

INTEGRATING ARTIFICIAL INTELLIGENCE (AI) INTO TEACHING AND LEARNING IN CLINICAL MEDICINE



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BACKGROUND



- Artificial intelligence (AI) has emerged as a transformative tool in healthcare and education, particularly in clinical medicine. Defined broadly, AI encompasses a variety of advanced techniques, including machine learning, natural language processing, and large language models, which facilitate complex tasks traditionally performed by humans
- In the realm of medical education, AI has been increasingly integrated into learning environments, enhancing teaching methodologies and learning experiences through tools such as intelligent tutoring systems and clinical decision support systems
- Using social constructivism as the guiding theoretical lens, this narrative review was conducted to synthesise existing literature on the role of artificial intelligence (AI) in introducing tools and methodology in healthcare learning, teaching and research.



METHODS

A structured search of the literature was conducted in the following electronic databases: Scopus, EBSCOhost, Google Scholar, PubMed, Science Direct, and JStor. The search focused on studies published between 2020 and 2025 to capture the most recent developments in AI applications in healthcare education and research. The following Boolean operators and keywords were applied:

“Artificial intelligence” OR “machine learning” OR
“chatbot” OR “generative AI”
AND “medical education” OR “healthcare education” OR
“health professions education”
AND “teaching” OR “learning” OR “research”

Additional literature was identified through reference lists of included studies and through manual searches of relevant journals. Only articles published in English were included.





INCLUSION AND EXCLUSION CRITERIA

- Peer-reviewed empirical studies, conceptual or theoretical papers, and narrative or scoping reviews were included in the study. Articles addressing AI applications in teaching and learning within clinical medicine contexts. Lastly, studies that provided insights relevant to social or collaborative dimensions of AI were also included.
- Studies that focused solely on the technical development of AI tools without consideration of educational implications were excluded. Studies conducted outside of clinical medicine contexts and opinion pieces, editorials, or commentaries that lack conceptual or empirical grounding were also excluded.

SELECTION

- During the process of screening, any uncertainties or disagreements about inclusion were resolved through discussion among the review authors. Approximately 19 articles were included in the final review. To provide transparency in the selection process, a simplified PRISMA-style flow diagram was created to illustrate the number of articles identified, screened, excluded, and included.



Practical Applications in Clinical Medicine

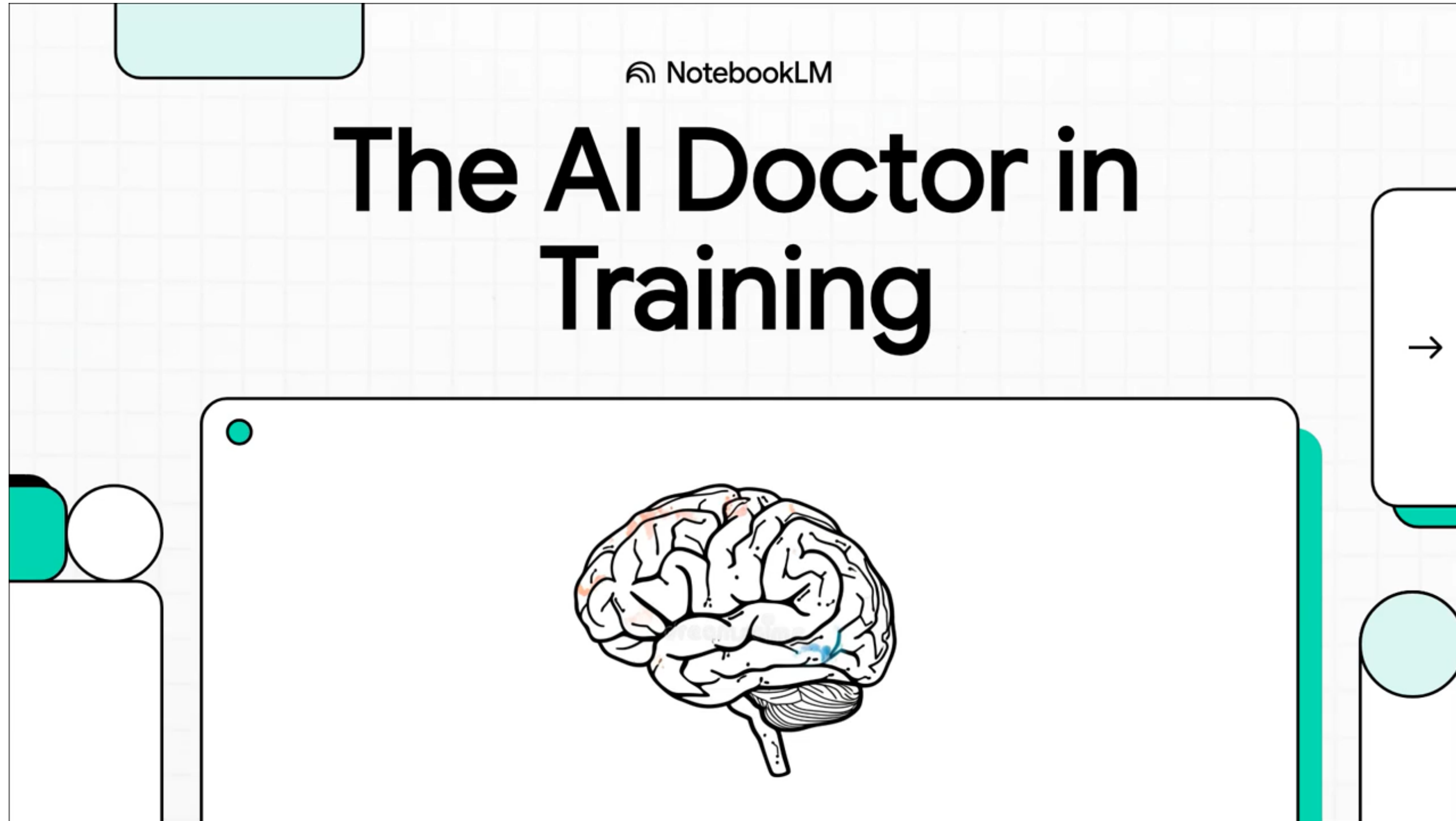
- Group case-based discussions and problem-solving.
- Interdisciplinary learning
- POCUS: Improves skill acquisition and readiness
- AI-generated clinical cases
- Healthcare: Clinical reasoning, Assistance with the interpretation of results.
- Simplify evidence through podcasts: NotebookLM

How Can AI Enhance Formative Assessment?



Draft	Auto	Create	Improve	Provide
ChatGPT: Draft quizzes, simulate discussions, give feedback	Quizizz / Kahoot: Auto-generate interactive quizzes	Perplexity AI: Create short summaries and comprehension questions	Grammarly / Wordtune: Improve self-editing and writing quality	AI Rubric Generators : Provide criteria-based, consistent feedback

KEY FINDINGS AND CONCLUSION



ACKNOWLEDGEMENTS AND FUNDING



The Department of Family Medicine at the University of KwaZulu-Natal for their support of the study.

