Virtual Reality (VR) – Does it have a role in medical education?

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Outline

• Gather thoughts on place of VR in medical education
• What is VR?
• Share project in primary care
• Have a go
• Feedback
Experience

• Discuss with your neighbours:
  – Any previous experience with consumer VR?
  – What sort of device did you use?
  – Can you see a place for this technology in education in your specialty?
  – Are there any barriers to its use?
What is VR?

• An immersive computing platform
• Provides a full 360 degree 3D scene, with head tracking
• Most VR equipment provides some degree of hand tracking, through either cameras or gyroscopic controllers
• Advanced equipment provides six degrees of freedom tracking, so you can walk around in the virtual environment
### Why did we use VR?

<table>
<thead>
<tr>
<th>Generation</th>
<th>Greatest/Silent</th>
<th>Baby Boomers</th>
<th>Gen X</th>
<th>Millennials</th>
<th>Gen Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age in 2016</td>
<td>71-93Y</td>
<td>52-70Y</td>
<td>36-51Y</td>
<td>19-35Y</td>
<td>0-18Y</td>
</tr>
<tr>
<td>Population (Global)</td>
<td>0.3bn</td>
<td>1.1bn</td>
<td>1.5bn</td>
<td>2bn</td>
<td>2.4bn</td>
</tr>
<tr>
<td>% of Global Population</td>
<td>9%</td>
<td>15%</td>
<td>20%</td>
<td>27%</td>
<td>32%</td>
</tr>
<tr>
<td>Life-Defining Events</td>
<td>World War I and II</td>
<td>Cold War</td>
<td>End of Cold War</td>
<td>9/11 Terrorist Attacks</td>
<td>Post-Great Recession</td>
</tr>
<tr>
<td></td>
<td>Great Depression</td>
<td>Moon Landing</td>
<td>Live Aid</td>
<td>Iraq War</td>
<td>Arab Spring</td>
</tr>
<tr>
<td></td>
<td>Electric Appliances</td>
<td>Transistor Invented</td>
<td>First Personal Computer</td>
<td>Advent of Social Media</td>
<td>Rise of AI</td>
</tr>
<tr>
<td>Communication Style</td>
<td>Letter</td>
<td>Telephone</td>
<td>Email/SMS</td>
<td>Instant Message</td>
<td>Emoji</td>
</tr>
<tr>
<td>Key Technology</td>
<td>Car</td>
<td>TV</td>
<td>PC</td>
<td>Smartphone</td>
<td>AR/VR</td>
</tr>
<tr>
<td>Hobby</td>
<td>Reading</td>
<td>Watching TV</td>
<td>Surfing the Internet</td>
<td>Video Games</td>
<td>Music Streaming</td>
</tr>
<tr>
<td>Digital Proficiency</td>
<td>Pre-Digital</td>
<td>Digital Immigrants</td>
<td>Early Digital Adopters</td>
<td>Digital Natives</td>
<td>Digital Innovators</td>
</tr>
<tr>
<td>Iconic Figure</td>
<td>Franklin D. Roosevelt</td>
<td>John F. Kennedy</td>
<td>Kurt Cobain</td>
<td>Mark Zuckerberg</td>
<td>Malala</td>
</tr>
<tr>
<td>Music</td>
<td>Jazz</td>
<td>Elvis</td>
<td>Nirvana</td>
<td>Britney Spears</td>
<td>Justin Bieber</td>
</tr>
<tr>
<td></td>
<td>Swing</td>
<td>Beatles</td>
<td>Madonna</td>
<td>Justin Timberlake</td>
<td>Taylor Swift</td>
</tr>
<tr>
<td>How They Get Around</td>
<td>'55 Ford Thunderbird</td>
<td>SUV</td>
<td>Bicycle/Car</td>
<td>Uber/Lyft</td>
<td>Mom's Prius</td>
</tr>
<tr>
<td>Current Living Situation</td>
<td>Retirement Home</td>
<td>Semi Detached House</td>
<td>Own Small Apartment</td>
<td>Sharing an Apartment</td>
<td>Parents' House</td>
</tr>
<tr>
<td>Social network other than Facebook</td>
<td>The Rotary Club</td>
<td>Match.com</td>
<td>Linkedin</td>
<td>Tinder</td>
<td>Snapchat</td>
</tr>
<tr>
<td>Deepest Fear</td>
<td>The world in 2016</td>
<td>No longer center of attention</td>
<td>What about my generation</td>
<td>Paying off student debt</td>
<td>Low batteries</td>
</tr>
<tr>
<td>Key Life Question</td>
<td>How did the country go so wrong?</td>
<td>Where's the Viagra?</td>
<td>What's the point?</td>
<td>What's a career?</td>
<td>What's a headline?</td>
</tr>
<tr>
<td>Defining Condition</td>
<td>Permanently Aggrooved</td>
<td>Erectile Dysfunction</td>
<td>ADHD</td>
<td>Gluten-Intolerant</td>
<td>Peanut Allergy</td>
</tr>
<tr>
<td>What They Spend On</td>
<td>Oklahoma Community Dinner Theater</td>
<td>VIP tickets to The Rolling Stones</td>
<td>Burning Man</td>
<td>Coachella</td>
<td>Minecraft</td>
</tr>
</tbody>
</table>

Source: Kinect, McCrindle, Pew Research, Bruce Feirstein – Vanity Fair, various sources, BofA Merrill Lynch Global Research
What did we do? (1)

• GP trainees attended a group session on communication skills which focused on the difficulties encountered when a source of information is distant to them, be that a patient or colleague.

• Trainees were encouraged to consider the risks and difficulties that might be encountered, and to reflect on how they mitigate these in their day to day practice.

• Trainees completed a pre/post activity questionnaire to capture thoughts and quantify how their confidence dealing with these scenarios had changed.
What did we do? (2)

• VR game: ‘Keep Talking and Nobody Explodes’
• Teams of four work to defuse a virtual ‘bomb’:
  – One trainee has VR head mounted display
  – One observed the interactions, the others were ‘experts’
THE DEFUSER
YOU'RE ALONE IN
A ROOM WITH A BOMB

THE EXPERTS
THEY'VE GOT THE MANUAL
BUT THEY CAN'T SEE THE BOMB
What did we learn? (1)

- 100% trainees enjoyed the session (n=30)
- 100% felt that the VR headset added significantly to the value of the session
- Trainees self reported increases in confidence in avoiding jargon (33%)
- Further reported improvement in working under pressure and in teams (50%)
- Interestingly, there was an increase of 30% in perceived difficulty of remote consultations
What did we learn? (2)

• Trainee engagement was excellent
• Feedback demonstrated we had struck a nerve, and that the trainees found this to be a powerful learning tool

“as someone who hates role play, but loves games (eg articulate) this was very useful, a lot easier and less awkward and demonstrated the same learning points. thank you!”

“made for better listening, forced better explaining”

“while observing i noticed the hand gestures the person with the manual was using to describe the symbols, even though they couldn’t be seen.”

“It showed how someone with a problem can’t always tell what information is relevant”
Applicability to Medical Education

• VR headset enabled trainees to:
  – Develop clear communication skills avoiding jargon
  – Practice data gathering in situation where your immediate ability access information is limited, such as with remote consultations
  – Experience working under pressure, managing uncertainty (using resources available and talking to others) and developing team working skills
What did VR add?

• The sense of ‘presence’ in VR empowers experiences within it
• It provided a distinct difference in experience for the defuser and expert, providing opportunities for reflective learning
• Non-verbal communication is powerful, and the defuser is not isolated from this if able to see the experts/room
Your Turn!
What did you think?

Reflect on the experience in your groups

Time to feedback
What will we do next?

• We plan to:
  – continue to use this software package
  – explore using 360 video recording to allow trainees to watch their own consultations as an observer
  – produce a series 360 degree communication skills videos, which will be made publically available
Take home messages

• We must embrace the future of digital training and health care; the best care can only be provided to all if we can fully exploit the potential of digital and other technologies

• Digital natives engage well with innovative approaches to communication skills training, and reacted with enthusiasm when offered opportunities to experience training in VR

• VR is an evolving technology that has a place in medical education to teach communication skills

• Immersive technologies can present unexpected risks due to their realism
QUESTIONS

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With thanks to the Portsmouth and Isle of Wight GP trainees & Wessex Medical Educators for their input into this project
Mind the Gap Report

'Nurtured'
1980 - 1994 - I Am a Millennial

- I expect support to achieve
- Optimistic
- Competitive
- Team Player
- Enthusiastic
- I need frequent recognition and feedback
- I am ambitious with high career expectations
- I am career motivated but not company loyal. I prefer flexibility - work - life balance is key
- I want to work with you and not for you.
- I want a sense of community in the workplace
- I need mentorship, coaching and reassurance.
- My development relies on support and feedback
- I am productive and efficient but you need to give me the tools
- I will rely on my parents for financial support
- My friends are important to me and I want to be liked
- I need a sense of purpose and contribute to the greater good
- I earn to spend, my family are my friends and I need a sense of belonging
- I am 35% of NHS Workforce

Employment
NHS

- Education
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Longevity
NHS

Education

I keep up to date with technology. I leave other generations behind. I go viral!

'No way like the new way'

Don't 'Force Fit me into a traditional work environment. I will not engage!

Connected & Communicating

I expect to keep in touch. Connectivity is 'as important as breathing'

Digital Native

Value Diversity

Everything should be inter-connected I get frustrated at manual methods of working. I want one device to access everything

Informed

I expect to be informed and you must listen and acknowledge my responses

Work Home & Money

I will spend more time changing jobs and job hunting

I will be less well off than my parents. I will struggle with independant household management

To Be Continued...

Personal Freedom is Non-negotiable

Transparency
Self-Reliance & Flexibility

MIND THE GAP

Produced by Dr E (Doctor PhD, BM, RGN, Policy), A Warner RGN, BSc (Hons), MA (MPhil), A Daniels (BSc, BSc (Hons), BSc (Hons))

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• Mind the Gap: Exploring the needs of early career nurses and midwives in the workplace; NHS England [accessed 4th July 2018]

• A health and Care Digital Capabilities Framework; Health Education England [accessed 28th August 2018]