

ABSTRACT BOOK

2nd INTERNATIONAL CONFERENCE ON **ARTIFICIAL INTELLIGENCE** **AIMEC** **IN MEDICAL EDUCATION** **2025**

"Transforming Medical Education in the Age of Artificial Intelligence"

12th - 14th DECEMBER 2025

Preclinical Building, Faculty of Medicine,
Universiti Kebangsaan Malaysia (UKM), Jalan Yaacob Latif, Bandar Tun Razak,
56000 Cheras, Kuala Lumpur, Malaysia.

#AIMEC2025

FREE ORAL PRESENTATION – O223

Integrating ChatGPT and JavaScript Object Notation-Based Data for Adaptive Airway Management Training Among Anaesthesia Undergraduate Students

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ABSTRACT

Introduction: Airway management is a critical skill in anaesthesiology, yet undergraduate medical students often experience limited opportunities to practise structured assessment and clinical reasoning. Conventional teaching provides supervised exposure with real patients, but the variety of scenarios is limited and restricted by patient safety considerations, limiting the development of clinical competency. To support self-directed learning and strengthen cognitive readiness, an interactive airway management module using ChatGPT as an instructional agent was conceptualised.

Objective: The objective is to conceptualise an Artificial Intelligence (AI)-supported airway management module that enhances decision-making, provides structured simulation, and complements conventional teaching.

Methodology: A design and development research approach was applied. The ASSURE model guided the analysis of learner needs and instructional requirements. A structured dataset was built using JavaScript Object Notation (JSON), a lightweight format that stores information in key-value pairs. In this module, JSON serves as the central database containing airway scenarios, clinical descriptors, available assessment methods, predictors, decision rules, and feedback. Each scenario is organised as nested objects, enabling ChatGPT to retrieve specific information based on student inputs. Students select three out of seven airway assessment methods. ChatGPT interprets these selections, queries the corresponding JSON nodes, and presents the relevant scenario details. If the combined assessment predicts a difficult airway and the selected management pathway is suboptimal, the module highlights areas for improvement and provides guidance to reinforce correct airway management strategies.

Results and Discussion: The prototype shows how ChatGPT and a structured JSON dataset can simulate real-life decision pathways in a safe digital environment. The system supports guided reasoning, immediate feedback, and repeated practice, improving conceptual understanding.

Conclusion: The conceptual design demonstrates the feasibility of using ChatGPT as a structured instructional tool for airway management. The framework has potential for expansion into competency-based assessment, linked with analytic dashboards, and adapted to other anaesthesia topics, as a scalable AI-enhanced simulation model.

Keywords: ChatGPT-assisted instruction; JSON-based data design; simulation in medical education