

## 1. DEFINITION

An evaluation is an appraisal of the simulation designed to identify its strengths and weaknesses and measure whether the simulation succeeded in achieving its core learning objectives. The evaluation phase provides an opportunity for instructors to gauge whether the simulation achieved its pedagogical goals and to incorporate improvements to ensure greater success in future iterations (Murray et al., 2008: 7).

## 2. BEST PRACTICES

- a. **Research vs. Quality Improvement/Program Evaluation.** Consider the purpose of the assessment and whether you want to engage in Program Evaluation, Quality Improvement or Research (this distinction is particularly important because if the evaluation is research it will be subject approval by an Institutional Research Ethics Board). Research is grounded in a desire to further knowledge in a particular field of study (Levin-Rozalis, 2003). It is rooted in theory and designed to test a hypothesis. In contrast, quality improvement or program evaluation tend to have a narrower focus and are generally only applicable for the program that is being evaluated (Lynn et al., 2007, p. 667). Program Evaluation tends to have a narrower focus and is generally only applicable for the discipline that is being evaluated. See [Dalhousie's Guidelines on the Scholarship of Learning and Teaching](#) for more information these distinctions.
- b. **Data Collection.** Consider how to best gather rigorous, robust data on the student learning experience. Remember that the purpose of evaluations is in part to ascertain the usefulness or success of an activity for future applications (Levin-Rozalis, 2003). For example, consider if the success of the simulation could be gauged in part on the students' final marks in the course (Fredericking, 2005). Alternatively, instructors might consider keeping their own journal record of the simulation exercise as a source of data for the evaluation portion.
- c. **Surveys.** Consider making a quick three question survey for students to complete. This survey may be helpful for understanding the student's perspective for strengthening the simulation (Baranowski, 2006). Some questions for this qualitative survey might be: What did you learn from the simulation? How could the simulation be improved to improve learning in future years? What did you like most about the simulation? In addition, consider giving students surveys before and after the simulation to assess knowledge acquisition and/or skill development (McCarthy & Anderson, 2000: 280).
- d. **Triangulation.** Examining quantitative data in the form of students' performance in tandem with the results of the survey may prove to be an effective tool in evaluating the effectiveness of the simulation.

- e. **Additional Resources.** Keeping up with the Scholarship of Teaching and Learning on effective assessment of simulation-based learning. (Axtell et al., 1996: 139). See [Dalhousie's Scholarship of Teaching and Learning Resource Guide](#) for more information.

### 3. DISCIPLINES

#### Health Sciences

The majority of the literature suggests that a clinical setting is the best mode of simulation for evaluating the success of simulated learning in the Health Sciences. For example, a suturing simulation sought to improve the precision of students in a surgical clerkship. Pre and post precision scores were collected and analyzed against final pass rates to assess whether the simulation improved student performance (Pender et al., 2017). Alternatively, in scenarios that seek to improve upon a range of soft and hard skills, questionnaires and surveys can be useful. In one case, a structured questionnaire was used to evaluate the experience and perceived competencies of students who participated in a simulated ward exercise (Mole & Mclafferty, 2004).

#### Natural Sciences

Natural science classrooms use a range of virtual and laboratory simulation to enhance student learning. Physics simulations or 'LabSims' aimed to help prepare students for the laboratory. An evaluation of simulations as a precursor to lab work employed pre and post exercises that tested students' knowledge of the laboratory (Paetkau et al., 2013). Other virtual and computer based simulations have been evaluated through student interviews and questionnaires (Neumann et al., 2012; Richardson et al., 2013).

#### Social Sciences

Social Sciences classrooms do not typically rely on clinical or experimental settings (i.e. laboratory) that are equipped for data collection like the natural and health sciences do. Instead, instructors have used a range of evaluation methods including surveys (McCarthy & Anderson, 2000) to assess the effectiveness of role-play simulations in social science classrooms. In this case, the author employed pre and post surveys to assess the student's self-perceived learning outcomes following the simulation (Schnurr et al., 2014).

#### 4. RESOURCES

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