Navigating the Way Forward: Resources and Best Practices to Embed Virtual Resources in Clinical Education

Michelle Aebersold & Margaret Verkuyl

Learning Objectives

- Differentiate between a range of different virtual clinical experiences.
- View a sample of varied virtual environments used in nursing education.
- Discuss benefits and challenges to using available technology enabled environments.
- Review the process for embedding virtual experiences in nursing education.
- Compare and contrast options available for using virtual experiences to optimize learning.
- Evaluate virtual experiences in relation to clinical practice.
- Share resources and publications related to virtual clinical education.

Basic Information

- Use of chat
- Question time
- Break time
- Presentation flow
- Microphone off
- Video optional

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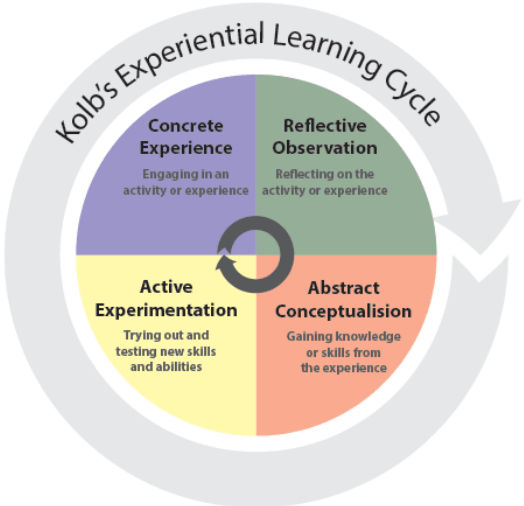
Learning Theories

Levels of Learning- Miller's Pyramid

- Performance integrated into practice
- Demonstration of Learning
- Interpretation/Application
- Fact Gathering

Move Learner from Knows to Does...Novice to Expert

CHSE



Kolb D.A. (1984) 'Experiential Learning experience as a source of learning and development', New Jersey: Prentice Hall

Terminology

- XR-Extended Reality
  - VR-Virtual Reality
  - AR-Augmented Reality
  - MR-Mixed Reality
  - 360 Video

Range of Options

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Computer-Based (Non-VR, Non-AR)

Real World Irrelevant

Monitor, Speakers
Keyboard, Mouse
Input devices

Hand controls view

Player moves only virtually

Player

Brain Converts 2D to 3D visuals

Virtual Reality (VR)

Real World Replaced

VR Headset

Head controls view

Player can move physically or virtually

Player

No 2D to 3D Conversion of Visuals

Augmented Reality (AR)

Real World Part of Simulation

AR Headset
or
Spatial AR

Head controls view

Player physically moves

Player

No 2D to 3D Conversion of Visuals

Clinical Simulation in Nursing (2019) ■, 1-7

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Clinical Simulation in Nursing

www.elsevier.com/locate/ecsn

Short Communication

A Call to Unify Definitions of Virtual Reality

Suzan (Suzie) Kardong-Edgren, PhD, RN, ANEF, CHSE, FSSH, FAAN[a,*], Sharon L. Farra, PhD, RN, CNE, CHSE, NHDP-BC[b], Guillaume Alinier, PhD, MPhys, PGCert, SFHEA[c,d,e,f], H. Michael Young, MDiv, CHSE[g]

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KEYWORDS
virtual reality;
augmented reality;
immersive technologies;

Abstract: Virtual reality (VR) will be widely adopted by nursing within the next five years as a simulation method. The confusion generated by the various emerging definitions of VR led to the authors to review various definitions and to make a recommendation for the use of the concepts immersion and presence as a way to define VR.

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cyberxr.org

Computer based Virtual Clinical Experiences

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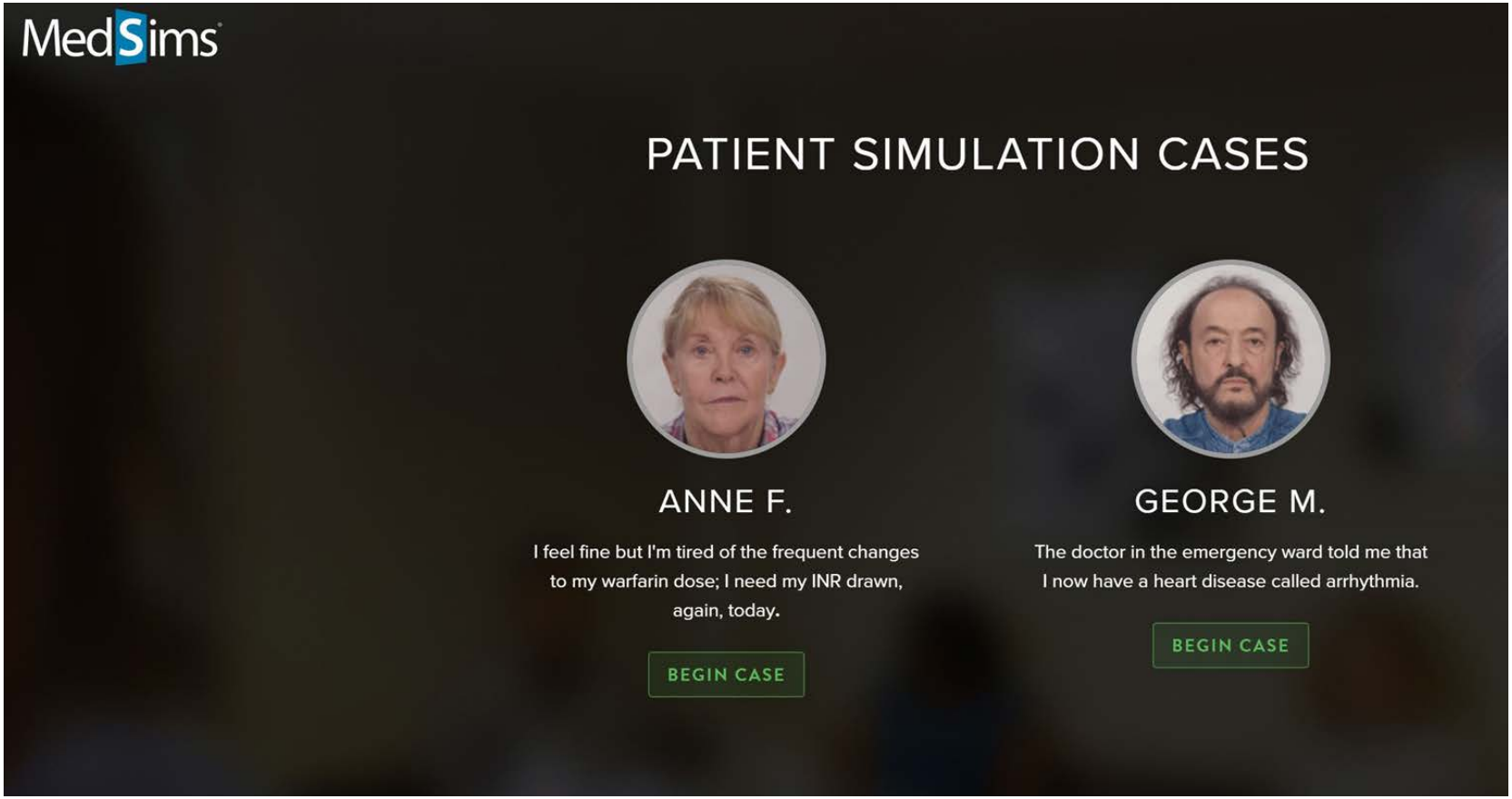
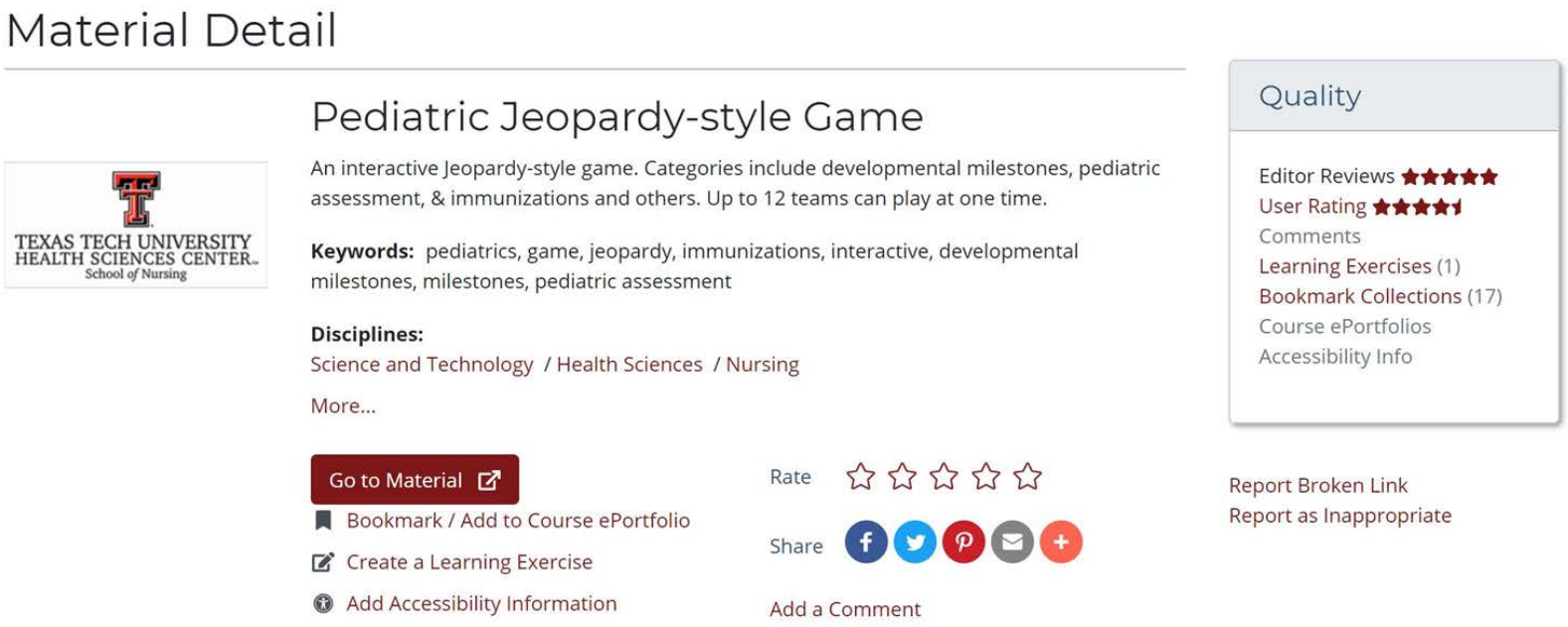
On-line Case Studies



https://www.medsims.com/

Educator Resources



http://www.merlot.org/merlot/index.htm

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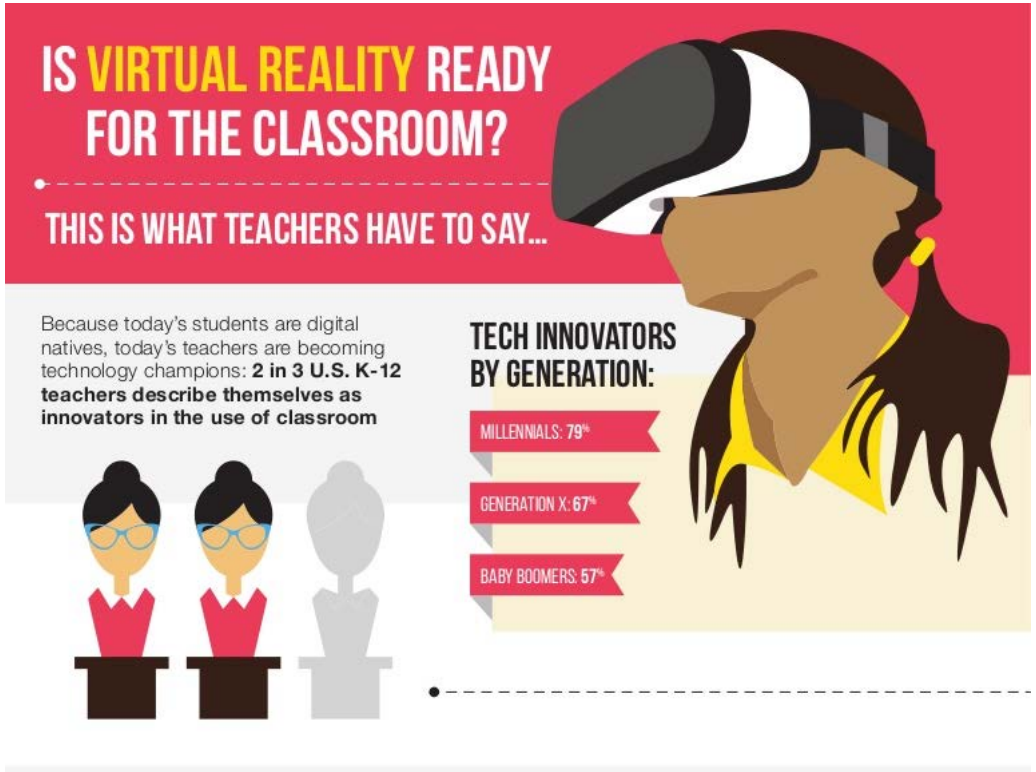
Immersive Virtual Experiences


DIGITAL
NATIVES


IS VIRTUAL REALITY READY FOR THE CLASSROOM?
THIS IS WHAT TEACHERS HAVE TO SAY...
Because today's students are digital natives, today's teachers are becoming technology champions: 2 in 3 U.S. K-12 teachers describe themselves as innovators in the use of classroom
TECH INNOVATORS BY GENERATION:
MILLENNIALS: 79%
GENERATION X: 67%
BABY BOOMERS: 57%

What is currently available?

- http://oxfordmedicalsimulation.com/
- https://acadicus.com/
- http://oramavr.com/
- https://www.simxar.com/

- These are just a few that are out there!

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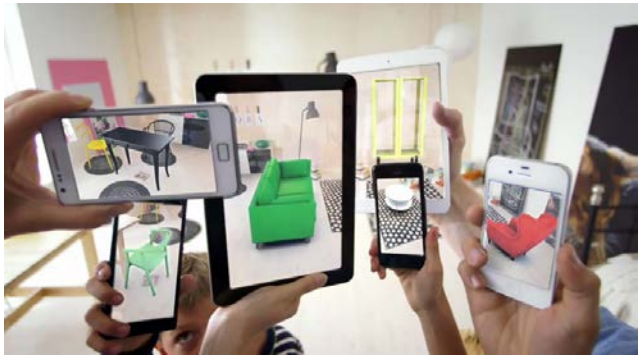
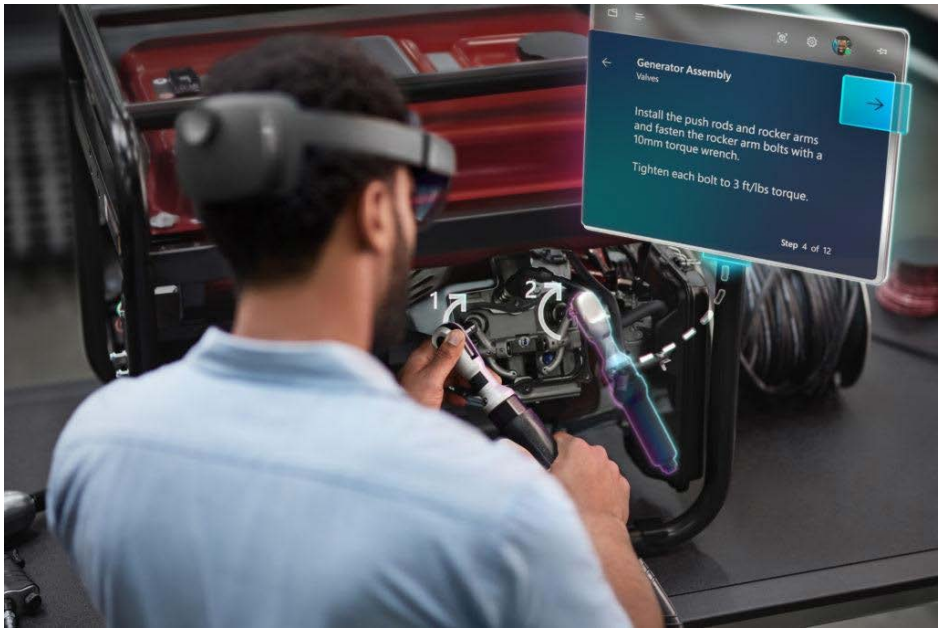
Augmented Reality





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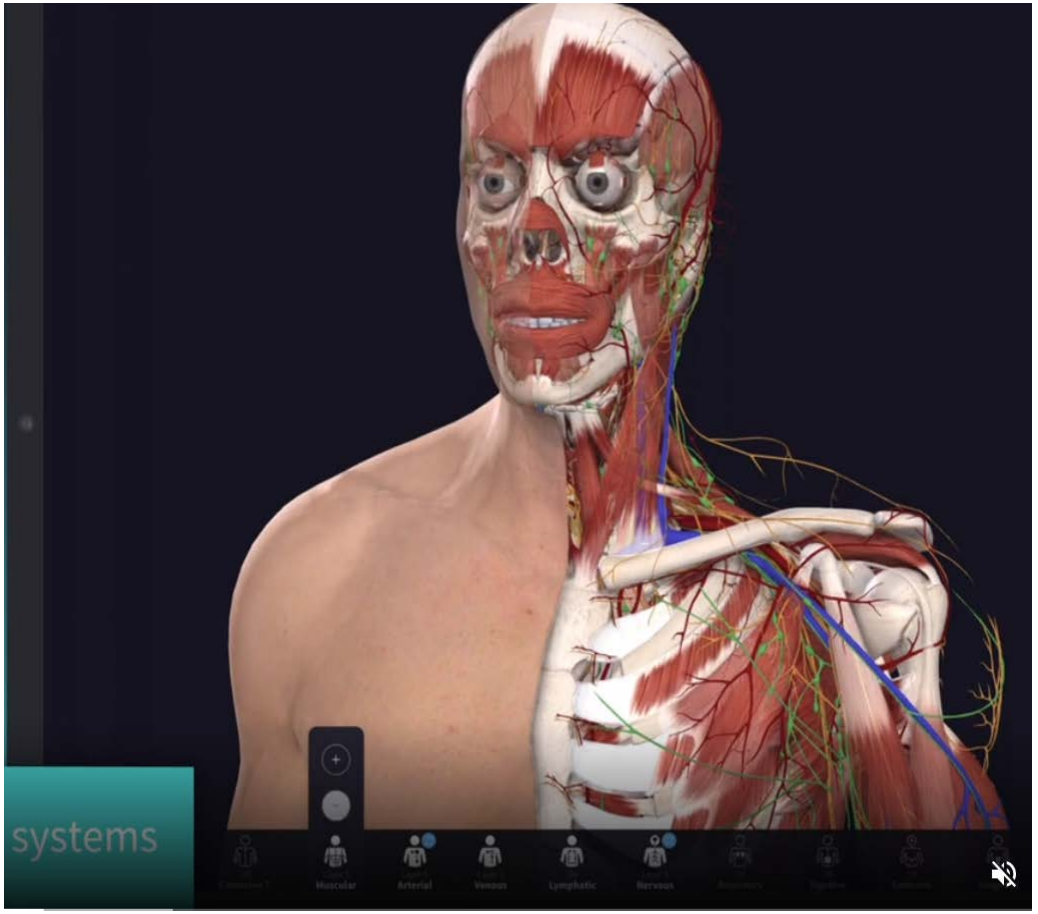
What are the Options

https://3d4medical.com/



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360 Videos-Opioid Training

https://www.youtube.com/watch?v=_gl6G2ALlrM

Handoff

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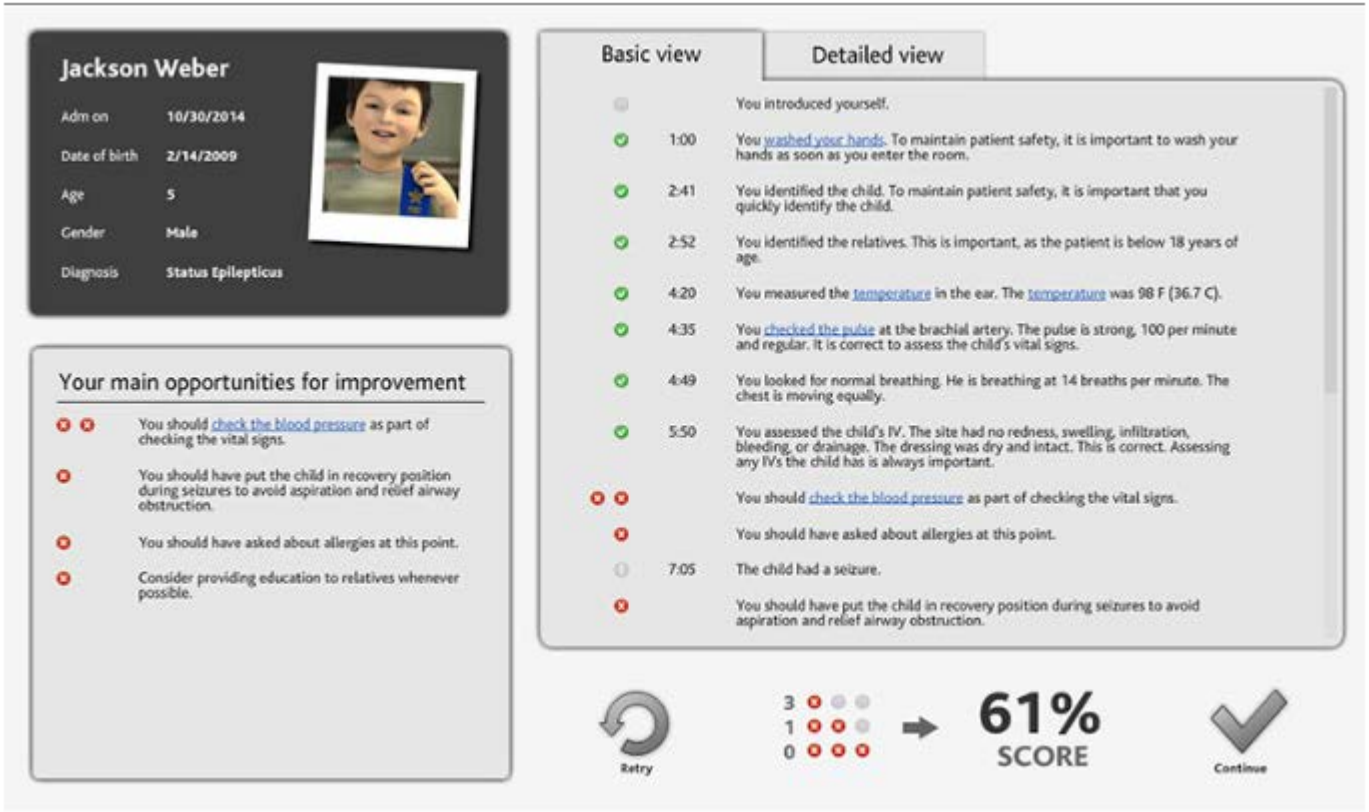
Benefits of Virtual Experiences

- Enhance learning motivation
- Help students understand
- Enhance positive attitude
- Apply clinical knowledge
- Support decision making activities

Challenges of Virtual Experiences

- Technology difficult to use
- May not be suitable for large group teaching
- Expense technology
- Design difficulty
- Faculty ability to use
- Debriefing methods

Analytics


Jackson Weber
Adm on 10/30/2014
Date of birth 2/14/2009
Age 5
Gender Male
Diagnosis Status Epilepticus
Your main opportunities for improvement
You should check the blood pressure as part of checking the vital signs.
You should have put the child in recovery position during seizures to avoid aspiration and relief airway obstruction.
You should have asked about allergies at this point.
Consider providing education to relatives whenever possible.
Basic view
Detailed view
You introduced yourself.
1:00 You washed your hands. To maintain patient safety, it is important to wash your hands as soon as you enter the room.
2:41 You identified the child. To maintain patient safety, it is important that you quickly identify the child.
2:52 You identified the relatives. This is important, as the patient is below 18 years of age.
4:20 You measured the temperature in the ear. The temperature was 98 F (36.7 C).
4:35 You checked the pulse at the brachial artery. The pulse is strong, 100 per minute and regular. It is correct to assess the child's vital signs.
4:49 You looked for normal breathing. He is breathing at 14 breaths per minute. The chest is moving equally.
5:50 You assessed the child's IV. The site had no redness, swelling, infiltration, bleeding, or drainage. The dressing was dry and intact. This is correct. Assessing any IVs the child has is always important.
You should check the blood pressure as part of checking the vital signs.
You should have asked about allergies at this point.
7:05 The child had a seizure.
You should have put the child in recovery position during seizures to avoid aspiration and relief airway obstruction.
Retry
3
1
0
61%
SCORE
Continue

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What does the Research Say

RESEARCH ARTICLE Open Access

A scoping review of augmented reality in nursing

Hanna Wüller*, Jonathan Behrens, Marcus Garthaus, Sara Marquard and Hartmut Remmers

Abstract

Background: Augmented reality (AR) has the potential to be utilized in various fields. Nursing fulfils the requirements of smart glass use cases, and technology may be one method of supporting nurses that face challenges such as demographic change. The development of AR to assist in nursing is now feasible. Attempts to develop applications have been made, but there has not been an overview regarding the existing research.

Objective: The aim of this scoping review is to provide an overview of the current research regarding AR in nursing to identify possible research gaps. This led to the following research question: "To date, what research has been performed regarding the use of AR in nursing?". A focus has been placed on the topics involving cases, evaluations, and devices used.

Review

Virtual Reality for Health Professions Education: Systematic Review and Meta-Analysis by the Digital Health Education Collaboration

Abstract

Background: Virtual reality (VR) is a technology that allows the user to explore and manipulate computer-generated real or artificial three-dimensional multimedia sensory environments in real time to gain practical knowledge that can be used in clinical practice.

Objective: The aim of this systematic review was to evaluate the effectiveness of VR for educating health professionals and improving their knowledge, cognitive skills, attitudes, and satisfaction.

Methods: We performed a systematic review of the effectiveness of VR in pre- and postregistration health professions education following the gold standard Cochrane methodology. We searched 7 databases from the year 1990 to August 2017. No language restrictions were applied. We included randomized controlled trials and cluster-randomized trials. We independently selected studies, extracted data, and assessed risk of bias, and then, we compared the information in pairs. We contacted authors of the studies for additional information if necessary. All pooled analyses were based on random-effects models. We used the Grading of Recommendations, Assessment, Development and Evaluations (GRADE) approach to rate the quality of the body of evidence.

Results: A total of 31 studies (2407 participants) were included. Meta-analysis of 8 studies found that VR slightly improves postintervention knowledge scores when compared with traditional learning (standardized mean difference [SMD]=0.44; 95% CI 0.18-0.69; I^2=49%; 603 participants; moderate certainty evidence) or other types of digital education such as online or offline digital education (SMD=0.43; 95% CI 0.07-0.79; I^2=78%; 608 participants [8 studies]; low certainty evidence). Another

ARE WE MISSING OUT ON BENEFICIAL LEARNING APPLICATIONS? MOBILE APPS USED BY CONSUMERS THAT SHOULD BE USED BY NURSING EDUCATION

Posted on March 23, 2020 | by NLNTEQ | Leave a comment

By: Donna Guerra “There’s an app for that!” More than ever before, mobile applications are powerful tools mainstreamed into the daily life of consumers. The most recent statistics indicate that 2.9 million mobile applications are available for android in the Google Play Store (Clement, 2020), with 1.8 million applications available for iOS in the Apple App Store (Costello, 2020). From

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XR Podcast

Oculus Quest

https://uploadvr.com/how-to-cast-quest-to-tv/#:~:text=On%20PC%20VR%20and%20PlayStation,to%20any%20PC%20or%20console.

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