INNOVATION IN HEALTHCARE EDUCATION ~A PARADIGM SHIFT~
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OBJECTIVES

- Discriminate between Virtual Reality and Augmented Reality.
- Describe the benefits of VR and AR for simulation, patient experience, practice, and education.
- Describe how technology can be used to engage learners in authentic learning experiences.
- Analyze practical applications of innovation in real life settings.
- Assess the benefits of integrating technology in conjunction with current systems.
“The first step is to establish that something is possible; then probability will occur.”

How were you taught?

Bueller...
Engage learners with authentic learning experiences, to facilitate change in knowledge, skills, practice, and attitudes and reach our performance outcomes.

**SO, WHAT IS AUGMENTED REALITY?**

**AND**

**WHAT IS VIRTUAL REALITY?**

**AUGMENTED REALITY**

Is a live direct or indirect view of a physical, real-world environment whose elements are “augmented” by computer-generated sensory input such as sound, video, graphics or GPS data.


**MIXED REALITY**

The physical world environment that allows computer generated objects to interact with physical objects. (example a computer generated character that can hide behind a table in the physical environment.)

TIME CAPSULE

1957 - Sensorama
Motion Hkgs

2017 - HoloLens
Alex Kipman (Microsoft)

Meta
Google Glass
Vuzix
Optinvent Ora-2
Atheer Air
HoloLens

Surgery
Surgery

- There is a race for new technologies in Virtual Reality and Robotics in Surgery, especially clinically validated, powerful medical simulation, and neurosurgery leads with augmented reality and image guided surgery.
- Surgical Training is expensive and much of the training has to be done outside the operating theater.
- The main determining factor is the reliability and validity of the training system.

Surgical Training Benefits of Augmented Reality

- Reduced cost for training
- Reduced Risk
- Time
- Evaluation and Analysis
- Surgical Planning
- Patient Experience
According to an article in the National Center for biotechnology Information, evidence suggest that in-house hospital department based simulation have lead to organizational learning. The assumption is that the level of fidelity between augmented and virtual reality and clinical setting depends on the closeness in the reality of the setting in sensory output, to the actual performance.


**VIRTUAL REALITY**

an artificial environment which is experienced through sensory stimuli (such as sights and sounds) provided by a computer and in which one's actions partially determine what happens in the environment; also the technology used to create or access a virtual reality
Conclusion:

- Augmented and Virtual Reality are here.
- There are documented clinical benefits using AR and VR.
- Evidence supports simulation for improved clinical outcomes.

**Caution**

- We must not embrace technology just for the sake of innovation itself.
- We spend billions of dollars each year on technology that clearly does not improve outcomes, devices and innovation must meet real needs with tangible outcomes.
- Technology and innovation are only as useful as the people that are willing to use it, and the outcomes that are produced.
Practice

Oculus Rift: Anatomy
Medtronic VR
3D4Med
Sharp Aquos Board
Touch Surgery

REFERENCES


