Article Support for QEP the Proposal CATALYST: Conversational AI Technology Advancing Learning: Yielding Skills in Thinking

1. Labadze, L., Grigolia, M. & Machaidze, L. Role of AI chatbots in education: systematic literature review. *Int J Educ Technol High Educ* **20**, 56 (2023). https://doi.org/10.1186/s41239-023-00426-1
   a. This literature review provides references to 75 published articles on the topic of AI, specifically chat features of AI, and their impact on education. Cited within these 75, the following are a few articles in support of the argument for the implementation of AI Chat features to facilitate student learning.
2. St-Hilaire, F., Vu, D. D., Frau, A., Burns, N., Faraji, F., Potochny, J., Robert, S., Roussel, A., Zheng, S., & Glazier, T. (2022). A new era: Intelligent tutoring systems will transform online learning for millions. ArXiv Preprint ArXiv:2203.03724.
   a. In this quantitative study, students interacted with a chat AI tool with a limited database pertinent to the student's studies. The students interacted with the chat AI with problems that they were able to answer, ask for help, or skip and then receive immediate feedback. The result of the study yielded learning gains 2 to 2.5 times higher than the control group.
3. Putra, F.R., & Ciptaningrum, D.S. (2024). Understanding the Role of Generative Pre-Trained Transformer (GPT) in Improving Learning Quality and Practices. *QALAMUNA: Jurnal Pendidikan, Sosial, dan Agama*.
   a. In this qualitative study, results for the use of Chat GPT in education suggested that these AI chat tools have the potential to support and enhance student motivation in the learning process. "Participants in the study have acknowledged the pivotal role played by GPT as a catalyst in addressing students' individual needs, interests, and preferences, thereby facilitating the generation of personalized learning content" (Putra & Ciptaningrum, 2024).
4. Eysenbach G. (2023). The Role of ChatGPT, Generative Language Models, and Artificial Intelligence in Medical Education: A Conversation With ChatGPT and a Call for Papers. JMIR Med Educ 2023;9:e46885. https://mededu.jmir.org/2023/1/e46885
   a. This article utilizes and publishes their interaction with ChatGPT to demonstrate the capabilities and limitation of this tool. Combined with other published data, one can see the importance of having a limited AI chat tool that is specific to an educator's database of reference for their students to ensure accurate and up to date learning for their students to review with the AI chat tool.
5. 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), 1–19.
   a. In this quantitative study, the chatbot was utilized exactly as proposed by the QEP submission in the form of a virtual teaching assistant that responds to student questions. The data resulted in better performance on post tests from the students who utilized the chatbot tool compared to the students who did not.