Virtual Simulation: Suspending Disbelief to Create a Real World Interaction

Kay Gaehle, PhD;
Kevin Stein, DNP, CRNA;
Bernadette Sobzak, DNP, PNP;
Amelia Perez, PhD

SOUTHERN ILLINOIS UNIVERSITY EDWARDSVILLE

1

- **Virtual Reality Simulation**
  - Transform learners through experiential learning.
- **AI + Human Interaction**
  - Combines true human intelligence with the scalability and data-driven possibilities of AI.

Mursion Vitual Simulator©
https://www.mursion.com/

2

- Provide a safe environment for learners to practice complex communication skills necessary for the effective management of difficult interactions and emotionally charged situations (Kron et. al., 2017).
- Result in equivalent medical student stress levels compared to students interacting with standardized patients (Compton and Nagendran, in press).
- Provide a good method to develop teaching skills in many levels of educators (Dawson and Lingnugaris/Kraft, 2017; Chini, Straub, and Thomas, 2016; Dieker, Hughes, Hynes, and Straub, 2017).

Virtual Reality Simulations

3

- To evaluate the effectiveness of a virtual reality simulation experience with Graduate Students in NP, CRNA and NE clinical practicum courses to improve communication skills in **challenging, realistic, real time** scenarios.

Purpose of the Project

4

WHO?

- **Students**
- **Faculty**
- **Avatar Interactor trained in the scenario and use of equipment**

WHAT?

- **Provides real time, synchronous interaction of the student and an avatar**
- **Requires the student to apply prior knowledge on how to handle situations and practice a response**
- **Engages emotional context and cognitive function**

WHY?

- **Provides students with the opportunity to develop communication skills in challenging situations.**
- **Provides emotional and cognitive challenges during the interaction**
- **Each student experience depends on how the student interacts with the avatar.**

Virtual Reality Simulations

5

Virtual Professional Practice Lab and COST

6

1. Faculty develop realistic scenarios and possible directions the scenario could take and determines number of persons, setting of interaction and interaction intensity level

2. Faculty submits the scenario to the interactor for review

3. Faculty – Interactor meet to discuss the scenario and possible directions the conversation may take

4. Faculty and the interactor practice the scenario and work out any questions the interactor may have.

HOW? Faculty Planning

7

Images © Mursion

VR Settings Characters

8

NP Situation: H and P

9

SRNA Student VR Setting: Patient with pain seeking meds

10

NE Student VR Setting

11

- Student failing clinical due to unsafe patient environment
- Student who plagiarized part of a paper
- Student with behavior change in class

NE: 3 Scenarios

12

Schedule Agreeable Virtual Lab Time

- Face to face and online students

Review possible scenarios

- Students receive scenario 24 hours before the interaction.
- Students determine what to think about before the interaction.

Student's Preparation

- Students volunteered in random order to interact with the avatar
- Assigned one of the three scenarios each student would do.
- In the lab students had to say:
  - Start scenario
  - Pause scenario
  - End scenario

Day of the Interaction

- **ONLINE NE STUDENT SESSION**
- Zoom meeting with online students
  - Interactor emailed students to join the meeting
  - IT Specialist controlled student participation
  - Recorded session for future review

VR Simulation Session 1

15

- **FACE to FACE NE SESSION**
  - IT specialist present to record each interaction.
  - Students all sat in VR lab as peers did the interaction
  - 1 to 1 debriefing occurred in adjoining room.
  - Group interaction at the end of the session was in the lab.

VR Simulation Session 2

16

Sample Interaction

17

- One on one debriefing with faculty member immediately after interaction
- Group debriefing after a group students engaged with the avatar
- Peer feedback assignment one week after the interaction.

Debriefing After Interaction

18

- Student statements during debriefing:
  - "I was surprised how real that felt."
  - "She (the avatar) could be really mean."
  - "I felt a lot of push back from her (the avatar), like she was not listening to me."
  - "Does this really happen with students?"

SUSPENDING DISBELIEF

19

Clear message?

Listening?

Maintain/regain control?

3 key elements learned?

Idea to use this method as NE

Peer Feedback Assignment

20

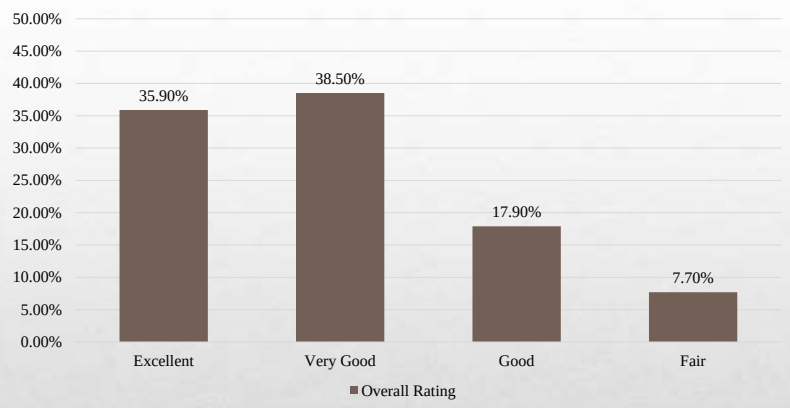
- IRB approval to collect data
- Students signed a consent to participate
- Data collection focused on Evaluation of the VR simulation as a Learning Activity.
- Qualtrics was used to collect data.

- N=56 students participated in the VR simulations
- N=39 agreed to participate in the survey and data collection
  - 12 NE students
  - 19 SRNA students
  - 8 FNP students

Results of Overall Survey

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
Realism	35.9%	59%	2.6%	2.6%	0
Confidence	15.4%	61.5%	15.4%	7.7%	0
Comfort	25.6%	59%	10.3%	5.1%	0
Communication	12.8%	66.7%	15.4%	5.1%	0
Application of knowledge	30.8%	59%	5.1%	5.1%	0
Safe Learning Environment	46.2%	46.2%	7.7%	0	0
Debriefing	51.3%	41%	7.7%	0	0
Useful Learning Tool	25.6%	64.1%	7.7%	2.6%	0

23



Overall Rating of Learning Activity

24

- **Feelings- nervous, anxious, empathy for the patient**
- **Enhanced learning- interactive avatar, real life situations, dealing with difficult situations, able to identify my strengths and weaknesses**
- **Impeded learning- first time using virtual simulation thus unsure of expectations, no physical contact to perform patient assessments**

Open Ended Feedback

25

- Implement this teaching strategy in each graduate practicum course and evaluate learning
- Consider evaluating stress level of participants before, during and after VR simulation
- Consider VR implementation in undergraduate program
- Investigate funding opportunities to maintain the lab

Future Directions

26

References

- Chini, J.J.; Straub, C.L.; & Thomas, K.H. (2016). Learning from avatars: Learning assistants practice physics pedagogy in a classroom simulator. *Physical Review Physics Education Research, 12*. DOI: 10.1103/PhysRevPhysEducRes.12.010117
- Compton, S. & Nagendran, A. (under review). Stress response of medical students when exposed to virtual reality vs. standardized patients in a learning situation. *Teaching and Learning in Medicine*. Unpublished manuscript.
- Dawson, M.R. & Lignugaris/Kraft, B. (2017). Meaningful practice: Generalizing foundation teaching skills from TLETeachLivE® to the classroom. *Teacher Education and Special Education, 40* (1), 26-50.
- Dieker, L.A.; Hughes, C.E.; Hynes, M.C.; & Straub, C. (2017). Using virtual environments to improve teacher performance. *School-University Partnerships: Technology to Enhance PDS, 10* (3) 62-81.
- Foronda, C., & Bauman, E. B. (2014). Strategies to incorporate virtual simulation in nurse education. *Clinical Simulation in Nursing, 10*(8), 412-418.
- Gazza, E. A., & Hunker, D. F. (2014). Facilitating student retention in online graduate nursing education programs: A review of the literature. *Nurse Education Today, 34*, 1125-1129.
- Huun, K. (2018). Virtual simulations in online nursing education: Align with Quality Matters. *Clinical Simulation in Nursing, 22*, 26-31.
- Kron, F.W. et al. …….Becker, D.M. (2017). Using a computer simulation for teaching communication skills: A blinded multisite mixed methods randomized controlled trial. *Patient Education and Counseling, 100*, 748-759.
- Mursion. (nd) https://www.mursion.com/research.html
- Padilha, J. M., Machado, P. P., Ribeiro, A.L., & Ramos, J. L. (2018). Clinical virtual simulation in nursing education. *Clinical Simulation in Nursing, 15*, 13-18.
- University of Central Florida (2015). Institute for simulation and training. https://www.ist.ucf.edu/

•Questions??