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BEYOND GRADES TO LEARNING ENHANCEMENT: DEVELOPMENT, IMPLEMENTATION, AND EVALUATION OF A CONVERSATIONAL AI AGENT IN MEDICAL EDUCATION

Albaraa Al-Ghatabahr¹, Ayad Abdullah¹, Zakaria Jije¹, Hussameldin Alabdulkarim¹, Mohammed Smet¹, Eyad Basheer¹

Supervisor: Majid Ali¹

¹ Department of Basic Sciences, College of Medicine, Sulaiman Al-Rajhi University, Al-Bukayriyah, Saudi Arabia

Abstract

Background: Artificial intelligence (AI) is transforming medical education by offering personalized, interactive learning. However, evidence on their educational impact remains limited. Objective: To evaluate the educational impact of a custom GPT agent for undergraduate medical students. Methodology: The intervention involved the development and deployment of a curriculum-aligned custom GPT-4 conversational agent supporting individualized learning in a 4-week pharmacology block in Year 2 of MBBS program at the College of Medicine, Sulaiman Alrajhi University in 2024-2025 academic year. A mixed-

Methods: A sequential-explanatory design was conducted for its evaluation after the block. Phase 1 included a survey with the enrolled students (n=58) assessing usage, perceptions, and satisfaction, alongside a comparative analysis with two historical cohorts (2022–2023, n=33; 2023–2024, n=37). Phase 2 involved semi-structured interviews with nine volunteers. Quantitative data were analyzed using SPSS v28, and qualitative data via thematic analysis. Ethical approval was obtained prior to the start of the block. Informed consent was also obtained from all the students at the start of the block.

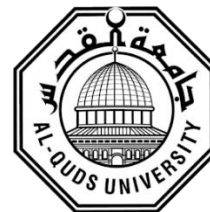
Results: and Discussion: Of 58 students, 52 responded (89.6%), 98.1% used the custom GPT, and 74.5% engaged with it daily. Most found it more effective (92.2%) and engaging (94.1%) than traditional learning

Methods: with an average recommendation score of 4.65 ± 0.73 out of 5. Frequency of use correlated significantly with perceived improvement in mid-block quiz and the final examination ($p < 0.05$). Academic performance (block total percentage) rose slightly but insignificantly [75.5% (average of two historical cohorts) vs. 77.4%; $p > 0.05$]. Qualitative analysis revealed six themes that echoed with the quantitative results: learning support, efficiency, supplementary role, strengths, challenges, and improvement suggestions.

Conclusion: The disconnect between user engagement and minimal performance improvements challenges traditional evaluation paradigms. While conversational AI may not directly enhance final scores, it supports metacognitive development, reduces cognitive load, and fosters critical thinking skills essential for modern medical practice, necessitating multidimensional assessment frameworks.



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Correspondence concerning this article should be addressed to the mentioned authors at the mentioned institutes.

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E-mail: research@admin.alquds.edu

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