (Zhao, 2023). Educators can employ AI to develop immersive learning environments by integrating adaptive learning systems that customize the learning experience based on each student's needs and abilities (Yin et al., 2022). AI-powered tools can analyze students' language proficiency, adjust lesson content, and offer real-time feedback, thereby enhancing the learning process (Pokrivčáková, 2019).

Given the potential of AI to create engaging, personalized, and interactive learning experiences, it is appropriate to investigate how educators can effectively leverage AI technologies to develop immersive and interactive learning environments. By examining the various applications of AI in education, such as AI-powered chatbots, digital writing assistants, adaptive learning systems, and personalized learning companions, researchers can gain valuable insights into the strategies and best practices for integrating AI into educational settings to enhance student engagement and learning outcomes.

Connection to Literature

Learner-centered teaching has gained significant attention in the field of education due to its ability to enhance teaching effectiveness and promote student autonomy and independence (Magno & Sembrano, 2008). This approach shifts the focus from the teacher to the student, allowing learners to take responsibility for their own learning process (Zhou et al., 2019). By implementing learner-centered practices, instructors can create a more democratic and engaging learning environment where students are empowered to actively participate in their education (Moate & Cox, 2015). This method emphasizes the importance of tailoring teaching strategies to individual student needs, learning styles, skills, and goals (Benson, 2022).

One of the key aspects of learner-centered teaching is the promotion of student autonomy and self-directed learning (Chowdhury, 2021). This approach involves designing teaching methods that cater to the learners' needs, learning styles, and objectives, empowering them to take control of their education (Chowdhury, 2021). By incorporating active learning and encouraging creativity and innovation among students, learner-centered teaching fosters a sense of confidence and independence in learners (Chowdhury, 2021). This method helps students develop high-level thinking skills and intrinsic motivation, leading to better retention of important information (Metto, 2014). Research has shown that learner-centered teaching can significantly impact student learning outcomes, particularly in fields like mathematics and science (Sunzuma & Luneta, 2023). By engaging students in the learning process and encouraging them to actively participate in classroom activities, learner-centered approaches can enhance students' understanding of complex

subjects and improve their problem-solving skills (Marcourt et al., 2022). However, the implementation of learner-centered practices in STEM education can be influenced by individual characteristics of instructors and environmental factors within the teaching environment (Emery et al., 2021).

As technology continues to play a significant role in education, the transition from teacher-centered to student-centered approaches has become more prevalent, emphasizing the importance of student engagement and active participation in the learning process (Al-Abdali & Alzayadi, 2020). This shift not only benefits students by promoting autonomy and self-directed learning but also challenges educators to adapt their teaching methods to meet the evolving needs of learners (Al-Abdali & Alzayadi, 2020). Specific strategies include AI and learner autonomy, personalized learning experiences, AI generated content and adaptive assessment will be discussed in detail with adaptations across disciplines and identified learning outcomes.

How it works & Implementation Strategy

The rapid advancement of generative AI tools has the potential to revolutionize education by shifting the focus from teacher-centered to learner-centered teaching. This paper explores the premise that AI empowers learners and promotes a more personalized, engaging, and effective learning experience. By examining the impact of AI on various aspects of education, such as learner autonomy, personalized learning, adaptive assessments, feedback and guidance, collaborative learning, and immersive learning environments, we propose a set of research propositions that will guide future investigations in this field. The presentation also addresses the challenges and ethical considerations associated with the integration of AI in education, emphasizing the need for further research and experimentation to ensure that the benefits of AI-driven education are realized while minimizing potential risks. As we navigate this new era of AI in education, it is imperative to explore how these technologies can transform the learning experience, support both learners and educators, and ultimately lead to a more learner-centered educational paradigm.

Implications for Collaboration and Use of LCT Strategies

The integration of AI in education presents various challenges and ethical considerations that need to be carefully addressed to ensure responsible and effective implementation. Data privacy is a critical consideration collection and processing of student data raise concerns about privacy, security, and the potential misuse of personal information. Educators must ensure that data handling complies with privacy regulations and that appropriate safeguards are in place to protect sensitive information (Alasadi & Baiz, 2023). The ethical implications of data privacy in AI applications necessitate a thorough examination of consent, data security, and confidentiality to safeguard student privacy (Ogbaga, 2023). Ensuring transparency and accountability in data practices is essential to maintain trust and uphold ethical standards in educational AI systems (Lin, 2023). The successful integration of AI in education requires educators to have the necessary training and support to effectively leverage AI tools in teaching and learning. Educators need to develop digital literacy skills, understand AI technologies, and be equipped to navigate the ethical considerations associated with AI in education (Khan et al., 2022).

References:

Owan, V. (2023). Exploring the potential of AI tools in educational measurement and assessment. *Eurasia Journal of Mathematics Science and Technology Education*, 19(8), em2307. https://doi.org/10.29333/ejmste/13428

Hultberg, P. (2024). Comparing and assessing four ai chatbots' competence in economics. *Plos One*, 19(5), e0297804. https://doi.org/10.1371/journal.pone.0297804

Li, L., Chen, C., Wang, L., Liang, K., & Bao, W. (2023). Exploring AI in smart education: real-time classroom behavior analysis with embedded devices. *Sustainability*, 15(10), 7940. https://doi.org/10.3390/su15107940

Zhao, T. (2023). Ai in educational technology.. https://doi.org/10.20944/preprints202311.0106.v1

Yin, H., Khan, S., Alharbi, A., & Nazir, S. (2022). Assessing English teaching linguistic and AI for efficient learning using analytical hierarchy process and technique for order of preference by similarity to ideal solution. *Journal of Software Evolution and Process*. https://doi.org/10.1002/smr.2462

Pokrivčáková, S. (2019). Preparing teachers for the application of ai-powered technologies in foreign language education. *Journal of Language and Cultural Education*, 7(3), 135-153. https://doi.org/10.2478/jolace-2019-0025

Moate, R. and Cox, J. (2015). Learner-centered pedagogy: considerations for application in a didactic course. *The Professional Counselor*, 5(3), 379-389. https://doi.org/10.15241/rmm.5.3.379

Benson, P. (2022). Learner-centered teaching. *International Research Journal of Modernization in Engineering Technology and Science*. https://doi.org/10.56726/irjmets32262

Magno, C. and Sembrano, J. (2008). The role of teacher efficacy and characteristics on teaching effectiveness, performance, and use of learner-centered practices. *The Asia-Pacific Education Researcher,* 16(1). https://doi.org/10.3860/taper.v16i1.93

Chowdhury, T. (2021). Fostering learner autonomy through cooperative and collaborative learning. *Shanlax International Journal of Education*, 10(1), 89-95. https://doi.org/10.34293/education.v10i1.4347

Sunzuma, G. and Luneta, K. (2023). Zimbabwean mathematics pre-service teachers' implementation of the learner-centered curriculum during teaching practice. *Eurasia Journal of Mathematics Science and Technology Education*, 19(5), em2258. https://doi.org/10.29333/ejmste/13131

Marcourt, S., Aboagye, E., Armoh, E., Dougblor, V., & Ossei-Anto, T. (2022). Teaching method as a critical issue in science education in Ghana. *Social Education Research*, 82-90. https://doi.org/10.37256/ser.4120232058