USING TECHNOLOGY TO IMPROVE PROCESS AND SYSTEM MODALITY IN HIGH-FIDELITY MANIKIN-BASED SIMULATION

Nazanin SHEYKHMOHAMMADI, Denis ZAMPUNIERIS, Pascal STAMMET, Christian GREVISSE
Faculty of Science, Technology and Medicine, University of Luxembourg, Luxembourg
Email: Nazanin.sheykhmohammadi@uni.lu

INTRODUCTION

Using simulation in medical education can improve clinical practice significantly [1]. High-fidelity patient simulators use advanced manikins that are programmed based on complex human physiology and pharmacology mathematical models to create a realistic simulation [2]. A simulation session includes "pre-briefing, simulation scenario, and debriefing" [3]. Integrating technology into medical education is evolving learning methods and pedagogy. However, due to the limitations of current technology, educators usually require clarification about which technologies are helpful based on their needs and how effectively they can integrate them into the learning environment [4]. Studies also highlighted the importance of instructors' role in simulation training, such as developing and managing scenarios and providing feedback and guidance. However, the limited availability of instructors can be a significant challenge [5].

OBJECTIVES

In the PhD project we are working on starting July 2022, we aim to improve processes and help educators manage simulation sessions better using technologies such as proactive systems, automated software, and digital materials.

METHODS

In this project, after investigating previous research, we started simulation sessions of the basic life support (BLS) scenario with undergraduate students in medicine at the University of Luxembourg. We use a high-fidelity manikin, Leonardo, manufactured by MedVision Group. After our first experience, we organized the research into <u>four phases: designing scenarios, pre-briefing, simulation, and debriefing</u>. This way, we also try adhering to INCSL standards [6].

RESULTS

In the first results [7], <u>we identified the challenges and requirements faced by trainers and students</u> in the initial use of high-fidelity manikins and recommended improvements. We also suggested the necessary steps and framework for developing valid and reliable scenarios.

We focused on <u>pre-briefing</u> for the project's second phase [8]. We conducted it using digital quizzes and videos and used INACSL criteria to evaluate and improve the method.

In The next phase [9], we explored the requirements for feedback to students in BLS simulation and developed the <u>automated software that generates customized and detailed reports of students' actions.</u> Also, considering the limited time and resources in the <u>debriefing</u> session, we had a solution to facilitate <u>self-debriefing</u> by integrating the automated feedback report with video recordings.

Future Works

Future works will focus on evaluating user satisfaction with the feedback software report and self-debriefing. Afterward, We will proceed to the most important and last phase of the project, which is working on <u>using proactive systems[10] during simulation sessions to reflect on student actions</u>.

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