Feasibility of AI-Driven Personalized Learning for Internal Medicine Residents

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Background: Artificial intelligence (AI) is revolutionizing medical education, providing unique opportunities for personalized learning. Internal Medicine residency programs struggle with tailoring educational content to meet individual learner needs. While the flipped classroom model enhances engagement, it falls short in offering real-time, personalized feedback. This study evaluates the integration of adaptive AI beings into flipped classroom frameworks to address this gap, leveraging AI-powered natural language processing to customize learning experiences and improve educational outcomes.
Existing literature highlights the promise of AI in education but lacks exploration within residency training contexts.

Objective: To evaluate the feasibility and impact of adaptive AI beings in enhancing personalized learning experiences for Internal Medicine residents preparing for in-service exams. The study aims to determine the potential of AI to improve exam performance and learning efficiency.

Methods: Using the edYOU platform, the study deployed adaptive AI beings capable of personalizing content based on individual resident knowledge levels. Residents interacted with these AI beings in real-time, enabling dynamic, tailored educational experiences. Performance metrics were collected through simulation-based in-service exams and qualitative feedback from residents.

Results: Engagement with the AI platform varied widely, with residents spending an average of 32.3 hours (a few minutes to 148 hours). Higher platform engagement correlated with improved quiz performance ($r = 0.63$). Correct response rates ranged from 60% to 85%, with residents dedicating more time to achieving better scores. Engagement with specific topics averaged 82.57%, reinforcing the positive impact of sustained interaction.

Conclusions: Integrating AI-driven adaptive tools in residency education demonstrates significant potential to enhance personalized learning. This innovation can serve as a scalable model for improving educational efficiency across graduate medical education. Further exploration of AI technologies in medical training is warranted, with implications for broader adoption and refinement of AI-based pedagogical strategies.

Keywords: Artificial intelligence, personalized learning, Internal Medicine, flipped classroom, residency training.