

Running head: TESTING A SIMULATION FRAMEWORK

Testing a Simulation Framework Using a Simulation in Insulin Management

Pamela R. Jeffries, Cynthia Dobbs and Vema Sweitzer

Indiana University School of Nursing

Abstract

An exploratory study tested a theory and data-based framework that was used to design, implement, and evaluate simulations used as teaching strategy in a nursing medical/surgical I course. Concepts of the Simulation Model (Jeffries, 2005) included educational principles, student factors, teacher factors, simulation design characteristics, and outcomes. The study tested the model with 60 students from a large Midwest university enrolled in a required medical/surgical course. A 15 minute simulation focusing on caring for an insulin-managed patient followed by a 15 minute guided reflection time was designed and facilitated by the clinical instructor. Students were randomly assigned roles: nurse, student nurse, simulated patient, family member, and observer for the simulation experience. There were no significant differences in knowledge gains from pre/post tests on insulin management, however the students were found to be self-confident in caring for an insulin-managed patient in the clinical setting. Overall, the students were very satisfied with the instructional method and desired more simulated learning experiences in their courses.

## Introduction

To prepare nurses for safer and more efficient practice environments and faced with the challenges such as diminished clinical sites, nurse educator shortage, and increasingly complexity in the healthcare environment, nurse educators must explore innovative ways to teach nursing students the real-world of nursing in a cost-effective, productive, and quality manner. Providing students with limited clinical experiences and immersing them with lecture content meets the need of imparting required technical knowledge, but is inadequate to prepare them for the complexities of the work place. Clinical simulation combined with clinical experience and other teaching methods, is a powerful tool to prepare competent nurses for clinical nursing (Morton, 1997). Incorporating clinical simulations into nursing curricula is just one approach to preparing nurses for a safer, efficient practice. As an increased number of nursing simulations are used to enhance learning, more information is needed about the outcomes, what teaching and learning practices contribute to positive outcomes, or how the simulation design can contribute to the overall teaching and learning. The purpose of this study is to describe a teaching-learning strategy using simulation designed to increase the knowledge, problem-solving skills, and self-confidence when caring for a diabetic, insulin-managed patient and the students' satisfaction with this instructional method.

## Significance

Simulations offer numerous health care providers a significant educational method that meets the needs of today's learners by providing them with interactive, practice-based, instructional strategy. Testing and implementing teaching strategies that use the simulations has the potential to contribute in many ways to nursing education. For example, simulations are

being studied to assess the possibility of more effectively utilizing faculty in the teaching of basic clinical skills and interventions. Additionally, simulations are also being used as a flexible teaching-learning strategy allowing learners more flexibility to practice, based upon their schedules. Learner can access the simulation at their convenience and not be required to practice the skills in front of an instructor, although that option would remain available for those who needed the extra instruction or reinforcement. The learner can revisit a skill a number of times in an environment that is safe, non-threatening and conducive to learning. As noted in the literature, simulations actively involve students in their learning process (Bruce, Bridges, & Holcomb, 2003). By interacting within the active-learning simulation, the learner is required to use a higher-order of learning rather than simply mimicking the teacher role model. Decision-making, problem-solving, and critical-thinking skills can be required by this teaching modality. Another aspect when using simulations is the consistency of teaching overall clinical and didactic content, providing a standardization of the material. Furthermore, simulations are promoting increased learner satisfaction in the classroom and clinical setting, providing a safer, non-threatening practice of skills and decision making, and contributing to the state-of-the-art learning environment.

### Literature Review

A clinical simulation is an event or situation made to resemble clinical practice as closely as possible (Seropian, 2003). Full-scale patient simulations using high-fidelity, sophisticated patient simulators provide a high level of interactivity and realism to the learner. Less sophisticated, but still educationally useful, approaches involve the use of computer-based simulations in which the participant relies on a two-dimensional focused experience to problem-

solve, perform a skill, and/or make decisions during the clinical scenario. Simulations can be used for a variety of purposes which may include teaching facts, principles, and concepts, assessing the student's progress or competency with a certain skill or nursing intervention, integrating the use of technology in the learning experience, and developing problem-solving and diagnostic reasoning skills in a safe, non-threatening environment before caring for a real client.

Simulations offer nurse educators and health care providers a significant teaching-learning intervention that can assist in meeting today's learning needs by providing them with interactive, practice-based, instructional strategies. Implementing and testing the use of simulations has the potential to actively involve students in their learning.

Tomey (2003) states students are assumed to learn best through activities that require their active participation. Through simulation, many studies (Nehring, Lasheley, & Ellis, 2002; Rauen, 2001; and Morton, 1997) have cited how learners are directly engaged in the activity and obtain immediate feedback and reinforcement of learning. Learning activities can range from simple to complex. For example, a case scenario can be provided in which a cardiac patient is restless, experiencing chest pain, and short of breath, affecting his cardiovascular status. Students can be asked to select the most appropriate intervention and describe the rationale for the intervention. The patient simulator (PS) can support more complex active learning strategies since the opportunity allows the student can assess a critical health incident (e.g., airway obstruction or life-threatening arrhythmia) through the measurement of physiological parameters and communication with the "patient," on-the-spot planning for quick and appropriate nursing interventions, and real-time response by the patient simulator for realistic evaluation and further intervention. Case scenarios, simulation of real-life clinical problems requiring assessment and decision-making skills, use of catheter simulators, role-playing with actors, and critiquing ones'

or a peer's videotape of a selected skill performance are examples of methods faculty can use to promote active learning (Vandrey & Whitman, 2001; Lee & Lamp, 2003; Cioffi, J., 2001; Nehring, Lashley, & Ellis, 2002, and Morton, 1997). Such active and interactive learning environments encourage students to make connections between concepts and engage the student in the learning process.

Student feedback post simulation is helpful, informative, and encouraging whether the information is from the instructor, a peer, an HPS, or a computer-based tool. Simulations provide students the opportunity to learn and practice nursing concepts with immediate feedback about their performance, knowledge, and decisions that guides the learner toward the desired learning outcomes (Aronson, et al., 1997; Hampl, Herbold, Schneider, & Sheeley, 1999; Peterson & Bechtel, 2000; Gates, Fitzwater, & Telintelo, 2001; Nelson, 2002; Gordon & Pawlowski, 2002; Pugh & Youngblood, 2002; and Byrne, Sellen, Jone, Aitkenhead, Hussain, Gilder, Smith, & Ribes, 2002).

In simulations, students' feedback to faculty is also important to assess their understanding of the concepts and their performance skills. Aaronson et al. (1997) provide time after simulation experiences in the laboratory for the learners to provide feedback about the experience. Students are instructed to write at least one nursing note describing one of the scenarios, and then these notes are reviewed by faculty at the designated station. Faculty believe the exercise of providing feedback on the essential elements of the problem or interventions provides a valuable experience for the student. As Jones (2002) noted, within the spectrum of feedback, students are taken through a real-time representation of their interactions. The informed feedback sessions are used constructively to build upon students' existing knowledge and to help them gain in confidence.

Collaborative learning in simulations refers to participants working together to problem-solve in a situation and share in the decision-making process. Gibbons et. al (2002) found that

collaborative learning increased a sense of collegiality and teamwork in learning, which, they believe, resulted in faculty-student bonding as well. Simulations can promote collaborative learning among students, instructors, and other health professionals to provide an environment in which everyone works together, mimicking what is actually done in real life (Johnson et al., 1999; Rauen, 2001; Aronson et. al., 1997, Klein & Doran, 1999; and Gibbons, Adamo, Padden, Ricciardi, Graziano, Levine, & Hawkins, 2002). Klein & Doran (1999) found that students who used a small group structure extensively during computer simulation assignments, contributed significantly more to discussion and provided more answers to their partners' questions than students who used an occasional group structure. Aronson et al. (1997) set up a simulation experience using student groups to gather data related to the patient situation, make a decision about what they thought was going on with the patient scenario, and then to choose the appropriate nursing interventions to meet the patient needs. The group appointed a spokesperson who reported each group's assessments and decisions to the faculty and then the group, debriefed on those judgments. Students' evaluation comments were overwhelmingly positive. Three major benefits identified from the study were sharing different ideas in a group, bringing course content to life without the stress of a real patient, and increasing confidence by giving opportunities for critical thinking and decision-making within their groups.

### Background Information

This study tested a theory and data-based framework developed by the National League for Nursing and Laerdal multi-site project group (Jeffries, 2005) that was used to design, implement, and evaluate an insulin management simulation used as teaching strategy in a beginning medical/surgical nursing course. Concepts of the Simulation Model (Jeffries, 2005)

include educational principles, student factors, teacher factors, simulation design characteristics, and outcomes.

## Study Design

### *Sample*

The convenience sample consisted of 60 Baccalaureate Junior nursing students enrolled Spring 2005 in H353 Alterations in Health I and H354 Alterations in Health I-the Practicum courses. These required courses are taken by all first semester junior students at Indiana University School of Nursing. All students participated in the simulation experience as a regular course activity. The simulation experience was not an additional credit or out-of-class experience. The mean age of the participants of the sample was 26 years old with 93% of the students being females.

### Research Questions

1. What simulation design features were important to include in the insulin management simulation design?
2. What are the important educational practices embedded in the insulin management simulation?
3. What are the learning outcomes of knowledge, satisfaction, self-confidence, and judgment performance of the students when incorporating a simulation in the teaching-learning process?



### *Procedure*

During the spring semester 2005, in H353 Alterations in Health I didactic course, diabetes and care of the client requiring insulin content was delivered in a 3-hour traditional lecture format by a master teacher. The clinical experience for this course was obtained in course H354 Alterations in Health I-the Practicum where students provide care to patients in a hospital setting for 1 ½ days per week for 6 weeks. Clinical course time was modified with the students returning to the learning laboratory for the simulation experience. One week following the diabetic content lecture, students participated in the simulation with their respective clinical instructors, who coordinated the simulation and ensured it was essentially the same for all students.

### *Simulation Process*

The course master teacher who presented the lecture content on diabetes and care of the client requiring insulin wrote the 15 minute simulation based on the simulation design features depicted in the simulation model as described in Table 1. Information and learning objectives for the simulation were presented to the students prior to the simulation session by a handout that included the objectives for the simulation, information on time allotment, and roles played by the student participants. The environment was made to resemble a patient room with supplies, medications, patient's chart, and diabetic protocols available. Students were randomly assigned roles: nurse, student nurse, simulated patient, family member, and observer. Students obtained more information about the simulation by listening to a 3 minute audio-taped morning report about the patient that resembled real-life activity. The scenario began with the patient complaining of dizziness. The patient was experiencing hypoglycemia, however, students had to assess clinical findings, laboratory values, and other critical information to come up with this

finding. Cueing in the simulation was provided by a family member, portrayed by a student, with script written for the participating family member. The students' clinical instructor observed the entire 15-minute simulation in the same room as the students without speaking or gesturing correct or incorrect actions and interventions. Immediately following the simulation experience, the same clinical instructor facilitated the 15-minute guided reflection portion of the simulation. The guided reflection activity included discussion on appropriate nursing interventions, priority setting, and decision-making skills.

Table 1. Design features for the insulin management simulation

<b>Design Feature</b>	<b>Example in insulin management simulation</b>
Objectives/information	Participants were provided a hand-out describing the simulation information
Fidelity	The environment was made to resemble a patient room with supplies, medications, patient's chart, and diabetic protocols available
Problem-solving features	Scenario began with the patient feeling dizzy  The patient was experiencing hypoglycemia, students had to assess for this
Student-Support	Cueing was provided from a family member which a student portrayed A written script of the cues was provided The students' instructor observed the simulation The instructor also facilitated the guided reflection
Debriefing	15-minute debriefing followed the simulation The activity, including priorities were discussed

## Evaluation Measures

Instruments for the Study included the following:

- **Simulation Design Scale (SDS):** A tool developed for by the NLN/Laerdal multi-site project group (Jeffries, et al., 2005) to measure constructs from the Simulation Model. Cronbach alpha in previous studies was 0.92 and this study included 0.92.
- **Educational Practices in Simulation Scale (EPSS):** A tool developed by the NLN/Laerdal multi-site project group (Jeffries, et. al., 2005) to measure the best practices in undergraduate education base on Chickering and Gamsons work (1987). Cronbach alpha for this study was 0.96.
- **Satisfaction with the teaching methodology** was measured using a five-item subscale with a 5 point Likert response scale ranging from strongly agree to strongly disagree. Previous studies, modifying Kirkpatrick's (1996) Evaluation Scale, (Jeffries, 2000, 2001) had Cronbach's alphas of 0.88 and 0.92, respectively. This study included a Cronbach's alpha of 0.94.
- **Self-confidence in learning** was measured as how confident the students felt to care for an insulin-managed diabetic client. The subscale contains eight items on the same response scales. The reliability for previous studies (Jeffries, 2000) using Kirkpatrick's modified Scale was 0.87. This study's Cronbach's alpha was 0.85.
- **Cognitive gains** were measured by comparing pre and post-tests over the care of a diabetic client requiring insulin management. The identical 12-item pre and post tests were instructor-developed, with content validity checks done by three experienced clinicians.

## Findings

Question #1. What simulation design features were important to include in the insulin management simulation? Table 2 depicts the means for the subscales on the simulation design scale showing feedback was the most important design feature in the insulin-management simulation. This finding supports the literature (Aaronson et al., 1997; Jones, 2002) where students found feedback a valuable component in simulations. Feedback helps the learner to understand their real-time experiences and learn what they did correct or incorrectly and why.

Table 2. Simulation Design Scale Means and Standard Deviation

Simulation Feature	Mean	S.D.
Objective/Information	4.0	1.1
Support	4.0	1.1
Problem-solving	4.1	1.0
Feedback	4.5	0.9
Fidelity	4.3	0.9

Question #2. What are the important educational practices embedded in the insulin management simulation? This study demonstrated that active learning as shown in Table 3 was the most important educational practice embedded in the insulin management simulation as viewed by the sample of 60 learners. Students learn best through active learning according to Tomey (2003). Active learning assists students to make the connections between theory and practice and engage the student in the learning process, being an active participant rather than a passive one.

Table 3. Educational Practices Scale Findings: Mean and Standard Deviation

Scale	Mean	S.D.
Active Learning	4.2	1.0

Collaboration	4.4	0.9
Diverse Ways of Learning	4.1	1.0
High Expectations	4.1	1.0

Question #3. What are the learning outcomes of knowledge, satisfaction, self-confidence, and judgment performance of the students when incorporating a simulation in the teaching-learning process? There were no significant differences in knowledge gains from pre/post tests. Even though there were no significant differences between the pre/post tests, maybe new knowledge is not being learned, but applied and synthesized. Further research needs to be done in this area, particularly to explore and capture the measurement for knowledge synthesis and application.

The students were overall self-confident to care for an insulin managed patient in the clinical setting (mean—4.3; scale 1-5 (5=strongly agree)). In the debriefing session, when students discussed the simulation, their experience, and overall reaction, many believed this experience would help them the next time they are assigned to care for a diabetic client. Being involved in a simulation depicting a hypoglycemia client, helped many students differentiate between hypoglycemia and hyperglycemia. The symptoms and rationale for the symptoms associated with the low blood glucose all made more sense when depicted in a simulated environment and then discussed in the guided reflection time by the instructor and students.

Overall, the students perceived they were making systematic, appropriate judgments when caring for the simulated, diabetic client (Mean—3.7 (S.D. – 0.5) –Scale 1-5 (5=strongly agree)). Using the self-perception judgment scale, a majority of the students believed they were systematically assessing the client and obtaining the information they needed to implement the correct nursing interventions. However, after participating in the simulation and discussing

assessments and priorities in the guided reflection portion of the simulation, students realized many times they were too quick to make decisions before collecting all the data or focusing in on critical information, e.g. patient was NPO which influenced the correct method of administering glucose to the patient. Additionally, many of the clinical instructors were able to assess for gaps in the knowledge of students and weaknesses in their assessment skills which can be worked on over the next few weeks of the clinical course. Simulations help students to experience and discuss the priorities of care in a real-time mode versus on a clinical setting when an instructor may have 10 students to facilitate allowing very little time for quality debriefing after every clinical event.

Overall the students were very satisfied with their instructional method (Mean – 4.2 (S.D. 0.9) Scale 1-5 (5 =strongly agree). Satisfaction was high for this group of students due to their active participation and opportunity to problem-solve in a non-threatening clinical environment. Students stated they wished they could have simulations incorporated in their medical/surgical courses since the activity brings reality to the clinical situation. As one student stated, “I would rather learning and make mistakes in the simulated environment, than on my real patient in the healthcare environment.”

#### Limitations

The sample size was small with only 60 participants. The students were from only one clinical course, medical/surgical I at one school of nursing. While diabetes content was presented to all students by the same master teacher, different teachers lead the students through the simulation in groups of 10, with variation in debriefing.

#### Discussion/Conclusions

Providing students with simulations in the teaching-learning process enhances instructional outcomes and provides a collaborative learning experience. Incorporating simulations in the teaching-learning process assists faculty in identifying curriculum gaps, content weaknesses, and student preparation. Simulations assist in providing the students with problem-solving, decision-making opportunities prior to going to clinical in a non-threatening environment where learning can take place. The guided reflection is an important aspect to the simulation experience by promoting student learning. Educators need to be consistent with the information provided in the debriefing and the critical behaviors emphasized in the simulation. Faculty must feel comfortable with incorporating simulations in the teaching-learning process. Part-time and full-time faculty need development and direction on designing and implementing simulations when incorporating them in the teaching-learning process.

#### Summary

Students learned from the simulation on insulin management. The simulation experience provided all of the students in the medical/surgical I course an experience in caring for a diabetic client. Simulations provide the learners a mechanism to collaborate in the decision-making, problem-solving process in a very interactive manner. Clinical educators need faculty development in simulations to feel comfortable and prepared for this teaching-learning process.

## References

- Aronson, B., Rosa, J., Anfinson, J., & Light, N. (1997). A Simulated Clinical Problem-Solving Experience. *Nurse Educator*, 22(6), 17-19.
- Bridge, B & Holcomb, J.B. (2003). Preparing to Respond: Joint Trauma Training center and USAF Nursing Warskills Simulation Laboratory, *Critical Care Nursing Clinics of North America*, 15(2), 149-162.
- Byrne, A. J. & Greaves, J. D. (2001). Assessment instruments used during anaesthetic simulation: Review of published studies. *British Journal of Anaesthesiology*, 86, 445-450.
- Chickering, A. & Gamson, Z. (1987). Seven principles of good practice in undergraduate education. *AAHE Bulletin*, March
- Cioffi, J. (2001). Clinical Simulations: development and validation, *Nurse Education Today*, 21, 477-486.
- Gates, D., Fitzwater, E., & Telintelo, S. (2001). Using Simulations and Standardized Patients in Intervention Research, *Clinical Nursing Research*, 10(4), 387-399.
- Gibbons, S., Adamo, G., Padden, D., Ricciardi, R., Graziano, M., Levine, E., & Hawkins, R. (2002). Clinical Evaluation in Advanced Practice Nursing Education: Using Standardized patients in Health Assessment. *Journal of Nursing Education*, 41(5), 215-221.
- Gordon, J. & Pawlowski, J. (2002). Education On-demand: The Development of a Simulator-based Medical Education Service, *American Medicine*, 77(7), 751.
- Hample, J., Herbold, N, Schneider, M., & Sheeley, A. (1999). Using standardized patients to train and evaluate dietetics students. *Journal of the American Dietetic Association*, 99(9), 1094-1097.
- Hughes, K. & Youngblood, W.B. (1990). The Relationship between Task Complexity and Decision-Making Consistency, *Research in Nursing and Health*, 13(3), 189-197.
- Jeffries, P.R. (March/April 2005). A Framework for Designing, Implementing, and Evaluating Simulations Used as Teaching Strategies in Nursing, *Nursing Education Perspectives*, 26(2), 28-35.
- Jeffries, P., Childs, J., Decker, S., Horn, M., Hovanaczek, M., Childress, R., Rogers, K., Feken, C., Spunt, D. & Politi, R.. "How to Design, Implement, and Evaluate Simulations in Nursing used as a Teaching Strategy, National League for Nursing Summit, Orlando, Florida, October 1, 2004.



Jones, T., Cason, C., and Mancini, M. (2002). Evaluating Nurse Competency: Evidence of Validity for a Skills Recredentialing Program. *Journal of Professional Nursing*, 18(1), 22-28.

Lee, C & Lamp, J. (2003). The Use of Humor and Role-Playing in Reinforcing Key Concepts, *Nurse Educator*, 28(2), 61-62.

Morton, P. (1999). Using a Critical Care Simulation Laboratory to Teach Students. *Critical Care Nurse*, 17(6), 66-68.

Nehring, W., Lashley, F., and Ellis, W. (2002). Critical Incident Nursing Management Using Human Patient Simulators. *Nursing Education Perspectives*, 23(3), 128-132.

Peterson, M and Bechtel, G. (2000). Combining the Arts: An Applied Critical Thinking Approach in the Skills Laboratory. *Nursing Connections*, 13(2), 43-49.

Pugh, C.M. & Youngblood, P. (2003). Development and validation of assessment measures for a newly developed physical examination simulator. *Journal of the American Informatics Association*, 9, 448-460.

Rauen, C. (2001). Using Simulation to Teach Critical Thinking Skills. *Critical Care Nursing Clinics of North American*, 13(1), 93-103.

Seropian, M. (2003). General Concepts in Full Scale Simulation: Getting Started. *Anesthesiology Analg*, 97, 1695-1705.

Shearer, R. & Davidhizar, R. (2003). Using Role Play to Develop Cultural Competence. *Journal of Nursing Education*, 42(6), 273-276.

Tomey, A. (2003). Learning with Cases. *The Journal of Continuing Education in Nursing*, 34(1), 34-37.

Vandrey, C. & Whitman, M. (2001). Simulator Training for Novice Critical Care Nurses, *AJN*, 101(9), 24GG-24LL.

# **Clinical Simulation: Care of an Insulin Managed Client**

Cynthia Dobbs MSN, RN

Vema Sweitzer MSN, RN

Pamela R. Jeffries DNS, RN

Indiana University School of Nursing

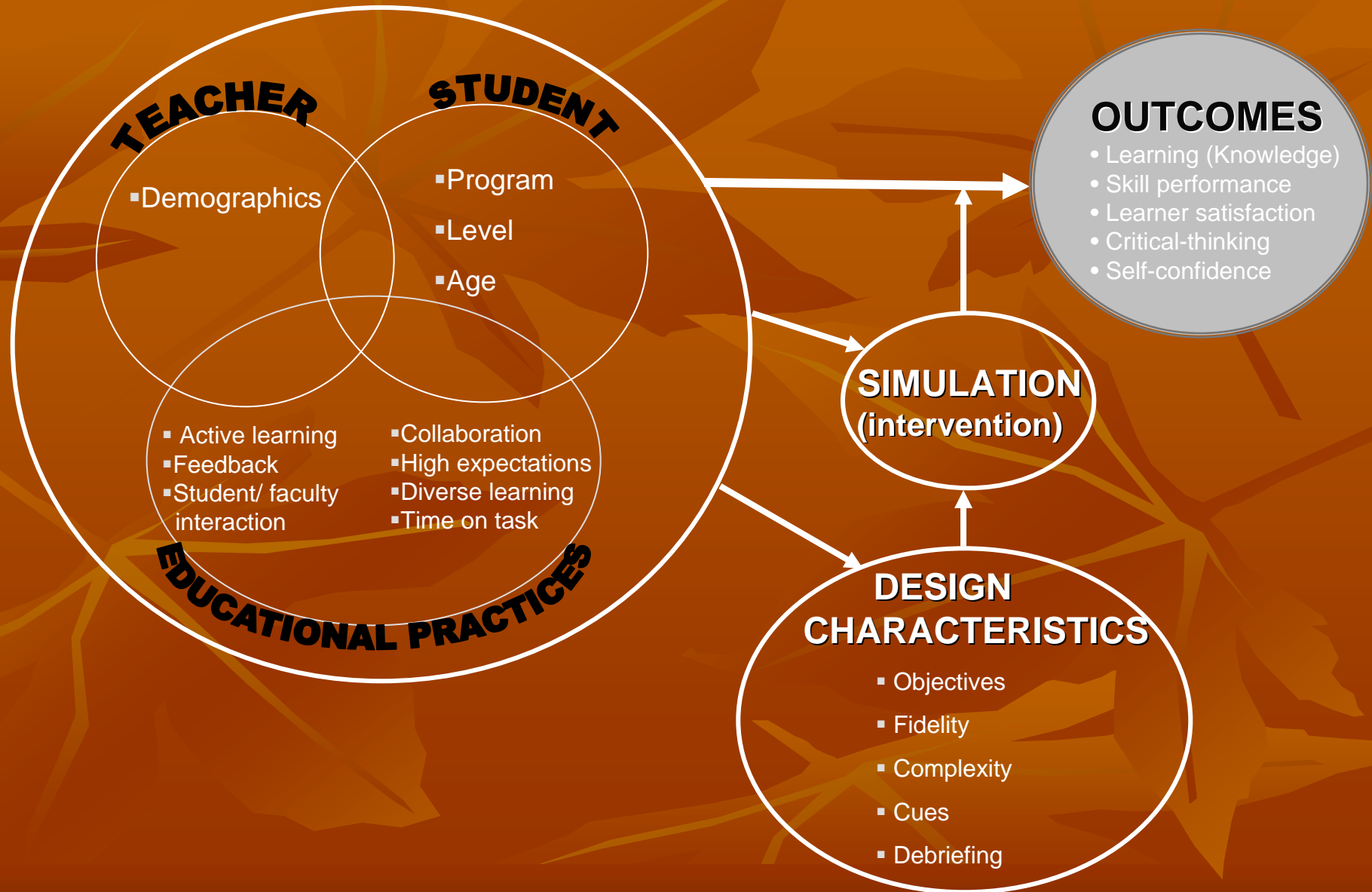
# Introduction

- To prepare nurses for safe more efficient practice environments, nurse educators are exploring more experiential, real-world clinical experiences.
- Clinical simulation combined with clinical experience and other teaching methods can be a powerful tool to prepare competent nurses for clinical nursing.

# Background

- Using NLN/Laerdals' data-based simulation framework, a simulation on insulin management was designed, implemented, and evaluated in a medical/surgical I course at a large, Midwest university.

# SIMULATION MODEL



# Research Questions

- What simulation design features were important to include in the insulin management simulation?
- What are the important educational practices embedded in the insulin management simulation?

# Research Questions cont.

- What are the learning outcomes of knowledge, satisfaction, self-confidence, and judgment performance of the students when incorporating a simulation in the teaching-learning process?

# Sample

- 60 Baccalaureate, junior nursing students participated in the study
- Mean age – 25.6 years
- 93% female
- 88% Caucasian



# Research Design

- An exploratory, descriptive study was conducted to explore simulation as a Teaching-Learning intervention in a medical/surgical I course

# Instruments

- Demographic questionnaire
- Educational Practices in Simulation Scale (Cronbach's alpha – 0.96)
- Simulation Design Scale (alpha – 0.92)
- Satisfaction Scale (alpha – 0.94)
- Self-Confidence Scale (alpha – 0.85)
- Judgment Performance Scale (alpha - )
- Cognitive Gains (12-item pre/post tests)

# Procedure

- Content was delivered to all 60 students from one master teacher
- Proceeding the content, a 15 minute simulation followed by a 15 minute guided reflection time facilitated by the clinical instructor
- Students were randomly assigned roles: nurse 1, student nurse, stimulated patient, family member, and observer

# Procedure continued

- The 15-minute simulation was written by the med/surg instructors
- Information and learning objectives for the simulation were presented to the students prior to the simulation
- Students obtained information about the simulation by listening to a 3-4 minute audio-taped morning report about the patient

# Design Features for the Simulation

- Objectives/information
  - Participants were provided a hand-out describing the simulation information
- Fidelity
  - The environment was made to resemble a patient room with supplies, medications, patient's chart, and diabetic protocols available
- Problem-Solving Features
  - Scenario began with the patient feeling dizzy
  - The patient was experiencing hypoglycemia, students had to assess for this

# Design Features continued

## ■ Student Support

- Cueing was provided from a family member which a student portrayed
- A written script of the cues was provided
- The students' instructor observed the simulation
- The instructor also facilitated the guided reflection

## ■ Debriefing

- A 15-minute debriefing followed the simulation
- The activity, including priorities were discussed

## Findings: Q#1: Important Simulation Design Features?

Simulation Feature	Mean	S.D.
Objective/Info.	4.0	1.1
Support	4.0	1.1
Problem/solving	4.1	1.0
Feedback	4.5	0.9
Fidelity	4.3	0.9

## Q#2: What are the Important educational Practices in the Simulation?

Scale	Mean	S.D.
Active Learning	4.2	1.0
Collaboration	4.4	0.9
Diverse Ways of Learning	4.1	1.0
High Expectations	4.1	1.0



# Q#3: Learning Outcomes

- **Knowledge (pre/post tests)**
  - There were no significant differences in knowledge gains from pre/post tests
- **Self-Confidence**
  - The students were overall self-confident to care for an insulin managed patient in the clinical setting (Mean – 4.3; scale 1-5 (5- strongly agree))

# Outcomes continued

## ■ Judgment Performance

- Overall, the students perceived they were making systematic, appropriate judgments when caring tfor the simulated, diabetic client (Mean – 3.7 (S.D. – 0.5) – Scale 1-5 (5 – strongly agree)

## ■ Satisfaction with learning

- Overall the students were very satisfied with their instructional method (Mean – 4.2 (S.D. 0.9) Scale 1-5 (5 = strongly agree)

# Conclusions

- Providing students with simulations in the teaching-learning process enhances instructional outcomes and provides a collaborative learning experience.
- Incorporating simulations in the T-L process, assists faculty in identifying curriculum gaps, content weaknesses, and student preparation.
- Simulations assist in providing the students with problem-solving, decision-making opportunities prior to going to clinical when caring for a real client

# Implications for Nurse Educators

- Debriefing is an important aspect to the simulation and students' learning
- Educators need to be consistent in information emphasized from the scenario
- Faculty must feel comfortable with incorporating simulations in the T-L process
- Part-time and full-time faculty need faculty development on simulations when incorporating them in the T-L process

# Summary

- Students learned from the simulation on insulin management
- The simulation experience provided all 100% of the med/surg students an experience in caring for a diabetic client
- Simulations provide the learners a mechanism to collaborate in the decision-making, problem-solving process in a very interactive manner.

# Summary continued

- Clinical educators need faculty development in simulations to feel comfortable and prepared for this T-L process

# Questions?

Thank-you

[Cdobbs@iupui.edu](mailto:Cdobbs@iupui.edu)

[vsweitzer@iupui.edu](mailto:vsweitzer@iupui.edu)

[pjeffri@iupui.edu](mailto:pjeffri@iupui.edu)