Learning Together While Using An IV Simulator

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Learning Objectives:
1. Describe the five elements of cooperative learning,
2. Integrate the use of haptic simulators into nursing curriculum
3. Identify current instructional methods; Cost vs Benefit

Disclosure: No conflict of interest and no sponsorship or commercial support received.
Cooperative Learning

Positive Interdependence

Accountability

Promotive Interaction

Group Skills

Group Processing

5 Elements
Positive Interdependence

- Group Processing
- Group Skills
- Accountability
- Promotive Interaction
Accountability

- Positive Interdependence
- Accountability
- Promotive Interaction
- Group Skills
- Group Processing
Promotive Interaction

- Accountability
- Promotive Interaction
- Positive Interdependence
- Group Skills
- Group Processing
Group Skills

- Promotive Interaction
- Accountability
- Positive Interdependence
- Group Processing
Group Processing

- Group Skills
- Promotive Interaction
- Positive Interdependence
- Accountability
Haptic IV Simulator

Teaches Process:
Critical Reasoning and Tasks

Debriefing:
Scores and improvement links
Integrating the IV Simulator

Required course activity
Scores not part of grades

Complete simulation prior to practicing insertion on IV arms

Check off: 4th week of semester
ANOVA: Repeated Measure Course

Spring 2013
Cooperative Learning with Groups of 3 Students

1st

2nd

3rd
IV Simulator

Dependent (Outcome)Variable:

Initial numerical score received on the IV simulator
Independent Variables
Factors: 2 (Between) X 3 (Within)

A: Simulation Timing
- IV simulation before lab skills day
- IV simulation after lab skills day

B: Position
Identifies who attempts the simulation
1st - 2nd - 3rd
Hypotheses

1. There is a difference in the initial score received between the groups of students who participated in simulation before lab skills day and those who participated in simulation after lab skills day,

2. There is a difference in the initial score received on the IV simulator related by position within the group of students who are learning together,

3. There is an interaction between the students’ position and the timing of simulation.
Randomization

IV Simulation Day:
Random assignment into position.

Assigned username and password for simulator

Divide into 2 Groups

BEFORE Lab Skills Day
Students Sign Up online

AFTER Lab Skills Day
Students Sign Up online
Procedure

1. Review elements of Cooperative Learning
2. Review written instructions
3. Watch system tutorial
4. Proceed through simulation
5. Students assigned same scenario

Data Collected: Initial Attempt

1st
2nd
3rd
Positive Interdependence

1. Work together on simulator
2. Passing score 85 or better
3. Scores not counted in grade
Accountability

1. Each member passing score
2. Group- all members must pass
Promotive Interaction

1. Discuss
2. Challenge
3. Debate
4. Praise
5. Encourage
## Means and Standard Deviations for Timing and Position

<table>
<thead>
<tr>
<th></th>
<th>Simulation BEFORE (N=10)</th>
<th></th>
<th>Simulation AFTER (N=8)</th>
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<tbody>
<tr>
<td></td>
<td>Lab Skills Day</td>
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<td>Lab Skills Day</td>
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<tr>
<td>Position</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
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<td>1\textsuperscript{st}</td>
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Source Table for 2 X 3 Split Plot ANOVA for IV Scores

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<th>p</th>
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## Post Hoc Bonferoni Test Results

<table>
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<tr>
<th>Comparison</th>
<th>Value of Contrast</th>
<th>Standard Error</th>
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<th>p</th>
<th>d</th>
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<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; versus 2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>12.056</td>
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<td>2&lt;sup&gt;nd&lt;/sup&gt; versus 3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>3.000</td>
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<td>.400</td>
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*<i>p < .0167</i>
Position

Accounts for >41% of the variance

2\textsuperscript{nd} individual learns as a result of observing 1\textsuperscript{st} individual \quad d=1.22

3\textsuperscript{rd} individual learns as a result of observing 1\textsuperscript{st} individual \quad d=1.199

Not significant for 3\textsuperscript{rd} learning as a result of observing the 2\textsuperscript{nd} individual in this research. \quad d=.239
Current Instructional Methods to Teach IV Insertion

Cost-Benefit Analysis
Questions : Comments

McWilliams, L. (2013). Learning together while using the virtual intravenous simulator: ANOVA 2. Unpublished manuscript. Texas Woman’s University, Houston, TX.