

White Paper

Simulation in Nursing Education: Which Type to Use and When?

SIMULATION IN NURSING EDUCATION: WHICH TYPE TO USE AND WHEN?

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Due to changes in the healthcare industry (workplace conditions, wages, the national economy, demographics of the RN workforce, etc.), there's been a shortage of not only nurses, but the number of nursing education clinical sites. These changes, along with an increased patient load, have many registered nurses wary of accepting the added responsibility of working with pre-licensure students.

All these factors have led to a marked decrease in clinical sites, which is in direct opposition to what is needed to effectively prepare nursing students for practice.

One way to combat the previously identified issues and to prepare nursing students in a safe environment is the use of simulation. Simulation provides a safe environment for students to practice without any permanent or irreparable consequences.

The Growth of Simulation in Nursing Education

The National Council of State Boards of Nursing (NCSBN) National Simulation Study in 2014 was a multi-site, longitudinal, randomized controlled trial exploring the role and outcomes of simulation in pre-licensure clinical nursing education in the United States. The authors concluded that there was substantial evidence supporting **the substitution of simulation for up to 50 percent of traditional clinical experiences** under conditions comparable to those described in the study. Using this information, in 2015, the NCSBN convened an expert panel that included the International Nursing Association for Clinical Simulation (INACSL) and Learning Standards of Best Practice: SimulationSM and developed national simulation guidelines for prelicensure nursing programs. (<https://www.ncsbn.org/11494.htm>)

Types of Simulation

The types of simulations may be viewed as low-fidelity, medium-fidelity and high-fidelity computer-based simulations. Each type of simulation is vital to the educational process. The key factors to consider when selecting the type of simulation should be the educational objectives and the expected student learning outcomes (SLOs).

To gain a specific skill performance, consider **low-fidelity simulation**. This type of simulation often uses disembodied body parts, such as a pelvic model to train Foley catheter insertion. Additionally, low-fidelity case study simulations may be used to help a student understand clinical decision making. These low-fidelity case studies can be based in an educational Electronic Health Record (EHR) or through role play of a scenario that is integrated in the students' textbook. Whether using the educational EHR or role play, it is important that during debriefing the students verbalize how they arrived at their clinical decisions.

Medium-fidelity simulation includes partial task-trainers, such as IV cannulation arms or low-technology mannequins. The goal of this type of simulation is to help students gain specific skill ability and develop sound clinical judgement. An example of this type of simulation is allowing first semester nursing students to review, calculate, and administer medication to a low-technology simulated geriatric patient admitted with pneumonia, congestive heart failure, and diabetes. During this type of simulation, instructors can review multiple elements related to medication administration while emphasizing the importance of linking medication orders to a patient's condition.

High-fidelity simulation includes a computerized mannequin that can be programmed to produce lifelike responses to students' stimuli. In this case, an operator of the mannequin causes the mannequin to react in realistic ways. These realistic simulations can be very engaging to the student and should match the students' knowledge level, while always being driven by the SLOs, goals, and objectives. As in all types of simulations, the debriefing phase is key in enhancing the students' learning experience.

When to Use Each Type of Simulation

When a nursing program wants to have an outcome-based more than a process-based curriculum, and wants to provide a more experiential learning environment, the simulation type will be chosen as noted above, guided by the particular SLOs for each course.

For example, a low-fidelity simulation in a more advanced class can be deemed appropriate as the instructor evaluates the level of student comprehension. Additionally, analyzing students' responses to a low-fidelity case study can help ensure the students' application of knowledge, skills, and attitudes are appropriate.

While medium-fidelity simulation does not necessarily foster a realistic environment, it can be used to share the common threads of safe entry, patient teaching, calling the physician (health care provider) using SBAR, and writing nurse's notes.

High-fidelity simulation attempts to provide the most authentic experience where the student will be immersed in the care of a patient in the most realistic environment. It is best to use this type of simulation when the goal is to instruct the students about the appropriate responses to complex clinical situations and to help them develop their clinical judgement.

Developing a Strategy when Using Simulation

The overarching goal of any simulation activity is to give students the opportunity to develop skill acquisition, clinical judgement, and decision-making skills in a safe environment. When determining the strategy for using any type of low-, medium- or high-fidelity simulation, the goals of the exercise must be considered while ensuring each simulation activity matches students' ability levels.

It is also crucial that the instructors remind students to embrace the experience as a true learning opportunity. Having a defined process for the simulation is paramount. The students should have time prior to the scenario to read any appropriate materials that will prepare them for the simulation.

Questions can also be provided to help the students identify the key points of the exercise/simulation. When the students enter the simulation environment, they should be asked to think, talk, and act as if they were in the clinical setting. A well-planned simulation strategy allows the instructor to select the types of disease processes that have been discussed in class but not yet seen in the clinical setting. This allows the student to have the opportunity to compare and contrast what has been learned in class relative to a realistic simulation.

The final step of any simulation is debriefing, a time for feedback and reflection to gain insight into how a student arrived at their clinical decision. This is where the actual learning takes place and the goals of the simulation experience are measured. When the faculty guides debriefing with pre-planned questions, acts as a true facilitator, and allows the student to verbally reflect on their actions within the simulation exercise, the simulation experience becomes a rewarding and positive learning opportunity.