Comparisons of Cooperative Teams While Using the Haptic Intravenous Simulator

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Purpose: To evaluate differences among teams of cooperative learners while using a haptic intravenous simulator. Results from this study will provide additional information regarding the generalizability of the use of cooperative learning teams of nursing students who are learning the principles of IV insertion using a haptic intravenous simulator.

Background: Nursing students need opportunity to learn, practice and perform safe and effective intravenous insertion. Patients may experience harmful effects such as pain, infiltration, or infection if this complex skill is performed incorrectly. Haptic IV simulators teach the principles of IV insertion and allow students opportunity to practice safe and effective intravenous insertion while developing proficiency. Haptic IV simulators provide tactile feedback including palpation of a vein and resistance during venipuncture. As each student works through the simulation, the haptic IV simulator calculates a performance score (interval data: range 0 - 100 points) based on critical and non-critical errors made during the simulation. Cooperative learning, based on social interdependence theory, is an active learning strategy where teams of students work together in order to complete a task or goal. The basic elements of cooperative learning are: positive interdependence, promotive interaction, individual and group accountability, social skills and group processing.

Methods: A posttest only experimental research design was used with a convenience sample of 110 nursing students in an accelerated second degree registered nurse (2DRN) program in a southeast Texas university. Nursing students were first randomized into an assignment (A, B or C) which determined who was to attempt their simulation first, second or third and then randomized again into an IV team composed of each of the three different assignment. IV teams determine when to complete their IV simulation. On the day of their IV simulation, each team member was given an envelope with a letter on the outside. This letter represented their sequencing order, A (first), B (second) or C (third) learner. Each envelope contained a unique username/password in order to access the simulator, and procedural information. Procedural information included a description of how each member was to log in and out of the simulator using their unique username and password and sequencing pattern. After reviewing procedural information, the primary investigator presented information on how the team members were to work together until all members completed the task (positive interdependence), they were encouraged to support one another while making suggestions, collaborating or discussing (promotive interactions) how to solve the task. The task was for each team member to earn a passing performance score of an 85 or better on the IV simulator. The PI followed a checklist and script to ensure each team received the same information and that the team members were following the procedural information.

Results: Initial performance scores and number of attempts to earn a passing performance score will be analyzed using an ANOVA.

Title:
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Keywords:
cooperative teams, haptic simulator and intravenous simulator

References:


**Abstract Summary:**
Participants will be able to compare differences within team of students working on a haptic intravenous simulator and integrate a cooperative learning activity in a clinical, simulated or lab skills setting

**Content Outline:**
Review elements of cooperative learning.
Describe methodology and application to a haptic simulator.
Interpret results of comparison with teams of students using the haptic intravenous simulator.

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**Professional Experience:** Assistant Professor, college of nursing. 1 year experience as faculty, working with nursing student in the class, simulated environment and clinical setting. Research and publications involves cooperative learning with the intravenous simulator. Nursing Lab Administrator, college of
nursing. 6 years’ experience working in a simulated lab environment in a teaching institution. Involved in the development, preparation and facilitation of all simulated lab activities. Research and simulation activities directly involved with include: “Fostering Skills for the School Nurse in a Simulated Environment”, Texas School Nursing Organization, Graduate Nurses Program with St. Luke’s Episcopal Hospital, Interdisciplinary Clinical Collaboration project with Baylor College of Medicine, and Nurse Oncology Education Program with MD Anderson.

**Author Summary:** Dr. McWilliams is a content specialist in the area of simulation including high, medium and low fidelity. She has been involved in the development, implementation and debriefing of multiple simulated learning experiences and her research involves the use of cooperative learning. She has been a member of multiple interdisciplinary and intra-disciplinary collaborative teams and currently holds a faculty position in a college of nursing for a tier one university.