



Featured Article

Authoring Simulations for High-Stakes Student Evaluation

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KEYWORDS

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scenario development

Abstract: Although simulation methods have primarily been used for teaching in nursing education, there is a growing interest in the use of simulation for student and program evaluations. Developing simulation scenarios for high-stakes evaluation differs from traditional teaching and learning scenario authorship in a number of ways. This manuscript describes the process used to write, pilot test, and revise scenarios used in the National League for Nursing High-Stakes Testing feasibility project. Observations and reported differences in scenario development and facilitation may provide insight to others regarding the best use of summative simulation scenarios.

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Introduction

Today, health care simulations are playing a major role in health professions education. The simulation movement is ever growing as evidenced by more sophisticated simulators, increasing numbers of simulation centers worldwide, and the [Institute of Medicine \(2011\)](#) suggestion that simulations will play a more important role in health professions

education today and in the future. The use of simulation has moved well beyond the point of asking about effectiveness ([McGaghie, Issenberg, Petrusa, & Scalese, 2010](#)) and is focused now on best practices supported by research ([Norman, Dore, & Grierson, 2012](#)).

With increasing construction of state-of-the-art simulation centers around the world, attention is turning to program evaluation and research to measure activities in newly created simulation centers. Researchers now strive to prove linkages between simulations in health care education and improved patient outcomes. One type of program evaluation that is increasing in frequency is the use of simulation for high-stakes

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testing. High-stakes simulations are those evaluated for significant consequences, impact, or students' grade ([International Nursing Association for Clinical Simulation in Learning, 2011](#)). In 2010, the National League for Nursing (NLN) began a multisite feasibility study to investigate high stakes testing in simulation ([Shultz, 2010](#)).

Key Points

- Writing simulation scenarios for summative evaluation differs from writing scenarios for learning or formative evaluation.
- Variation in how facilitators conduct scenarios and cue students can alter evaluation outcomes.
- Piloting, revising, and standardizing are critical steps in developing simulation scenarios for high stakes testing.

This article describes the development of high-stakes simulation scenarios for the project. We also include insights on selection of topics, writing scenarios, peer review of scenarios, pilot testing, and final revisions that may provide guidance for scenario authors looking to standardize simulations for high stakes or summative assessment.

Background

The use of health care simulations for high-stakes testing has been controversial given its multiple con-

foundering variables ([Palaganas, 2012](#)) and the argument that learning in simulation requires a psychologically safe environment ([Rudolph, Simon, Dufresne, & Raemer, 2006](#)). High-stakes testing in this context is defined as a scenario with the potential to fail students at the end of a course or program on the basis of a simulation experience ([Kardong-Edgren, Hanberg, Keenan, Ackerman, & Chambers, 2011](#)). The NLN promotes fair testing practices in nursing education and recommends that faculty should use multiple sources of evidence when evaluating basic nursing competence ([NLN, 2010, 2012](#)). One source of evaluation increasingly respected as a valuable method of assessing competence is health care simulation. Although simulation for teaching and learning has been the focus of many nursing research studies, the development of simulation as a valid and reliable evaluation instrument has received less attention.

In 2010, the NLN conducted a Think Tank on Simulation for High-Stakes Evaluation in which participants identified nursing program outcomes and competencies able to be assessed using end-of-program, high-stakes simulation scenarios. The four outcome areas selected were deliberately chosen, extensively discussed, and brainstormed for feasibility in simulation-based assessment. They were assessment and intervention, nursing judgment, quality and safety, and teamwork and collaboration.

Four nurse educators experienced in simulation design and operation were recruited for the scenario development phase of this high-stakes simulation project. Author preparation materials included research results, best practice articles, the Think Tank report, and the report from a

National Delphi Study to developmentally level knowledge, skills, and attitudes (part of the Quality and Safety Education for Nurses initiative).

The team of four authors met initially with the research team and an NLN simulation consultant to review scenario design features, further define the four topics, and explore patient situations that would represent each topic area. To ensure consistency and best practice in scenario design, authors were asked to review a presentation on simulation design, a peer-reviewed article on simulation design, and the NLN Simulation Design Template.

Each author selected one of the four topics and each wrote three end-of-program pilot scenarios designed to evaluate a graduating nursing student in the selected outcome area. Authors received feedback from each other and from simulation consultants on objective writing, scenario progression, and proposed objective outcomes throughout scenario development. Details of each scenario were refined after several months of author collaboration.

Writing for Evaluation

One advantage of using simulation as a teaching tool is the ability to allow students to practice and to make mistakes in a safe environment. Using simulation for high-stakes testing removes the safety platform. This change in using simulation for summative rather than formative practice increases the need to employ evidence-based approaches and collaboration to guide scenario development for student evaluation.

[McDonald \(2013\)](#) defines formative evaluation as an appraisal of student achievement while the student is still learning. It asks, "How are you doing?" Alternatively, summative evaluation provides a description of student achievement at the end of a course and asks, "How did you do?" ([Table 1](#)). The NLN High-Stakes Simulation project entailed creating scenarios that tested a nursing student's ability to demonstrate effective patient care in one of four essential clinical performance areas at the end of the academic program. The results of this type of evaluation could potentially be used to determine whether a student would pass a course, graduate, or even gain licensure or certification. This project sought to determine the process, challenges, and potential solutions to the challenges of using health care simulation for summative evaluation of students in a fair and reliable manner.

Two models were used for scenario development guidance in this project: The NLN/Jeffries Framework ([Jeffries, 2005, 2013](#)), and the Simulation Design Scale evaluation instrument ([Jeffries, 2013](#)).

Rethinking the Model for Testing

The NLN/Jeffries Framework, developed in 2005, offers guidance for implementing simulation-based education. The framework was designed to best achieve student

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