

Integrating SIM-Capture into Simulation Instruction and its Effect on Nursing Student's Clinical Performance

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Abstract

Simulation is a cornerstone of nursing education today because simulation allows nursing faculty the opportunity to expose students to real-life clinical scenarios of varied complexity and acuity in an environment where there is no risk of injury to patients or students. One of the pillars of utilizing simulation technology in nursing education is engaging in thorough debriefing. The debrief process serves as both a formative assessment of student's clinical performance as well as an opportunity for students to apply theoretical nursing knowledge to clinical scenarios that he, she, or they may encounter in professional practice (Bonnell et al., 2019). However, with the multi-tasking required to implement and operate a simulated scenario, nursing faculty can miss details of an individual's student's performance as the simulation unfolds which hinders the faculty's ability to provide detailed feedback to the student. A thorough debrief experience allows students to engage in self-evaluation through reflection to identify his, her, or their growth opportunities, and faculty must be able to provide thorough feedback in order to facilitate that reflection process for students (Alhaj & Mussallam, 2018). SIM-Capture is a simulation tool provided by Laerdal Medical that, when integrated into a Laerdal simulation system, records all student actions in simulated scenarios to provide detailed, real-time feedback regarding the student's performance. The integration of this technology may be a key tool for nursing faculty as a means of accurately recording student's clinical performance in simulation in order to inform the subsequent debrief process in order to maximize student learning in the simulation environment.

Key Words: Simulation, SIM-Capture, debrief

Background

Simulation

Defined: Utilization of simulation devices that recreate characteristics of the clinical environment allowing nursing students to practice patient-care in a safe learning environment without the risk of harm to human patients, students, or nursing faculty (Bonnell et al., 2019).

Debrief

Defined: Group discussion immediately following a simulated scenario that is facilitated by nursing faculty and provides an opportunity to give students thorough, prompt feedback regarding clinical judgement and subsequent patient care compared to current practice guidelines (Bonnell et al., 2019).

Benefits of Simulation and Debriefing

- Students can practice clinical reasoning, judgement, and apply those skills into practice without the risk of causing harm to a human patient
- Nursing faculty can adapt the acuity and complexity of simulated scenarios to keep pace with an ever-evolving healthcare system in order to maximize student's exposure to clinical learning prior to transitioning into professional practice
- Students who participate in simulation receive prompt feedback from faculty which highlights clinical practice strengths and opportunities for student growth

National Council of State Boards of Nursing recommendations (NCSBN, 2023)

- Nursing faculty are prepared to plan and implement appropriate simulation scenarios
- Nursing faculty set clear objectives and anticipated outcomes for student learning in simulation
- Nursing faculty are prepared to facilitate debrief discussions utilizing a standardized debrief tool
- Nursing faculty are prepared to cultivate an active learning environment that provides repetitive practice and reflection in order to facilitate and reinforce student learning.

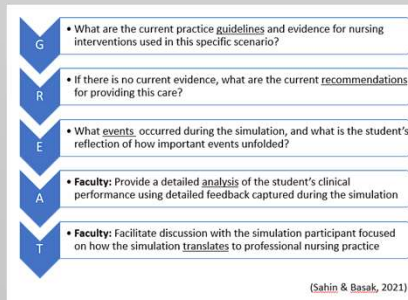
SIM-Capture: Laerdal product that when integrated into existing Laerdal simulation systems allows nursing faculty to record audio, video, and annotations of student performance from simulator data in real-time to provide objective, real-time feedback (Laerdal Medical, 2023).

Introduction

Simulation is a crucial element of modern nursing education, and the debrief process that occurs following simulation is imperative to nursing student's overall development of clinical reasoning and judgement. Nursing faculty must be able to provide prompt feedback that is objective and accurate following simulated clinical scenarios in order to facilitate student reflection and development of these skills. Accurate feedback can be difficult to provide when faculty are tasked with both running a simulation and observing student's performance. However, applications such as Laerdal's SIM-Capture can be integrated into an existing Laerdal simulation system in order to record all student's actions and interventions taken during a simulation scenario. This provides nursing faculty with clear, objective data on student performance and increases faculty's ability to give feedback to students that is concrete. This also enables faculty to facilitate debrief discussions that are driven by student reflection and self-assessment in order to better develop skills such as clinical judgement and reasoning to all are prepared for his, her, or their professional role as a registered nurse upon graduation from nursing school.

Review of the Literature

- The growing complexity of the United States healthcare system no longer allows nursing programs to rely solely on acute or long-term care clinicals to provide students with the opportunity to build professional competence to work effectively as a registered nurse (Abelsson & Birgitta, 2017). Simulation allows for learning opportunities students may not see in regularly scheduled clinical hours.
- Thorough debriefing facilitated by nursing faculty provides students with an opportunity to engage in self-assessment and reflection to identify clinical practice strengths as well as opportunities for growth in order to meet the anticipated clinical outcomes of the nursing program (Alhaj & Musallam, 2018). SIM-Capture provides real-time data to guide student's reflection of how events unfolded and why an intervention was subsequently implemented.
- Receiving and giving professional feedback are learned skills. Faculty must be able to provide students with prompt, objective feedback that is specific to the simulated clinical scenario in order to protect the psychological safety of students and faculty alike while also addressing gaps in clinical knowledge and/or practice (Kolbe et al., 2020).
- Simulation debrief should focus on clinical judgement skills and subsequent nursing interventions in order to develop student's clinical practice (Nagle & Foli, 2022). SIM-Capture provides objective feedback on student's performance of clinical skills which allows faculty more room to focus debrief discussions on clinical judgement.
- Integrated technology such as SIM-Capture provides purely objective feedback on student's simulation performance and allows for the implementation using Sahin & Basak's (2021) GREAT model for debrief:



Methodology

Research Foundation: This study would be implemented at Chemeketa Community College (CCC) and used to determine if there is a relationship between the use of SIM-Capture and student's simulation grades in his, her, or their final term of study in NURS 209. The study would utilize a quasi-experimental design since there would be a control group but no randomization of students.

Research Question: Do students who receive feedback based on SIM-Capture data in simulation achieve higher, lower, or similar grades to previous students who did not receive feedback based on SIM-Capture data in simulation?

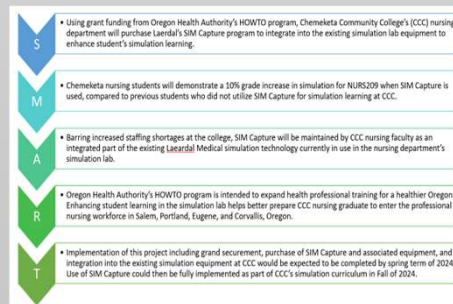
Principal Investigators: CCC Faculty and simulation lead
Hypothesis: Integration of SIM-Capture into CCC's existing simulation environment will provide clear, objective feedback to nursing students and subsequently increase his, her, or their final simulation grade in NURS 209.
Independent Variable: Student simulation grades prior to integration of SIM-Capture.
Dependent Variable: Student simulation grades after the integration of SIM-Capture.

Evidence-Based Practice Model: Johns Hopkins evidence-based practice model as a way of taking an inquiry, posing a research question, examining evidence, and then implementing research measures in order to assess the relationship between two variables. This model allows researchers to regularly reflect and evolve research practices and revise hypothesis based on current evidence and learning:



Ethics: FHSU IRB approval would be obtained prior to implementation of this study. As CCC does not have an IRB or similar body, approval would also be secured from the Dean of Nursing so long as FHSU IRB approval is secured.

Data Collection and Analysis: Simulation grades for NURS 209 would be pulled in aggregate form from the previous graduating nursing class of CCC as the control group. For comparison, the outgoing class's simulation grades for NURS 209 would be collected in aggregate form. Both groups would be analyzed using the mean, median, mode, and range of scores as well as the standard deviation. Then, an independent t-test would be performed to determine if the integration of SIM-Capture had a statistically significant positive or negative impact on student's simulation grades. SIM-Capture technology would be used in this research and would be implemented as below:



Anticipated Results

Following the integration of SIM-Capture into CCC's simulation environment, researchers anticipate that nursing faculty would be able to provide thorough, objective feedback to each individual nursing student. This, in turn, would allow nursing faculty to focus more intently on development of student's clinical reasoning and judgement skills to further develop clinical practice skills. Researchers anticipate these would culminate in higher overall simulation grades for graduating CCC nursing students in NURS 209.

Conclusion

Simulation is a means for nursing faculty to prepare students for professional practice through facilitation of simulated clinical scenarios that students may not be exposed to during regular acute or long-term care clinical hours. The debrief following each simulated scenario is a pillar of simulation in nursing education as it provides faculty with the opportunity to provide prompt feedback to students regarding clinical performance as well as facilitate a dialogue focused on student reflection and self-assessment as a means to grow the individual's clinical practice. Clear, objective feedback is a necessity to facilitate these debrief conversations and SIM-Capture is a technology that can help record student performance to aid nursing faculty in the above endeavors.

Limitations of this study: This specific study would yield a small sample size. Although statistical significance may be demonstrated to reinforce the validity of study findings, repeated measure with future CCC nursing classes would be needed in order to demonstrate reliability of these study measures and of SIM-Capture's ability to positively impact student's academic performance in simulation.

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