

LEONARDO PROJECT



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INTRODUCTION / SCOPE

Simulation has been integrated into the medical education curriculum at the University of Luxembourg, focusing on providing students with realistic training experiences. To achieve this goal, the simulation unit (SimUL) has employed new technologies, including high-fidelity patient simulators. But, initially, teachers and students faced challenges utilizing this technology. These challenges may have arisen from comparing the simulation experience with their theoretical knowledge or clinical environments.

METHODS / MATERIALS

Your text, figures, This interdisciplinary research began in July 2022 and is currently being conducted at the University of Luxembourg with undergraduate medical students. Leonardo, a high-fidelity adult patient simulator manufactured by MedVision (Figure 1), was utilized in this study. It is designed for simulation-based training in acute emergency situations [1]. We plan to complement this type of simulator with the use of Proactive Engine technology for medical education purposes [2].

OBJECTIVES / HYPOTHESES

- Designing, programming, and implementing scenarios
- To improve the learning experience during simulations by Proactive Engine technology
- To enhance feedback by implementing an automated analysis of students' mistakes



Figure 1. Leonardo patient simulator at the University of Luxembourg simulation center

RESULTS

- Scenario design and implementation: Improving the flexibility of an automated scenario while adhering to medical guidelines(Figure 3).
- Before the simulation (Pre-briefing): Create short videos and instructions on high-fidelity manikin and equipment utilization and a computer-based theory lecture on time management and medical guidelines.
- During simulation: Providing real-time feedback and automated instructional scaffolding and adding an alarm to alert students of errors related to sensor connections or manikin programming modifications.
- After simulation (Debriefing and feedback): Implement automated mistake analysis within the system and improve learning retention using e-learning tools.



Figure 2. Simulation session at the University of Luxembourg



Figure 3. Scenario programming interface in the software of Leonardo

CONCLUSIONS

- Enhancing the satisfaction of students and teachers.
- Optimizing the utilization of high-fidelity manikin facilities that the university has invested in.
- Suggest solutions through computer science for current challenges in high-fidelity simulation in medical education.

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