

# USING LEARNING OBJECTIVES TO DETERMINE LEVEL OF FIDELITY COMPARED TO TRADITIONAL CLINICAL EXPERIENCES FOR THE STUDENTS' PERCEIVED LEARNING EFFECTIVENESS

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# DISCLOSURES

## Conflict of Interest

- **Teresa Gore is the President of INACSL, co-developer of the INACSL-CAE Healthcare Simulation Fellowship, and co-developer of SLS Simulation for Leadership**
- **Julia Greenawalt (INACSL Conference Administrator & Nurse Planner) reports no conflict of interest**
- **Leann Horsley (INACSL Lead Nurse Planner) reports no conflict of interest**

## Successful Completion

- **Attend 90% of session**
- **Complete evaluation**

# OBJECTIVES

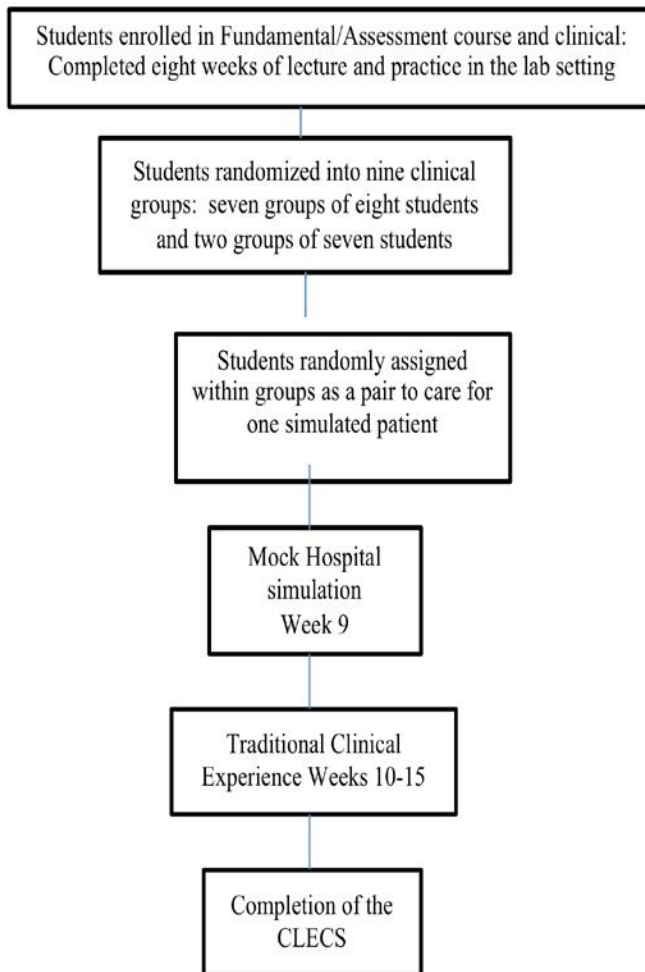
**Upon completion of this presentation, participants will be able to:**

- 1. Provide background information on comparison of simulation learning and traditional clinical learning and the Clinical Learning Environments Comparison Survey (CLECS)**
- 2. Describe the two simulation experiences and traditional learning experiences used in the study**
- 3. Discuss the results and impact on current BSN learning**

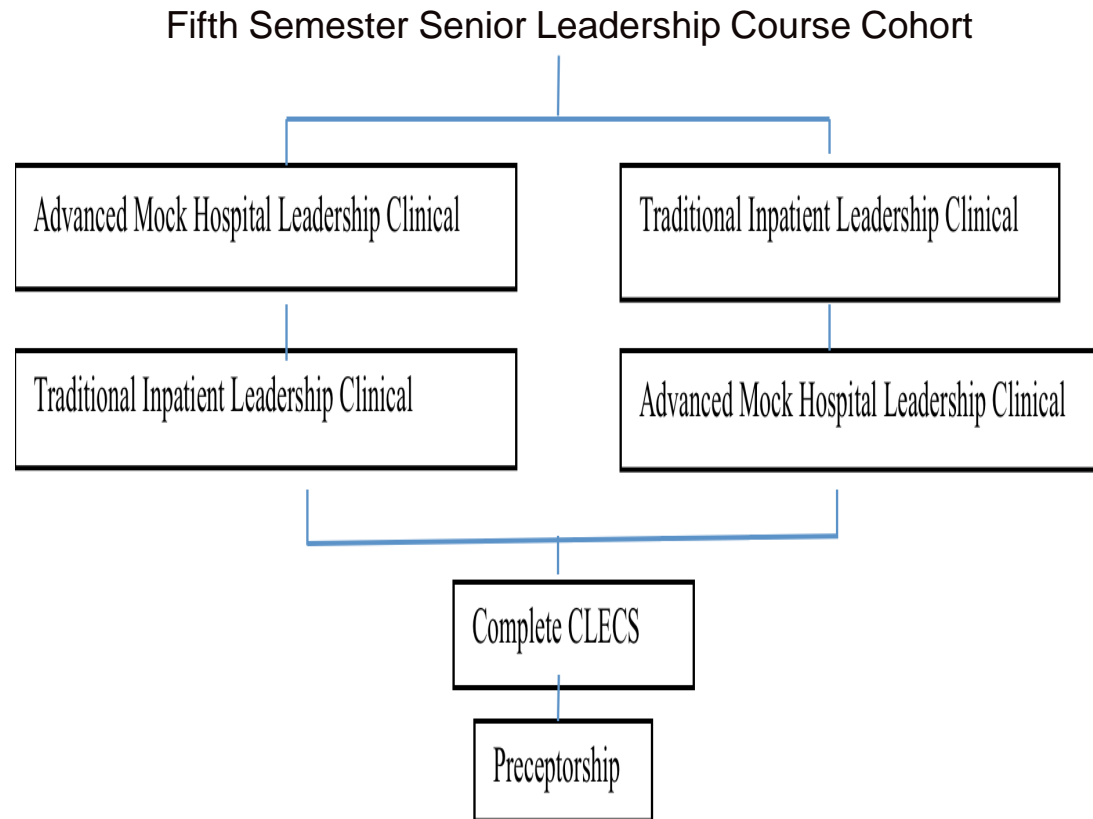


# FIRST AND FIFTH SEMESTERS

## FIRST SEMESTER



## FIFTH SEMESTER



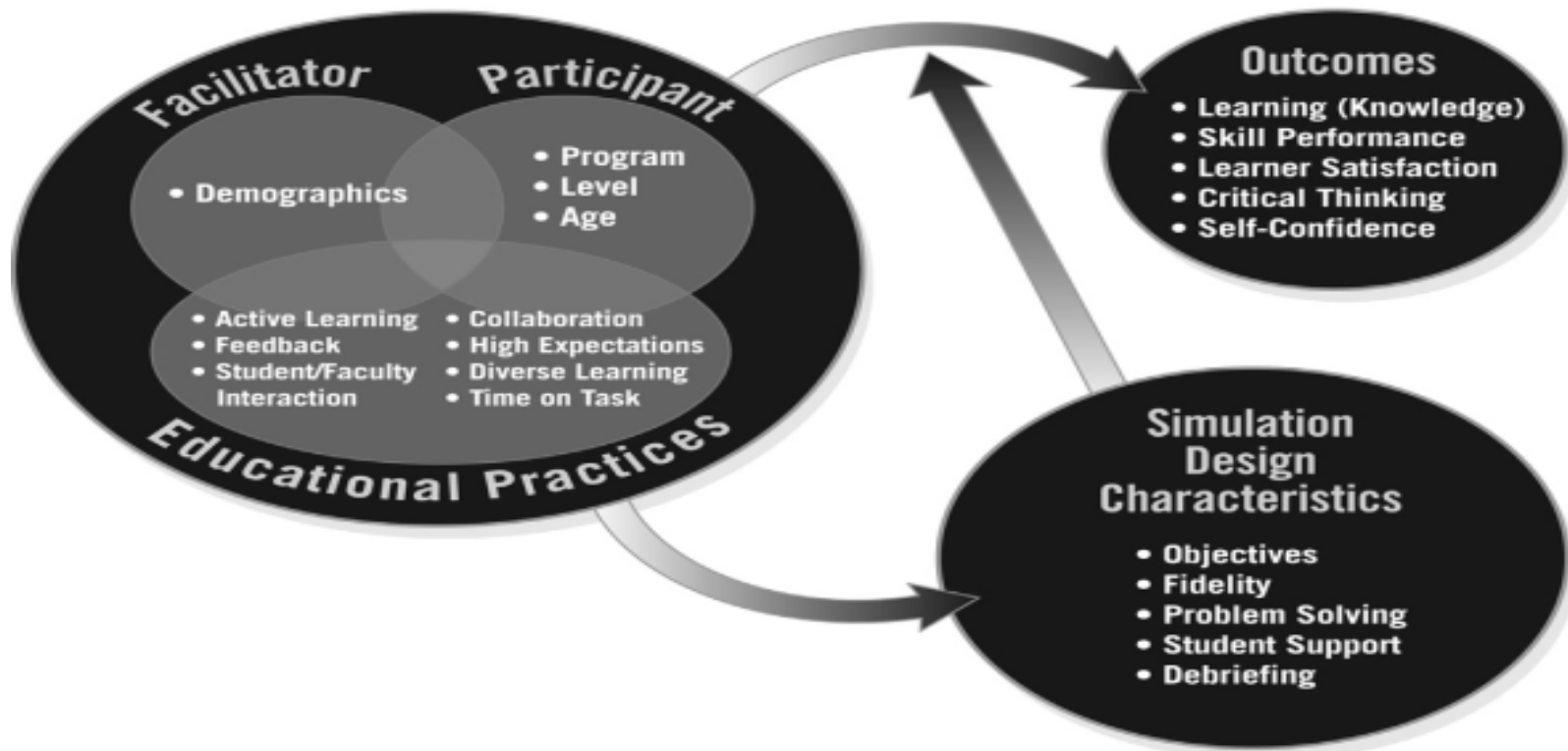
# RESEARCH QUESTIONS

- 1. What is the relationship between first semester students' perceived learning effectiveness on communication and teaching-learning dyad for an initial inpatient care medium-fidelity manikin and mid-level environmental fidelity simulation, and traditional clinical experience?**
- 2. What is the relationship between first semester students' perceived learning effectiveness on communication and teaching-learning dyad for an initial inpatient care medium-fidelity manikin and mid-level environmental fidelity simulation, and traditional clinical experience?**
- 3. What is the relationship between students' perceived learning effectiveness on communication, nursing leadership, teaching-learning dyad, and sum total score in simulation, and traditional clinical experience?**



# NLN-JEFFRIES SIMULATION FRAMEWORK

## The NLN/Jeffries Simulation Framework



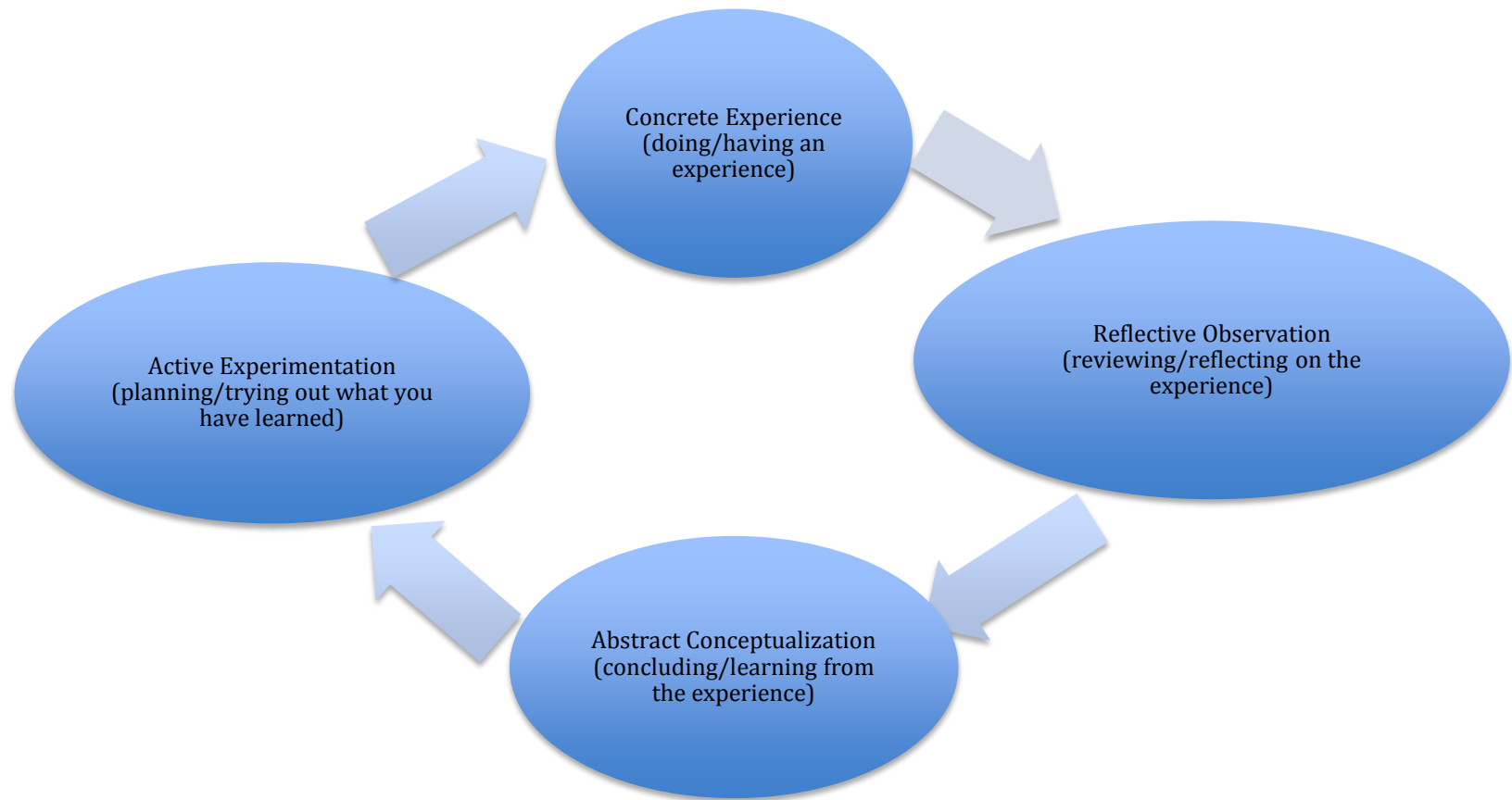
*The National League for Nursing-Jeffries Simulation Framework (NLN/JSF) from Simulation in Nursing Education: From Conceptualization to Evaluation (2<sup>nd</sup> ed)(p. 37), edited by P.R. Jeffries, 2012, New York: National League for Nursing. Reproduced with permission*



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# KOLB'S EXPERIENTIAL LEARNING THEORY



Kolb, D. A. (1984). *Experiential learning*. Englewood Cliffs, NJ: Prentice Hall.



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# REVIEW OF LITERATURE

## **National Council of State Boards of Nursing (NCSBN) National Simulation Study**

- Hayden, Smiley, Alexander, Kardong-Edgren, & Jeffries, 2014

## **The International Nursing Association for Clinical Simulation and Learning (INACSL) Standards of Best Practice: Simulation**

- INACSL, 2013

## **Students prefer high fidelity**

- Gore, Leighton, Sanderson, & Wang, 2014; Hoadley, 2009; Jeffries & Rizzolo, 2006; Lapkin, Levett-Jones, Bellchambers, & Fernandez, 2010



# REVIEW OF LITERATURE

## Simulation can improve:

- Knowledge
  - Gates, Parr, & Hughen, 2012; Howard, Ross, Mitchell, & Nelson, 2010; Lapkin et al., 2010; Tiffen, Corbridge, Shen, & Robinson, 2010
- Competence
  - Butler, Veltre, & Brady, 2009; McGaghie, Issenberg, Petrusa, & Scalese, 2009
- Self-efficacy
  - Kameg, Howard, Clochesy, Mitchell, & Suresky, 2010
- Confidence
  - Arnold et al., 2013; Cooper et al., 2011; Tiffen, et al., 2010; Wang, Fitzpatrick, & Petrini, 2013



# REVIEW OF LITERATURE

## **Other studies state no change in knowledge measured on tests after higher levels of fidelity**

- Arnold et al., 2013; De Giovanni, Roberts, & Norman, 2009; Friedman et al., 2009; Kardong-Edgren, Anderson, & Michaels, 2007; Kardong-Edgren, Lungsrom, & Bendel, 2009; Kinney & Henderson, 2008; Lee, Grantham, & Boyd, 2008

## **Dearth of studies comparing simulation to traditional clinical experiences**

- Gore, Leighton, Sanderson, & Wang, 2014



# STUDY

**Purpose: to explore the relationship of students' perceived learning effectiveness of:**

- different levels of fidelity simulation based on the learning objectives
- traditional clinical experiences based on the learning objectives.

**Explore the relationship between students' perceived effectiveness of simulation and traditional clinical experiences.**

**Convenience sampling for a descriptive correlational design for a cross-sectional study**



# CLINICAL LEARNING ENVIRONMENTS COMPARISON SURVEY- CLECS

**A 29- item side-by-side comparison of students' perceived learning needs in the traditional clinical environment and the simulated clinical environment**

**Sum score for perceived learning along with six subscales: communication, nursing process, holism, critical thinking, self-efficacy, and teaching-learning dyad (Leighton, 2007)**

**After exploratory factor analysis with principal component extraction and an oblique rotation:**

- Nursing Leadership (18 items)
- Communication (6 items)
- Teaching-Learning Dyad (5 items)



# CLECS

*Reliabilities for Each Subscale in CLECS (Cronbach's Alpha)*

CLECS Subscales	Traditional Clinical Environment	Simulated Clinical Environment
Nursing Leadership (18 items)	.933	.942
Communication (6 items)	.828	.898
Teaching-Learning Dyad (5 items)	.830	.862
Overall Scale	.923	.935



# RESULTS

CLECS Subscales	Traditional Clinical Environment			Simulated Clinical Environment		
	1 <sup>st</sup> Semester	5 <sup>th</sup> Semester	Overall	1 <sup>st</sup> Semester	5 <sup>th</sup> Semester	Overall
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )
Nursing Leadership (Possible 0-72)	53.03 (8.15)	54.03 (8.34)	53.63 (8.26)	53.44 (8.84)	54.34 (9.41)	53.98 (9.18)
Communication (Possible 0-20)	14.59 (4.79)	14.77 (5.29)	14.70 (5.09)	13.95 (5.42)	12.93 (6.53)	13.34 (6.12)
Teaching-Learning Dyad (Possible 0-24)	21.26 (2.59)	20.62 (2.72)	20.88 (2.68)	21.16 (2.68)	20.87 (2.99)	20.98 (2.87)
Total (Possible 0-116)	88.88 (13.05)	89.41 (13.30)	89.20 (13.18)	88.54 (14.32)	88.14 (15.58)	88.30 (15.06)



# RESEARCH QUESTION 1

*First Semester Students Pair-Sample t-Test on CLECS between Traditional and Simulated Clinical Environments*

CLECS Subscales	Pair-Samples t-Test ( <i>df</i> =102)		
	<i>t</i>	<i>p</i>	<i>d</i>
Nursing Leadership	0.92	.36	0.09
Communication	-1.59	.12	-0.16
Teaching-Learning Dyad	-0.58	.57	-0.06
Total	-0.43	.67	-0.04

Note: \* Statistical significance  $p < 0.05$





# RESEARCH QUESTION 2

*Fifth Semester Students Pair-Sample t-Test on CLECS between Traditional and Simulated Clinical Environments*

CLECS Subscales	Pair-Samples t-Test ( <i>df</i> =154)		
	<i>t</i>	<i>p</i>	<i>d</i>
Nursing Leadership	0.69	.49	0.06
Communication	-4.51	<.001*	-0.36
Teaching-Learning Dyad	1.33	.18	0.11
Total	-1.71	.09	-0.14

Note: \* Statistical significance  $p < 0.05$



# RESEARCH QUESTION 3

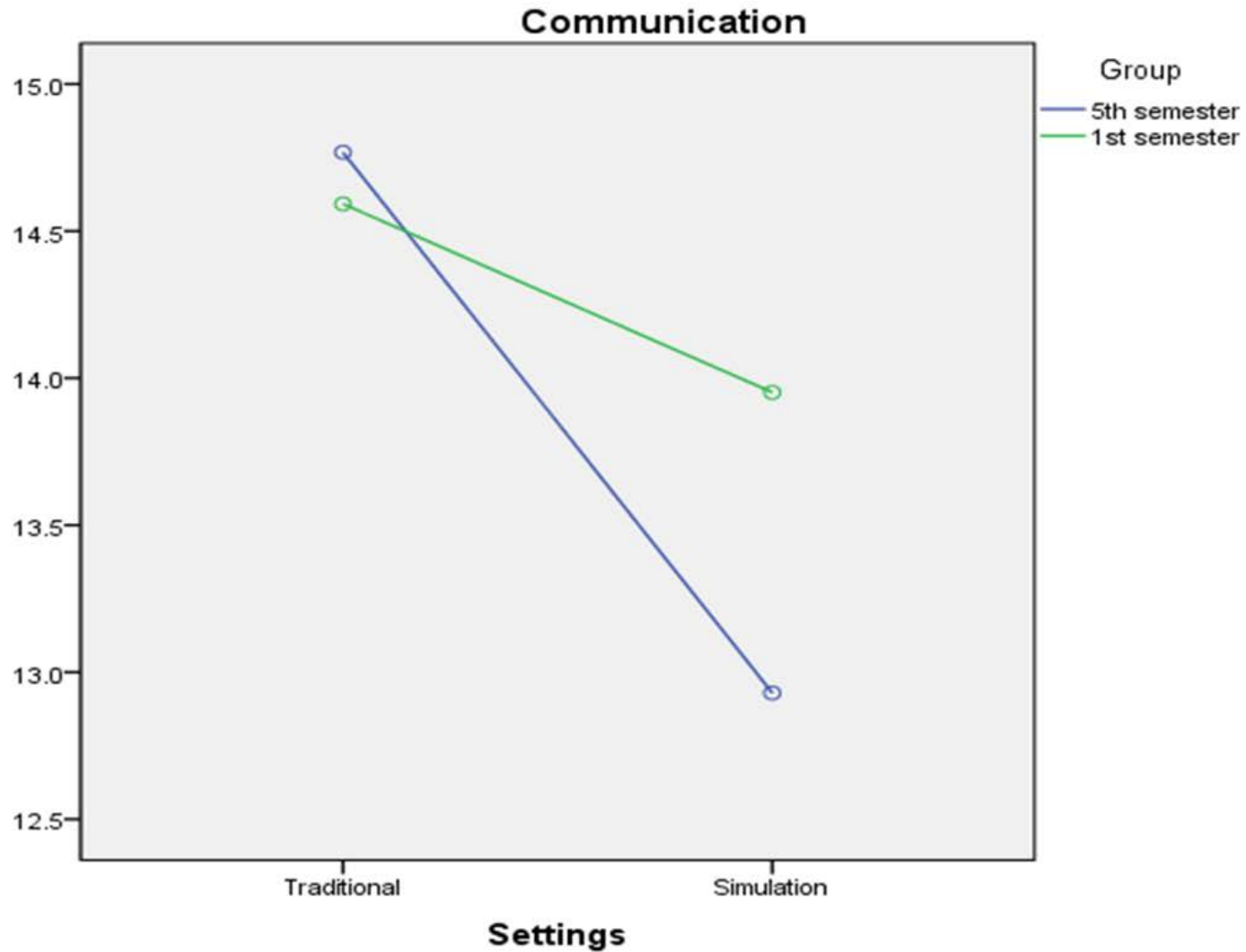
*Comparison of First and Fifth Semester Students in Traditional and Simulated Clinical Environments on the CLECS*

CLECS Subscales	Factor	Mixed-Design ANOVA <i>df</i> =(1,256)		
		<i>F</i>	<i>p</i>	$\eta^2$
Communication	1 <sup>st</sup> vs. 5 <sup>th</sup>	0.43	.52	.002
	Traditional vs. Simulation	17.15	<.001*	.063
	Interaction	4.00	.046*	.015
	1 <sup>st</sup> vs. 5 <sup>th</sup>	0.81	.37	.003
Nursing Leadership	Traditional vs. Simulation	1.17	.28	.005
	Interaction	0.019	.89	<.001
	1 <sup>st</sup> vs. 5 <sup>th</sup>	2.05	.15	.008
Teaching-Learning Dyad	Traditional vs. Simulation	0.27	.60	.001
	Interaction	1.68	.20	.007
Total	1 <sup>st</sup> vs. 5 <sup>th</sup>	0.001	.97	<.001
	Traditional vs. Simulation	2.09	.15	.008
	Interaction	.70	.41	.003

Note: \* Statistical significance  $p < 0.05$



# COMMUNICATION



# CONCLUSIONS

- **Results revealed that by designing a simulation to meet the learning objectives, not just the fidelity level of the simulation, students perceived the learning experience as equitable to the traditional learning experiences**
- **The participating students preferred to communicate with human patients and not manikins, especially in the lower level of fidelity simulation**



# IMPLICATIONS

- **Alternative for traditional clinical experiences of nursing students**
- **Potentially change the way nursing students are educated**
- **Provide empirical evidence for simulation as an equal clinical experiences as the traditional clinical experiences if the appropriate level of fidelity is used to meet the learning objectives**



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# REFERENCES

- Arnold, J. J., Johnson, L. M., Tucker, S. J., Chesak, S. S., & Dierkhising, R. A. (2013). Comparison of three simulation-based teaching methodologies for emergency response. *Clinical Simulation in Nursing*, 9(3), e85-e93. doi:10.1016/j.ecns.2011.09.004
- Butler, K. W., Veltre, D. E., & Brady, D. (2009). Implementation of active learning pedagogy comparing low-fidelity simulation versus high-fidelity simulation in pediatric nursing education. *Clinical Simulation in Nursing*, 5(4), e129-e136. doi: 10.1016/j.ecns.2009.03.118
- Cooper S., Cant, R., Porter, J., Bogossian, F., McKenna, L., Brady, S., & Fox-Young, S. (2011). Simulation based learning in midwifery education: A systematic review. *Women Birth*, 25(2), 64-78. doi: 10.1016/j.wombi.2011.03.004
- De Giovanni, D., Roberts, T., & Norman, G. (2009). Relative effectiveness of high-versus low-fidelity simulation in learning heart sounds. *Medical Education*, 43(7), 661-668.
- Friedman, Z., Siddiqui, N., Katznelson, R., Devito, I., Bould, M. D., & Naik, V. (2009). Clinical impact of epidural anesthesia simulation on short-and long-term learning curve: High- versus low-fidelity model training. *Anesthesia and Pain Medicine*, 34(3), 229-232. doi: 10.1097/AAP.0b013e3181a34345
- Gates, M. G., Parr, M. B., and Hughen, J. E. (2012). Enhancing nursing knowledge using high-fidelity simulation. *Journal of Nursing Education*, 51(1), 9-15. doi: 10.3928/01484834-20111116-01

# REFERENCES

Gore, T., Leighton, K., Sanderson, B., and Wang, C-H. (2014). Fidelity's effect on student perceived preparedness for patient care. *Clinical Simulation in Nursing*, 10(6), 309-315. <http://dx.doi.org/10.1016/j.ecns.2014.01.003>

Hayden, J., Smiley, R. A., Alexander, M., Kardong-Edgren, S., & Jeffries, P. R. (2014). The NCSBN national simulation study: A longitudinal, randomized, controlled study replacing clinical hours with simulation in prelicensure nursing education. *Journal of Nursing Regulation*, 5(2S), S3-S64.

Hoadley, T. (2009). Learning advanced cardiac life support: a comparison study on the effects of low-and high-fidelity simulation. *Nursing Education Perspectives*, 30(2), 91-95.

Howard, V., Ross, C., Mitchell, A., & Nelson, G. (2010). Human patient simulators and interactive case studies - A comparative analysis of learning outcomes and student perceptions. *Computers, Informatics, and Nursing*, 28(1), 42-48.

International Nursing Association of Clinical Simulation and Learning. (2013). Standards of best practice: Simulation. *Clinical Simulation in Nursing*, 9(6S), Si-S32.

Jeffries, P., & Rizzolo, M. (2006). *NLN/Laerdal project summary report, designing and implementing models for the innovative use of simulation to teach nursing care of ill adults and children: A national multi-site study*. New York, NY: National League for Nursing.



# REFERENCES

- Jeffries, P. R. & Rogers, K. J. (2012). Theoretical framework for simulation design. In Jeffries, P. R.(Ed.). *Simulation in nursing education: From conceptualization to evaluation (2<sup>nd</sup> ed.)*. New York, NY: National League for Nursing.
- Kameg, K., Howard, V., Clochesy, J., Mitchell, A. M., & Suresky, J. (2010). Impact of high fidelity human simulation on self-efficacy of communication skills. *Issues in Mental Health Nursing, 31*(5), 315-323.
- Kardong-Edgren, S., Anderson, M., & Michaels, J. (2007). Does simulation fidelity improve student test scores? *Clinical Simulation in Nursing, 3*(1): e21-4. doi: 10.1016/j.ecns.2009.05.035
- Kardong-Edgren, S., Lungstrom, N., & Bendel, R. (2009). VitalSim versus SimMan: A comparison of BSN student test scores, knowledge retention, and satisfaction. *Clinical Simulation in Nursing, 5*(3). e105-11. doi:10.1016/j.ecns.2009.01.007
- Kinney, S., & Henderson, D. (2008). Comparison of low fidelity simulation learning strategy with traditional lecture. *Clinical Simulation in Nursing, 4*(2), e15-e18, doi: 10.1016/j.ecns.2008.06.005
- Kolb, D. A. (1984). *Experiential learning*. Englewood Cliffs, NJ: Prentice Hall.
- Lapkin, S., & Levett-Jones, T. (2011). A cost-utility analysis of medium vs. high-fidelity human patient simulation manikins in nursing education. *Journal of Clinical Nursing, 20*(23/24), 3543-3552. doi:10.1111/j.1365-2702.2011.03843.x

# REFERENCES

Lee, K. H. K., Grantham, H., & Boyd, R. (2008). Comparison of high- and low-fidelity mannequins for clinical performance assessment. *Emergency Medicine Australasia*, 20(6), 508-514. doi: 10.1111/j.1742-6723.2008.01137.x

Leighton, K. L. (2007). Clinical learning environment comparison survey. In Learning needs in the traditional clinical environment and the simulated clinical environment: A survey of undergraduate nursing students. (Doctoral dissertation). Retrieved from ETD collection for University of Nebraska - Lincoln. (Paper AAI3271929)

McGaghie, W., Issenberg, S. B., Petrusa, E., & Scalese, R. (2009). A critical review of simulation-based medical education research: 2003-2009. *Medical Education*, 44, 50-63. doi: 10.1111/j.1365-2923.2009.03547.x

Tiffen, J., Corbridge, S., Shen, B. C., & Robinson, P. (2010). Patient simulator for teaching heart and lung assessment skills to advanced practice nursing students. *Clinical Simulation in Nursing*, 7(3), e91-e97. doi 10.1016/j.ecns.2009.10.003

Wang, A. L., Fitzpatrick, J. J., & Petrini, M. A. (2013). Comparison of two simulation methods on Chinese BSN students' learning. *Clinical Simulation in Nursing*, 9(6), e207-e212. doi:10.1016/j.ecns.2012.01.007