See It, Hear It, Feel It: Virtual Reality Immersive Learning

Jaime Hannans Ph.D., RN, CNE
Colleen Nevins DNP, RN, CNE

Channel Islands
CALIFORNIA STATE UNIVERSITY
Objectives:

1. Describe types of virtual reality, providing examples of use in nursing education currently.
2. Review findings of student response to immersive reality experiences in undergraduate nursing education.
3. Identify strategies and challenges with the integration of virtual reality experiences.
Immersive Extended Reality (XR) for Real Learning?

Dr. Jaime Hannans

Dr. Colleen Nevins
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Definitions:

“A computer-generated reality, which allows a learner or group of learners to experience various auditory and visual stimuli.” - INACSL (2016)


◆ Augmented reality consists of synthetic or digital computer-generated objects or stimuli superimposed on real life objects
◆ Mixed reality merges digital virtual reality with real time situation
◆ Virtual reality is computer-generated 3 dimensional environment
**Virtual Reality**

Students are immersed in a virtual experience wearing a headset to embody the patient, experiencing first-hand perceptions managing disease.

**Mixed Reality**

Through the fusion of virtual and real-time interactions, students interact with avatars engaging in real situational conversations that could not otherwise be practiced.

**Augmented Reality**

Students participate in actions or decisions in real environments augmented by computer-generated content, where discoveries can be made.
Are you familiar with any form of immersive learning such as:

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<tbody>
<tr>
<td>Augmented Reality</td>
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<td>Mixed Reality</td>
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<td>Virtual Reality</td>
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<tr>
<td>None of the Above</td>
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Do you use augmented, mixed and/or virtual reality in nursing education?

- Yes: 1
- No: 2
- I don't know: 3
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Augmented Reality
“I liked that there were tutorials on the facilities equipment like the pump, suctioning, etc. As some hospitals that we go to have different equipment.”

“Helpful to navigate the room and obtain an idea of what the set up will be like and where important items can be located.”

“I liked it as it gives us an idea of the clinical setting we will be in, especially for me as it will be my first time at ...(the facility).”
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Mixed Reality
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Mixed Reality

Teach Live
Virtual reality simulations for learning
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Student response to Mixed Reality (MR) experiences

Realistic
Empathy
Preparation
Confidence

Communication
Compassion
Engaging
Understanding
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Virtual Reality
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Virtual Reality

Meet Alfred

74-year old African American male with macular degeneration and hearing loss
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Meet Beatriz

A middle-aged Latina woman who progresses through early, middle, and late stages of Alzheimer’s Disease
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Virtual Reality

Meet Clay
A 66 year old Veteran who is diagnosed with terminal cancer and negotiates hospice care with his family as he nears end of life.
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Student responses to virtual reality
Study Design and Methods

- Nursing students enrolled in clinical courses
  - Alignment to course objectives
  - First, second, and third year students
- IRB Approval
- Pre and Post Surveys using Qualtrics
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Study Design and Methods

*Pre-brief

Pre-survey

VR Experience

Post-survey

*Debriefing
What words or phrases come to mind when you hear ‘geriatric’ or ‘older’ patient?
Pre-Survey Responses: Alfred
Post-Survey Responses: Alfred
I understand the perspective of an older adult.

22% difference from pre to post means
Question 13: This experience positively impacted my preparation for the nursing profession.  
Question 16: Virtual reality patient experiences, such as the experience as Alfred, can support the development of empathy for nursing students.  
Question 19: I have an improved understanding for how to care for patients with vision loss
Beatriz is a longer pre- and post- survey, as compared to Alfred Senior and junior nursing students (N=75) Knowledge, confidence, and perception questions
Confidence Pre-Survey: Beatriz

- Q5: 100.00% Very confident, 0.00% Confident, 0.00% Somewhat confident, 0.00% Not very confident, 0.00% Not at all confident
- Q8: 100.00% Very confident, 0.00% Confident, 0.00% Somewhat confident, 0.00% Not very confident, 0.00% Not at all confident
- Q11: 100.00% Very confident, 0.00% Confident, 0.00% Somewhat confident, 0.00% Not very confident, 0.00% Not at all confident
- Q12: 100.00% Very confident, 0.00% Confident, 0.00% Somewhat confident, 0.00% Not very confident, 0.00% Not at all confident
Confidence Post-Survey: Beatriz

- **Q5**: Very confident (60%), Confident (25%), Somewhat confident (15%), Not very confident (5%), Not at all confident (0%)
- **Q8**: Very confident (65%), Confident (20%), Somewhat confident (15%), Not very confident (1%), Not at all confident (0%)
- **Q11**: Very confident (70%), Confident (25%), Somewhat confident (5%), Not very confident (0%), Not at all confident (0%)
- **Q12**: Very confident (60%), Confident (30%), Somewhat confident (15%), Not very confident (5%), Not at all confident (0%)
To what extent do you agree with the following statement? "Once a person cannot recognize their family and friends, they no longer are able to feel emotions like love, friendship, hope, or connection."

Pre-Survey Responses: Beatriz
- Agree: 4.2%
- Somewhat Agree: 8.3%
- Neither: 1.4%
- Somewhat Disagree: 12.5%
- Disagree: 25.0%
- Strongly Disagree: 48.6%

Post-Survey Responses: Beatriz
- Agree: 1.4%
- Somewhat Agree: 4.2%
- Neither: 5.6%
- Somewhat Disagree: 5.6%
- Disagree: 32.4%
- Strongly Disagree: 50.8%
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Strategies and Challenges with the Integration of VR experiences

Strategize using a Framework
So you want to integrate XR …. now what??

1. Evaluate curriculum and program vision
2. Assess resources: faculty, staff, collaborating partners, finances, tech support, etc.
3. Cost consideration depending upon the type of XR experience
4. Evaluate equipment needs
5. Design activities aligning to program and course outcomes
6. Faculty training and facilitation
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Strategies and challenges with the integration of VR experiences

**AR Considerations**
- Access or account to web-based product
- Low equipment cost
- Imaging versus subscription
- User access or limitation of users

**MR Considerations**
- Subscription or contract hours can be expensive
- No to very low equipment cost
- Space needed
- No limitations with user access, based on time

**VR Considerations**
- Annual contract required
- One time equipment costs that can be high
- Space needed
- No limitations with user access or number of uses
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Challenges with the Integration of VR experiences

- Learning curve related to VR technology and setup
- Faculty interested with limited time or investment
- Be prepared for need of tech support
- Scheduling student rotations can be difficult
- Students may have disabilities than can be challenging in experiencing scenarios. *Ex: Visual, claustrophobia, physical*
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Do you have a virtual lab space?
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How do you envision the future of XR in Nursing Education?

Top three ideas for integrating XR:

1. 
2. 
3.
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Questions??

Want to learn more? Visit tiny.cc/virtualCI

Contact Information: Jaime Hannans: jaime.hannans@csuci.edu
Colleen Nevins: colleen.nevins@csuci.edu
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References


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