Learning Together While Using An IV Simulator

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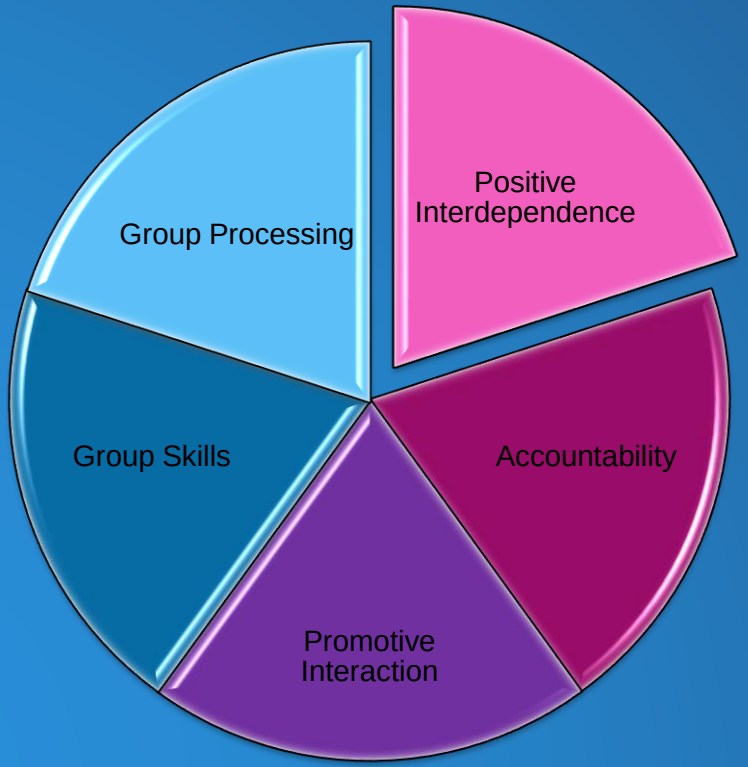
Learning Objectives:

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

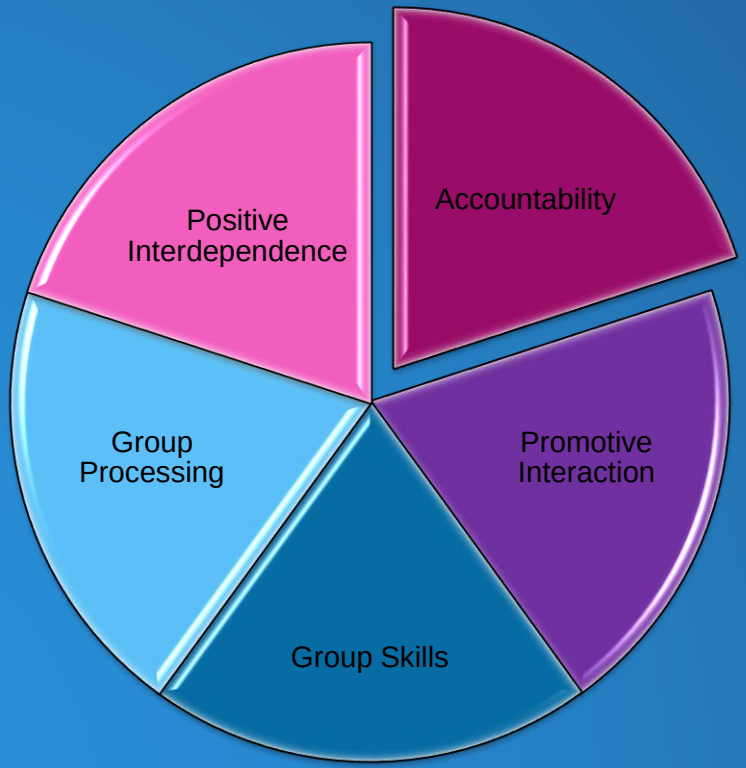
Disclosure: No conflict of interest and no sponsorship or commercial support received.

Cooperative Learning

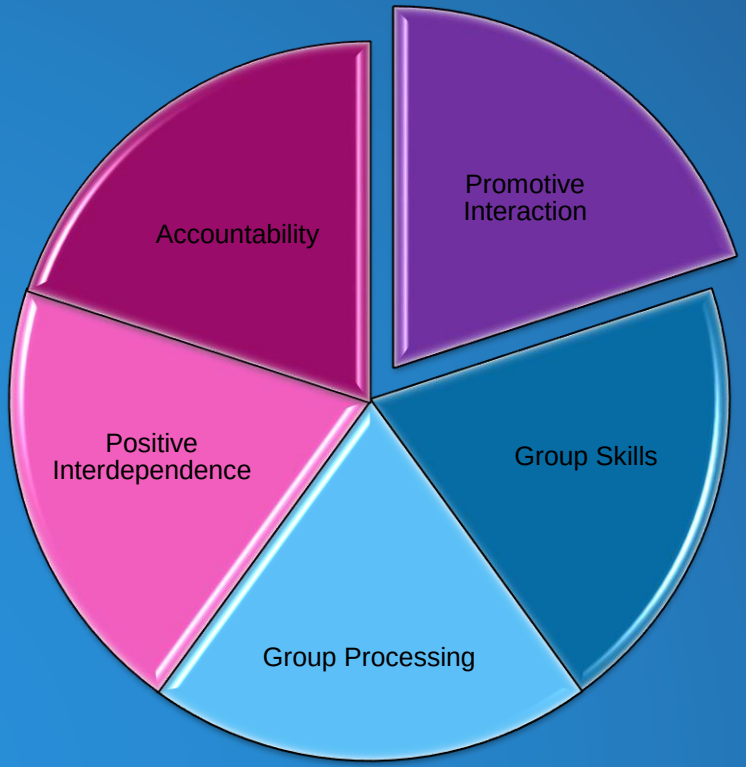
Positive Interdependence



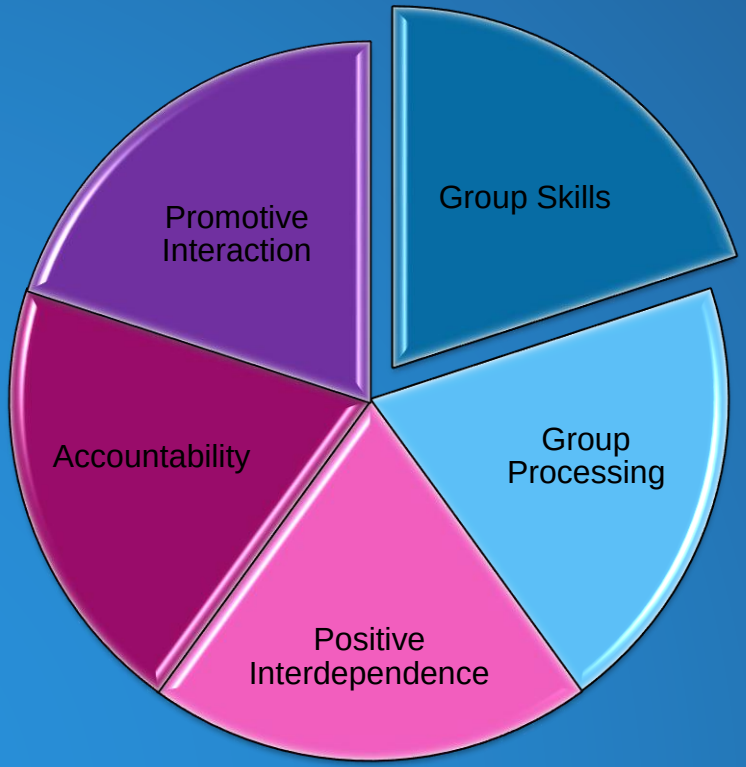
Accountability



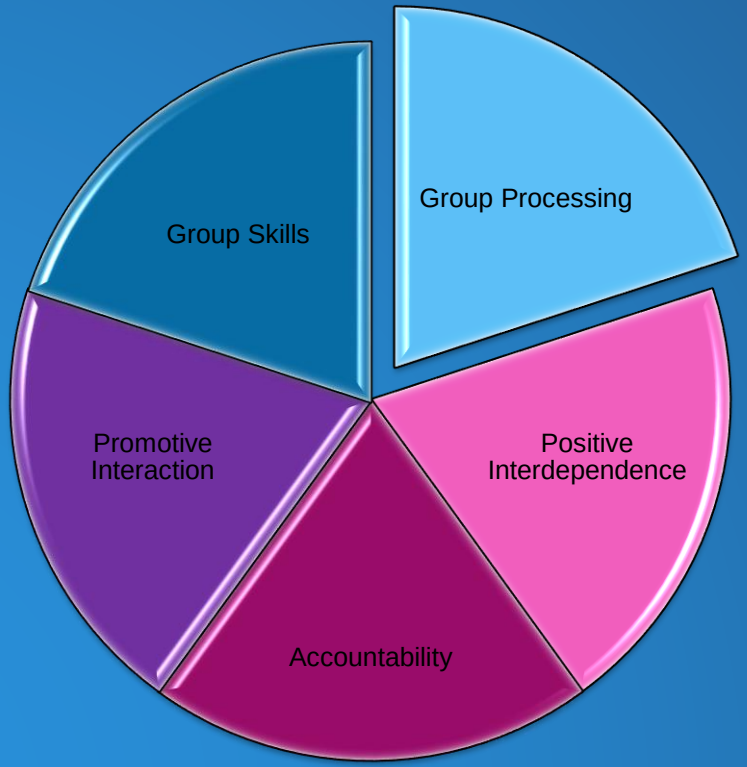
Promotive Interaction



Group Skills



Group Processing



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

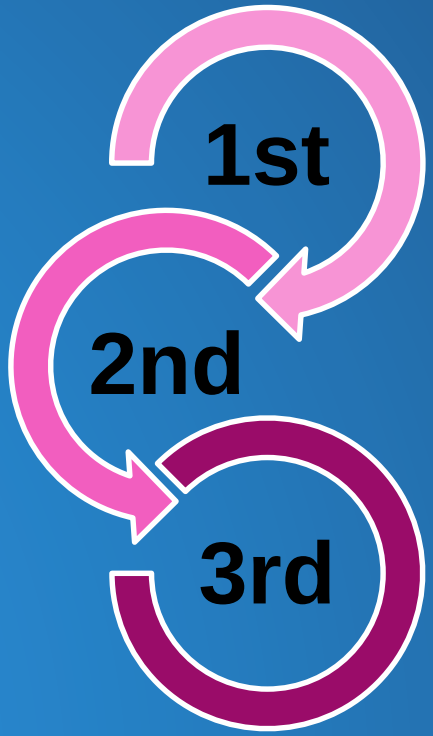
Complete simulation prior to practicing insertion on IV arms

Check off: 4th week of semester

ANOVA: Repeated Measure Course

Spring 2013

Cooperative Learning with Groups of 3 Students



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

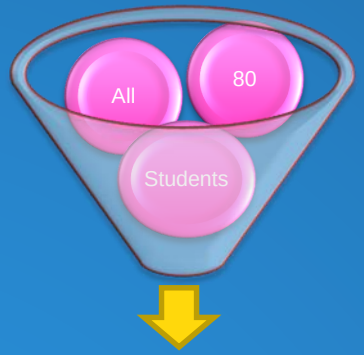
Identifies who attempts the simulation

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



Divide into 2 Groups

BEFORE Lab Skills Day	AFTER Lab Skills Day
Students Sign Up online	Students Sign Up online

IV Simulation Day:

Random assignment into position.

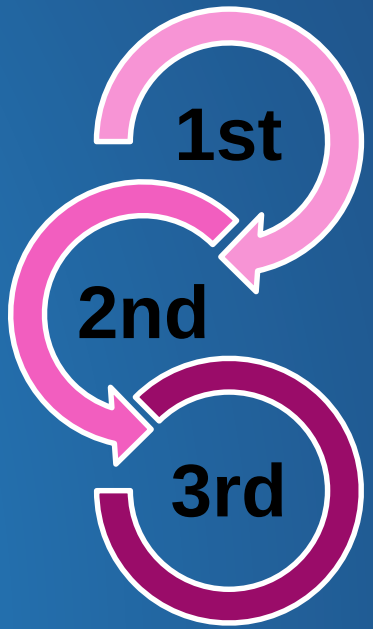
1st - 2nd - 3rd

Assigned username and password for simulator

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



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

	Simulation BEFORE (N=10) Lab Skills Day		Simulation AFTER (N=8) Lab Skills Day	
Position	Mean	SD	Mean	SD
1st	51.20	14.211	63.13	5.592
2nd	64.40	13.125	73.75	11.973
3rd	70.00	9.475	73.50	15.556

Source Table for 2 X 3 Split Plot ANOVA for IV Scores

Source	SS	df	MS	*F*	*p*	η^2
Between Subjects		17				
Timing	909.334	1	909.334	3.423	.083	.176
Error	4250.092	16	265.631			
Within Subjects		32				
Position	2144.346	1.765	1214.728	12.071	<.001	.416
Position X Timing	165.680	1.765	93.854	.933	.395	.032
Error	2842.283	28.245	100.631			
Total		49				

Post Hoc Bonferoni Test Results

Comparison	Value of Contrast	Standard Error	t	*p*	d
1st versus 2nd	12.056	2.466	4.888	<.001*	1.22
1st versus 3rd	15.056	3.365	4.474	<.001*	1.199
2ndversus 3rd	3.000	3.476	0.863	.400	0.239

*$p < .0167$

Position

Accounts for >41% of the variance

2nd individual learns as a result of observing 1st individual d=**1.22**

3rd individual learns as a result of observing 1st individual d= **1.199**

Not significant for 3rd learning as a result of observing the 2nd individual in this research. d=.239

Current Instructional Methods to Teach IV Insertion

Cost-Benefit Analysis

Questions : Comments

References

Johnson, D., Johnson, R. & Smith, K. (2007). The state of cooperative learning in postsecondary and professional settings. Educational Psychology Review 19, 15-29. http://dx.doi.org/10.1007/s10648-006-9038-8

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