
INTEGRATION OF ARTIFICIAL INTELLIGENCE IN MEDICAL EDUCATION: DEVELOPING A FRAMEWORK FOR CURRICULUM ENHANCEMENT

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ABSTRACTS

Background: In recent years, the field of medical education has been embracing innovative approaches to enhance the learning experience of students. One such approach is the integration of artificial intelligence (AI) technologies, including Natural Language Processing (NLP) models, Language Modeling (LLM), and chatbots. Chatbots offer a unique and interactive learning experience for medical students. These AI-driven conversational agents simulate human-like conversations, enabling students to engage in personalized interactions that serve their individual learning needs. By leveraging NLP models and LLM, chatbots can comprehend and respond to natural language queries, providing students with immediate feedback, guidance, and access to relevant resources. **Objectives:** This study explores integrating AI, specifically NLP models, LLM, and chatbots in medical education. It aims to create a structured framework for incorporating AI in medical curricula at a Portuguese medical school, benefiting both educators and students by ensuring the systematic inclusion of AI technologies in medical education programs. **Methods:** The research methodology consists of two phases. In the initial phase, a public forum was conducted to gather insights on the use of AI tools in medical education. The first forum was held in May 19, 2023, and attracted approximately 90 participants, including educators, students, researchers, physicians, and academic authorities, creating a platform for open discussions. Participants shared their knowledge, experiences, and opinions related to the

integration of AI in medical education. The forum aimed to gather diverse perspectives on the benefits, challenges, and ethical considerations associated with AI implementation. The second phase involves the development of a collaborative framework. Faculty members and students work together to create a comprehensive framework for integrating AI content into the curriculum of fourth-year medical students. This framework aims to foster students' critical thinking, creativity, and technical skills through structured integration of AI tools into medical education. It takes into account content selection, pedagogical approaches, assessment strategies, and ethical guidelines and is being developed based on the insights and conclusions drawn from the public forum. It ensures a coordinated and collective approach, leveraging the expertise and perspectives of both faculty members and students. The results of this work are to be presented in other forums or meetings to get further insights. In a second forum, the initial presentation was carried out at the Faculty of Medicine of the University of Porto on June 29, 2023. Results: The outcomes of the first forum provided valuable insights that will guide the development of our framework for incorporating AI content into the medical curriculum. One key result was the recognition that AI tools in medical education are not intended to replace the traditional teaching methods already in place, but rather to serve as an additional and complementary means of learning. Participants acknowledged the potential integration of these tools into a specific curriculum unit that focuses on topics related to evidence-based healthcare and digital health. Moreover, the discussions revealed that the application of AI tools could extend to several clinical domains in the future. The first forum also sparked substantial interest beyond medicine, leading to opportunities for collaboration among multidisciplinary experts and the exploration of cross-disciplinary pedagogical methodologies. This suggests AI tools could bridge knowledge gaps and facilitate knowledge transfer across faculties. The primary goal identified in incorporating AI tools in medical education was to strengthen students' creativity and critical thinking, thereby optimizing their effective and positive utilization of these tools. In order to accomplish this, it is important to focus both on the design of prompts for AI tools as well as the ability to interpret and evaluate the generated output. Participants emphasized the significance of prioritizing these aspects during the study and design of the framework. Additionally, the importance of familiarizing students with the technical aspects of these tools was also recognized, thereby demystifying their use in clinical practice and fostering critical thinking on the subject. The discussions highlighted the importance of equipping students with the necessary knowledge and skills to navigate future AI applications in clinical settings. This includes encouraging students to engage in research projects related to AI in medicine. Recognizing that biases and complications can arise in any AI model, challenges associated with the use of AI tools were discussed, such as ethical considerations and the potential impact on clinical practice and academic settings, including issues related to copyright and intellectual property. Participants also raised concerns about the risk of care dehumanization resulting from the introduction of AI systems. Therefore, it was emphasized that educational use of these tools should be supervised, ensuring proper information flow and maintaining the credibility of the outputs. The developed framework aims to prepare future health professionals to incorporate these technologies in a manner that preserves the personalized and empathetic nature of patient care. In the second forum of June 29, 2023, specific exercises were presented for the first time for students to practice discussing with the AI tools simple concepts, more complex problems, and also generate patient clinical histories. Further-

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more, as part of the framework development process, educators will be provided with strategies to expand the content of their classes by generating additional resources using chatbots. Conclusion: This ongoing study aims to develop a collaborative framework for integrating AI content into the medical students' curriculum. By fostering critical thinking, technical competence, and an awareness of ethical considerations, this framework will enable students to harness the potential of AI tools in clinical decision-making. Through this research, we strive to contribute to the advancement of medical education and prepare future healthcare professionals to effectively navigate the evolving landscape of healthcare.

Palavras-chave: Inteligência Artificial; Informação e Saúde; Educação.

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