THE C**VR**RICULUM PROJECT WORKSHOP

November 14, 2019

Agenda

- 10:30   Introductions, AIF Goals, Workshop Objectives
- 10:50   CVRriculum Study, Consent Forms
- 11:00   What is Virtual Reality
- 11:15   Tech Sprint: How to film using 360 VR camera

- 12:00 LUNCH!

- 12:30   Applying Simulation in Teaching
- 1:00   Example course implementation
- 1:20   Curriculum Sprint: Embedding VR project in your courses
- 2:30   Questions & Debrief (homework deliverables)
- 2:45   Exit-surveys

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INTRODUCTIONS & GOALS

CVRriculum Program at York University

- Program is funded by AIF Category I

Purpose is to:
- Apply and evaluate CVriculum as a means of enhancing and fostering the student-learning experience
- Create a pedagogical environment that facilitates students' critical thinking and self-reflection and prepares graduates for complex workplace environments
- Enhance collaboration among departments within the university through a cross-disciplinary experiential education approach
- Provide faculty with the ability to use VR in their classroom

Objectives of this Workshop

1. Describe virtual reality (VR) as a method of experiential learning

2. Use the VR Camera to film in the classroom

3. Understand effective application of simulation and VR to enhance curriculum (meet learning needs and are pedagogically sound)

4. Embed virtual reality as a pedagogical medium into a course syllabus

STUDY & CONSENT

CVRriculum Project Study

- The study will consist of 2 arms
  - the control group of students who receive standard course training and education and
  - the experimental group consisting of five teams of 5 students each, recruited from 5 courses

- Professors will embed the technology into their winter course curriculum to offer experiential learning opportunity
  - group of 5 undergraduate students in each class, (totaling 25 student participants).

- Purposive sampling recruitment strategy (RAs will consent students)
- RAs will come to your classes; help introduce the study and provide support through-out the semester

Study evaluation

- Workshop exit survey & observations (5 professors)
- Pre/Post survey of all students in class (entered draw to win 1/10 $25 gift certificates)
  - Pre-survey
    - Empathy (Toronto Empathy Scale instrument)
    - Course content (you create)
  - Post-survey
    - Empathy (Toronto Empathy Scale instrument)
    - Course content (you create)
    - Experimental group: Usability (Systems Usability Scale instrument)
- Observations and notes taken by RAs throughout process
- Focus group with students (10 participants)
  - Honoraria: $25 gift certificates
- Focus group with professors (5 participants)
- CONSENT!

WHAT IS VR?

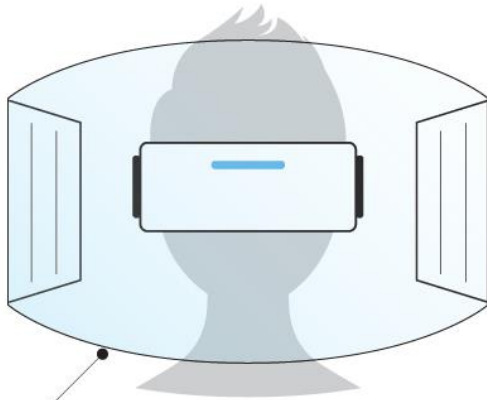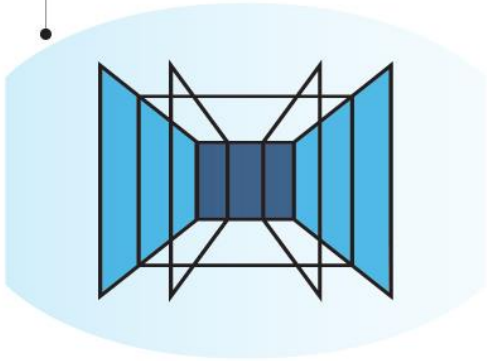# What is Virtual Reality (VR)?

Technologies that use specialized software & hardware to generate **realistic sensations** (visual, auditory, tactile, proprioceptive and/or vestibular) that **replicate the real world**.
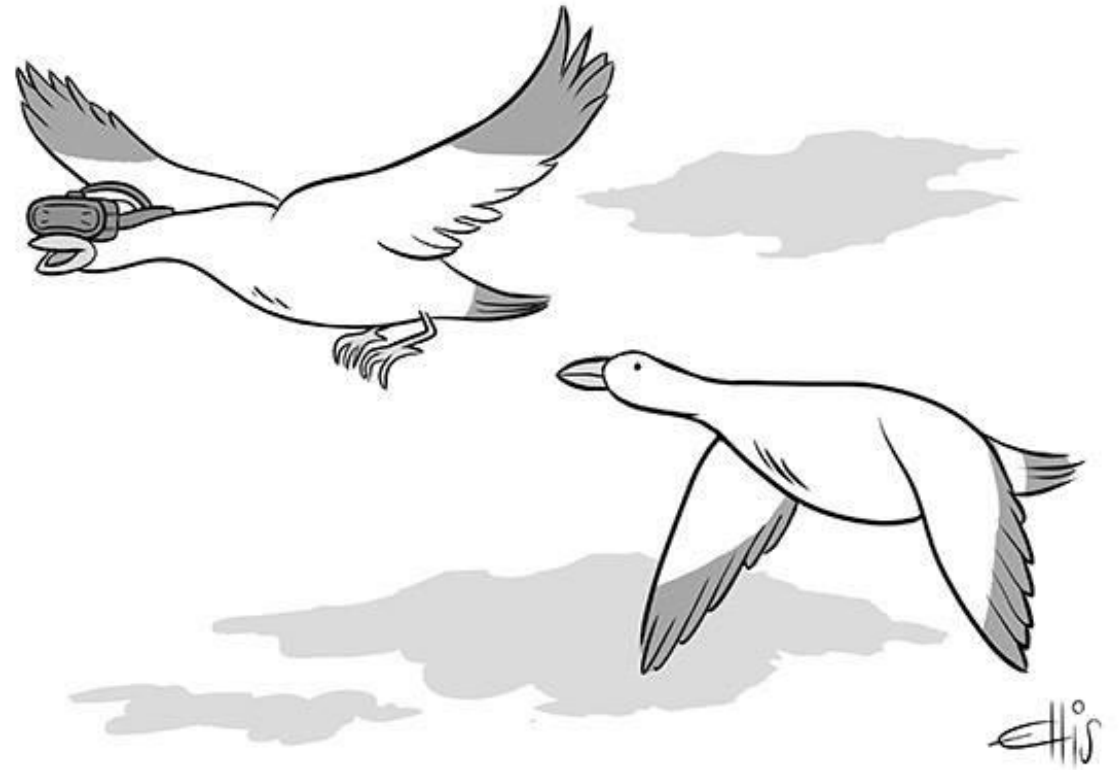
"It's like I'm actually walking."
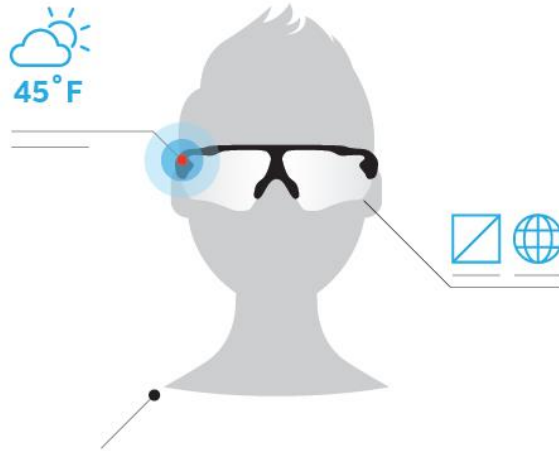
VIRTUAL REALITY (VR)

Completely digital environment

Fully enclosed, synthetic experience with no sense of the real world.
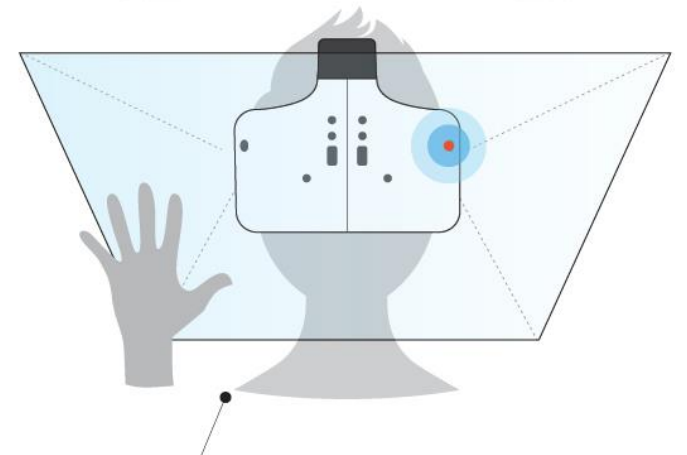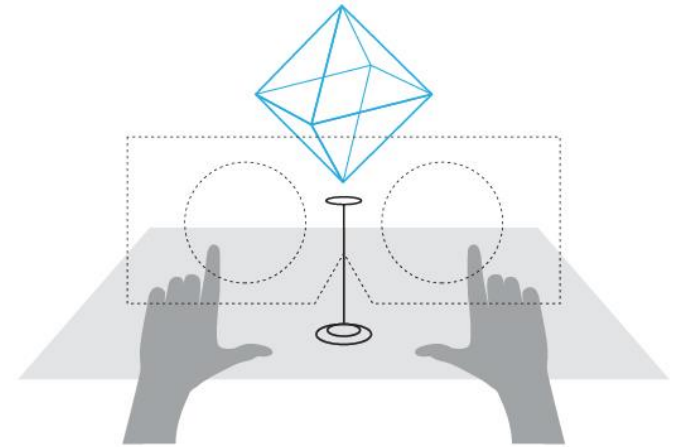
AUGMENTED REALITY (AR)

Real world with digital information overlay

45°F

Real world remains central to the experience, enhanced by virtual details.

MERGED REALITY (MR)

Real and the virtual are intertwined

Interaction with and manipulation of both the physical and virtual environment.

Main Players Head Mounted Display (HMD)

Smartphone/ Mobile

- Samsung Gear VR (Oculus)
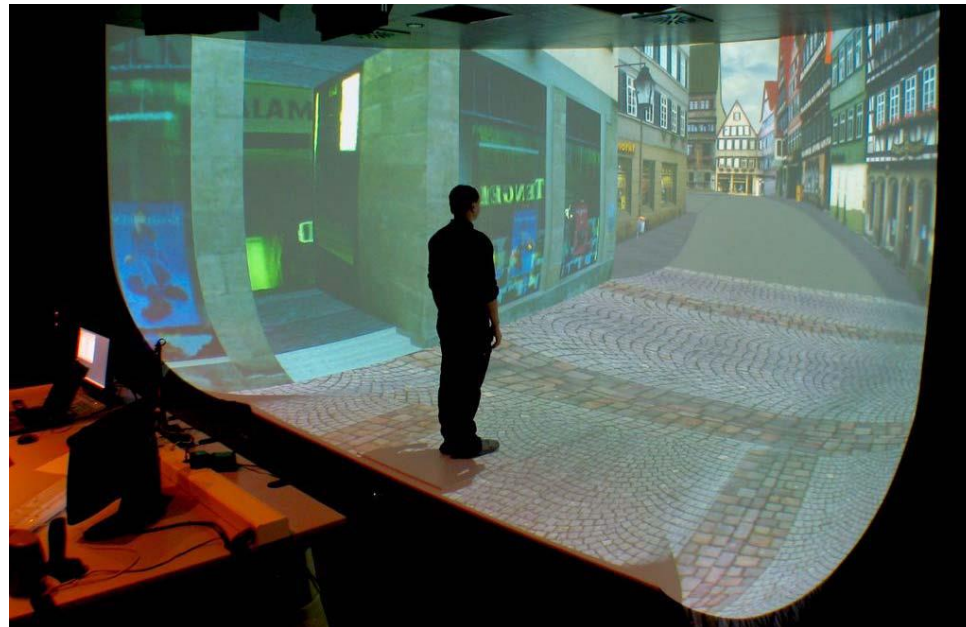- Google Cardboard
- Google Daydream
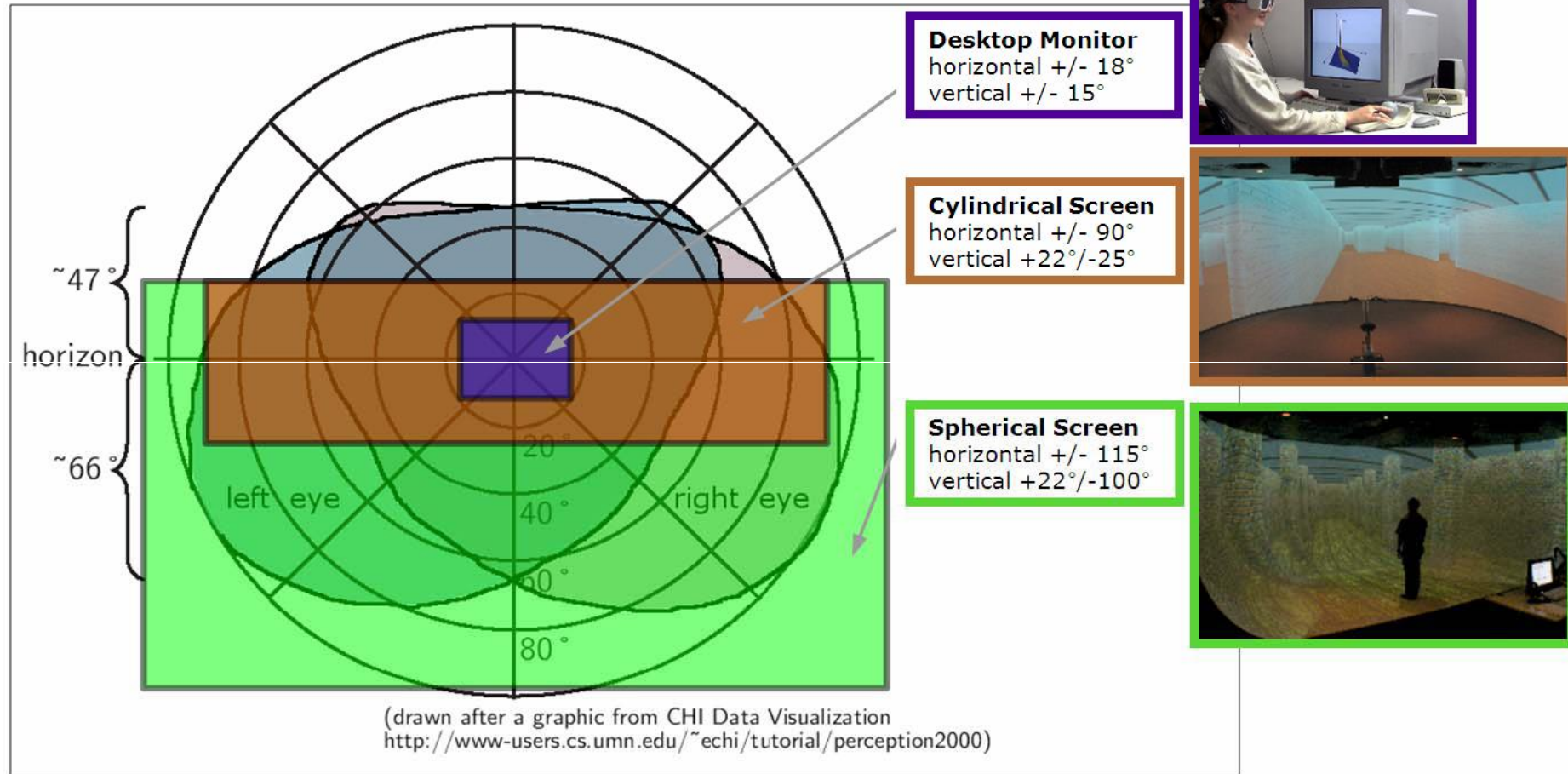- Oculus Go

PC (Graphics Processing Unit)

- Oculus Rift
- HTC Vive
- Microsoft Hololens (Augmented Reality)

Visual Displays

Field of View of Different Displays (sight)

Desktop Monitor
horizontal +/- 18°
vertical +/- 15°

Cylindrical Screen
horizontal +/- 90°
vertical +22°/-25°

Spherical Screen
horizontal +/- 115°
vertical +22°/-100°

~47°
~66°
horizon
left eye
right eye
20°
40°
60°
80°

(drawn after a graphic from CHI Data Visualization
http://www-users.cs.umn.edu/~echi/tutorial/perception2000)

Auditory Displays (sound)
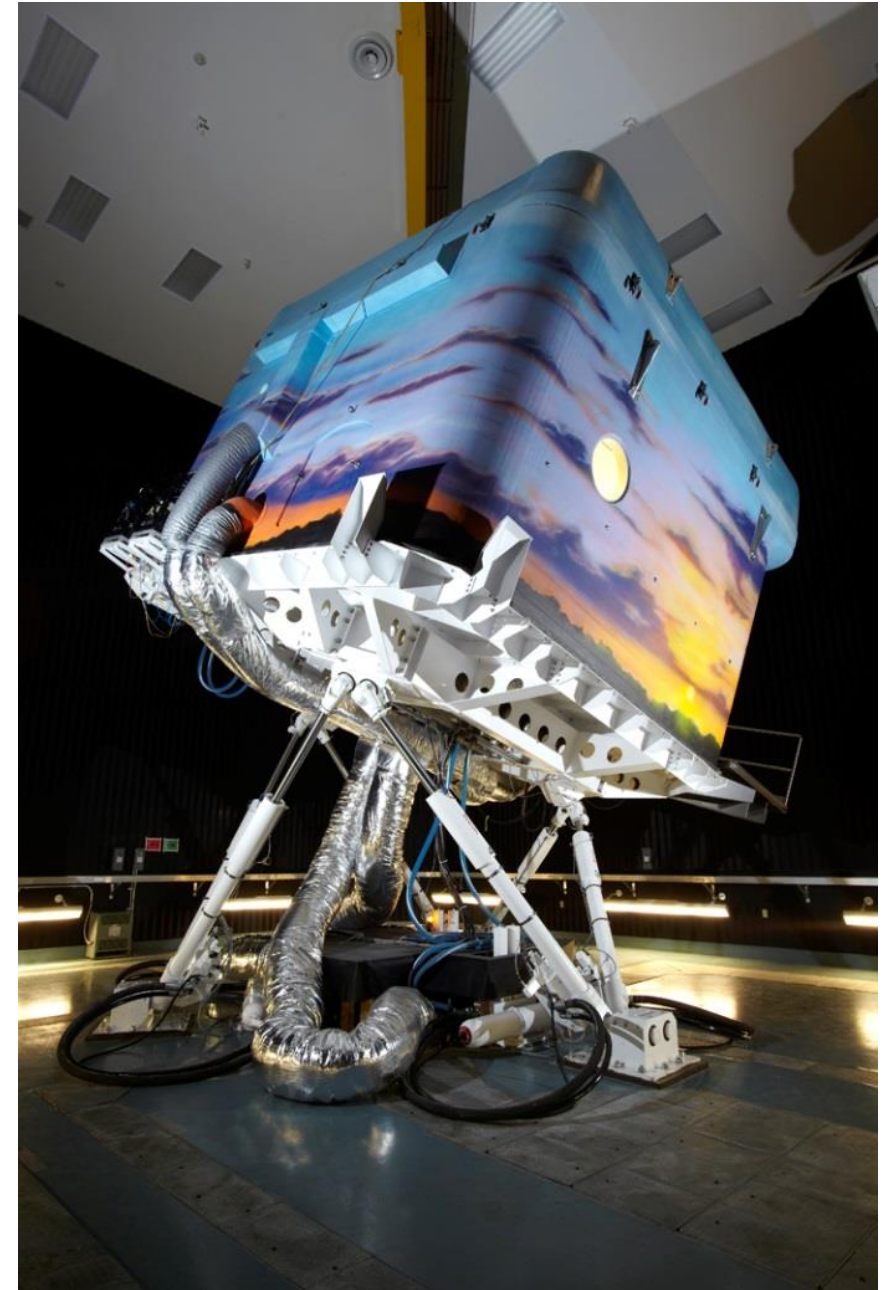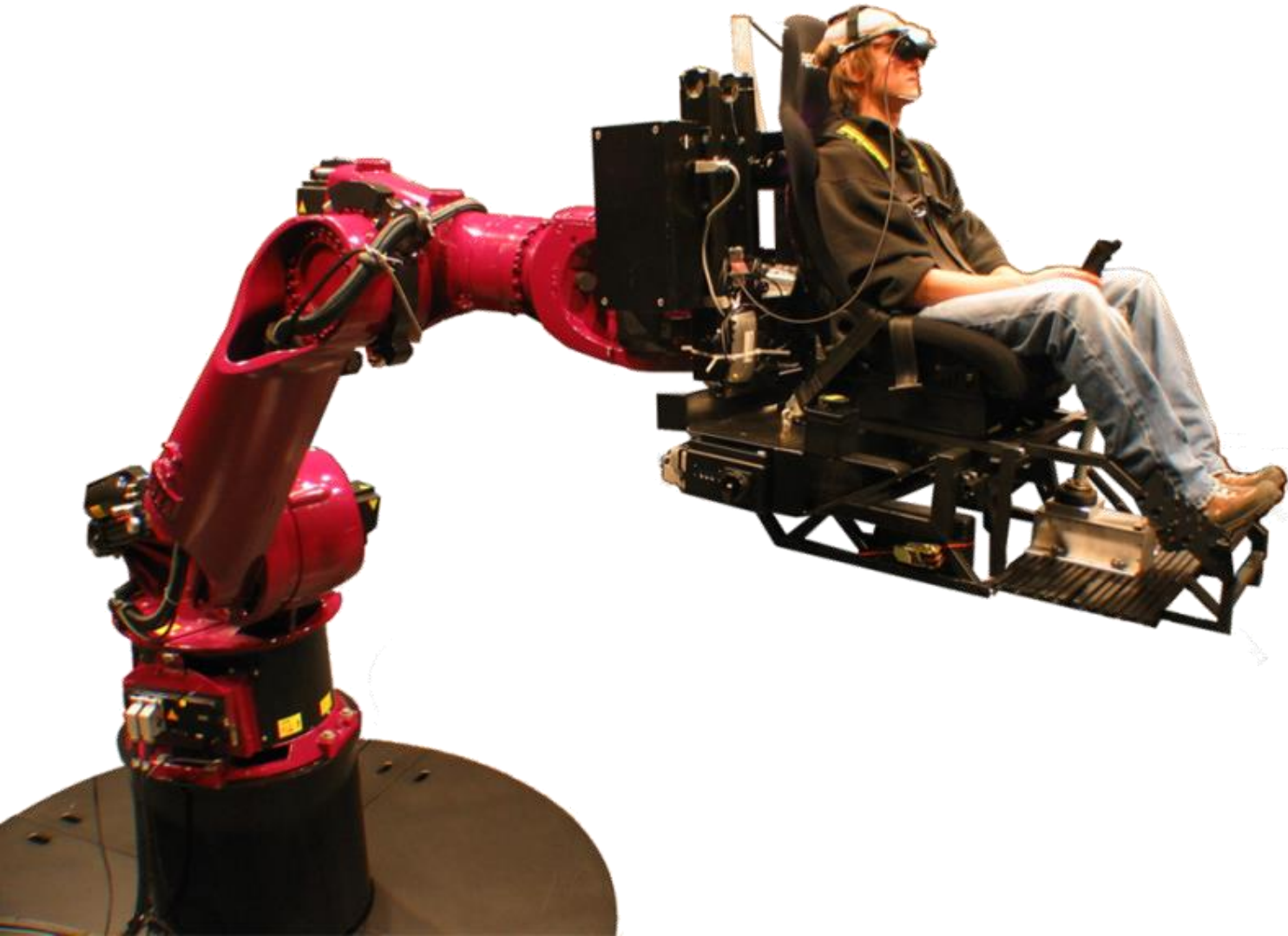
- Headphones
- Speakers
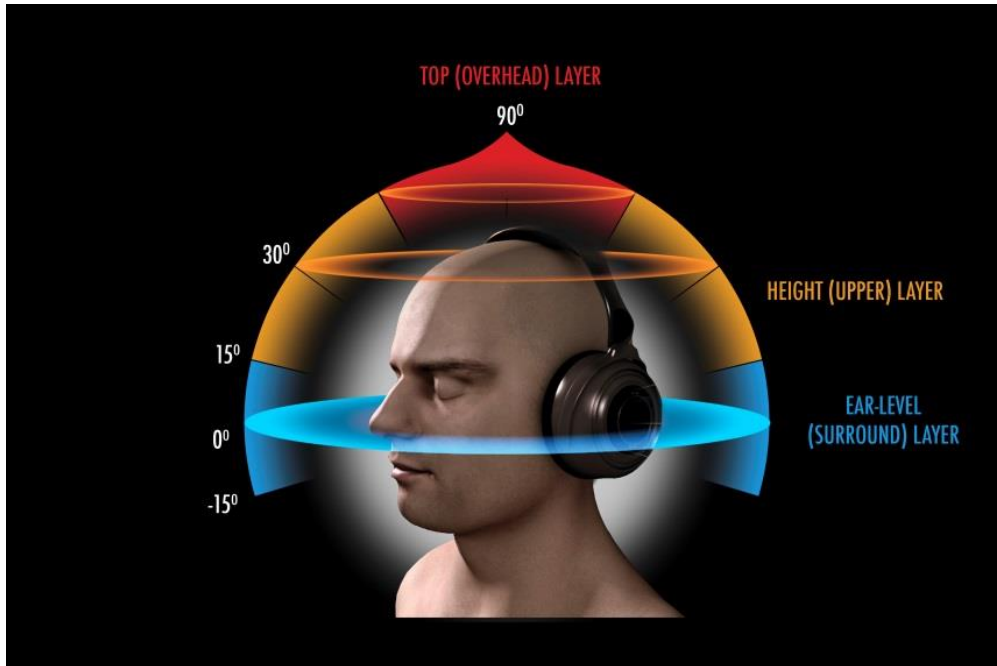
Haptic Interfaces (touch/ feel)

Treadmills & Tracking (motion/ vision)

Motion Platforms

VR Systems at TRI

StreetLab

DriverLab

Visual Content

Rendered Graphics

360 film

What makes VR unique?

Immersive (multiple senses stimulated),

Interactive (user autonomy, ability to manipulate environment),

Sense of presence…

Educational (Healthcare) Applications

- Teaching/Education (e.g. anatomy, emergency procedures)
- Training (e.g. surgical skills)
- Rehabilitation (e.g. mobility training, upper limb movement)
- Phobia treatment (e.g. systematic desensitization)
- Pain Management (e.g. in burn units)
- Wayfinding/Navigation
- Empathy building (patient-provider, lived experiences, refugee)
- Symptom management (anxiety, depression, isolation)

TECH SPRINT!

Learning the basics of 360 filming

Yi Camera Parts
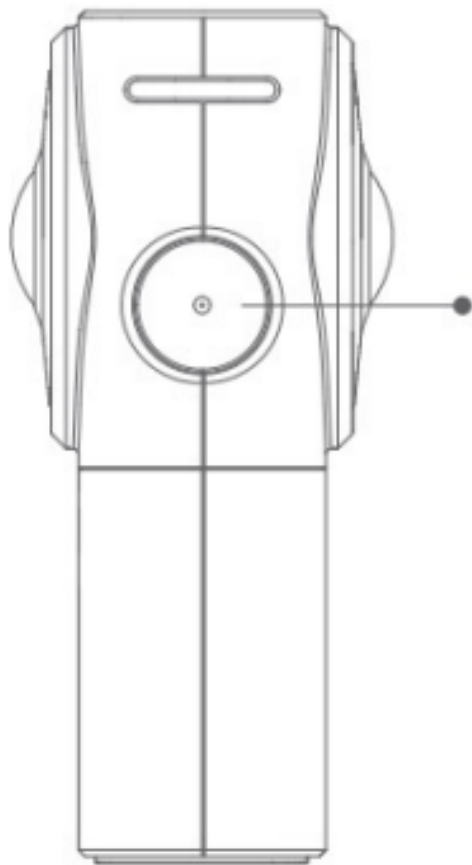
2.3.1 Powering ON and OFF:
To power on: Long press the power/shutter/OK. The screen will turn on, followed by a sound indication.

To power off: Long press the power/shutter/OK. The screen will turn off, followed by a sound indication.

2.3.2 Operate the camera:
Press Up/down button to select the menu, choose the capture mode and settings.

Press the power/shutter/OK to confirm it.

Yi Camera

- Camera options should be on 4K in-camera film mode
- Export as MP4 straight to computer using USB cord
- 3-files created per film capture
  - Take the largest file for the full film
  - Other two: compressed preview and meta data file (for additional edits)
- Drag and drop from file folder into HMD folder

LED Screen

Up Button

Down Button

Lens

Microphone

Status Light

YI

Selfie Stick/Tripod Mount
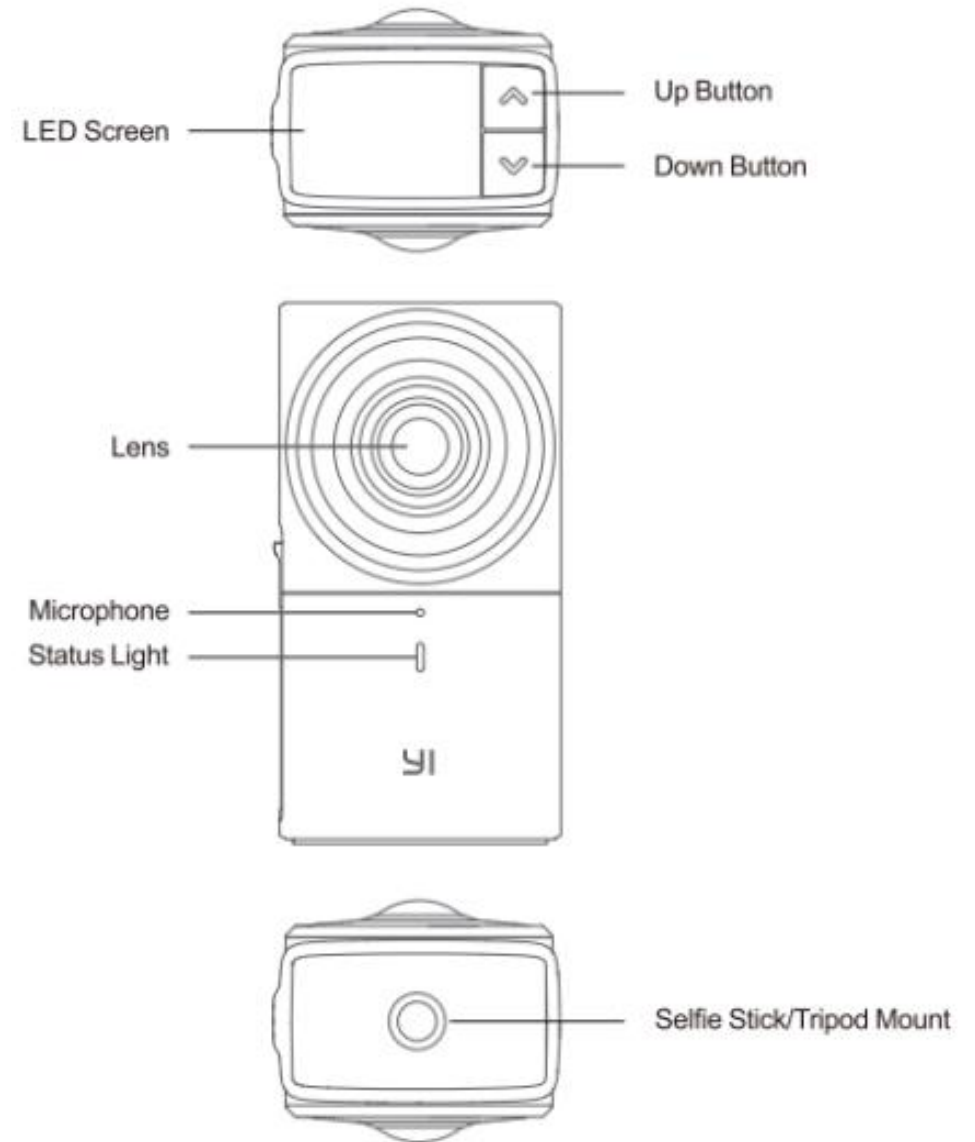
Filming considerations - 360

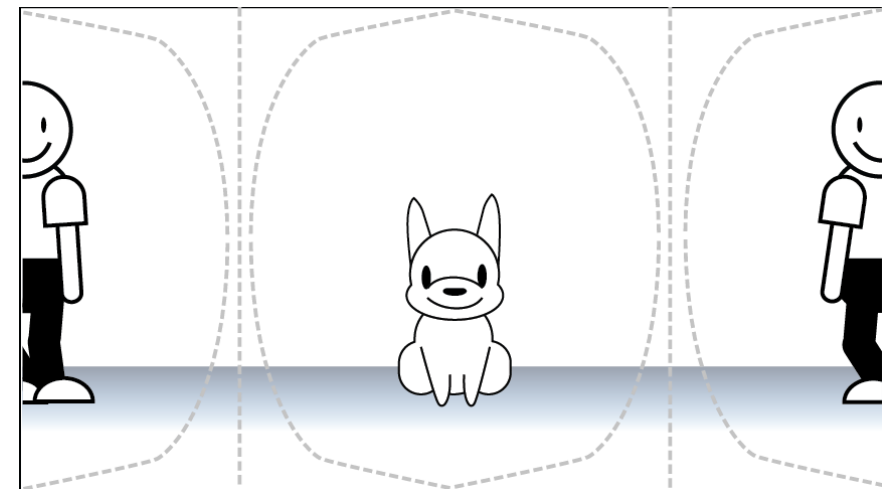- Lighting
- Sound
  - Built-in mic
- Position (height)
  - Tripod setup
- Stitching-line
- Ethics (everything/ one can be captured)

Mind the Gap
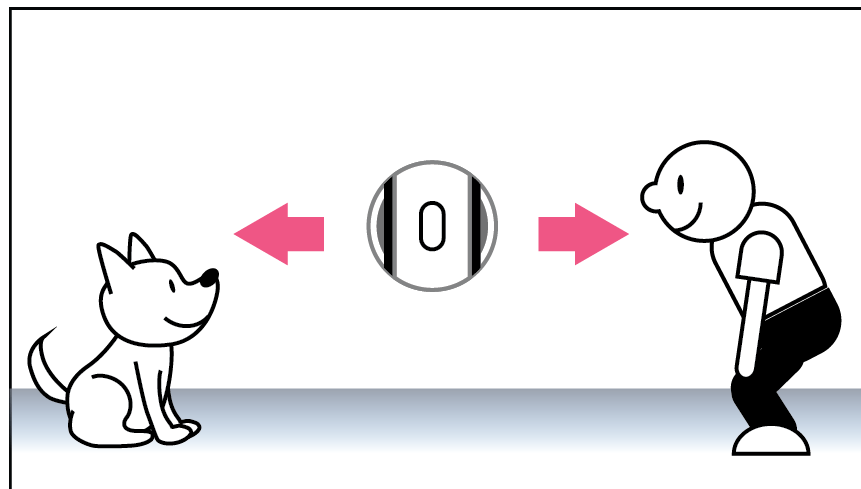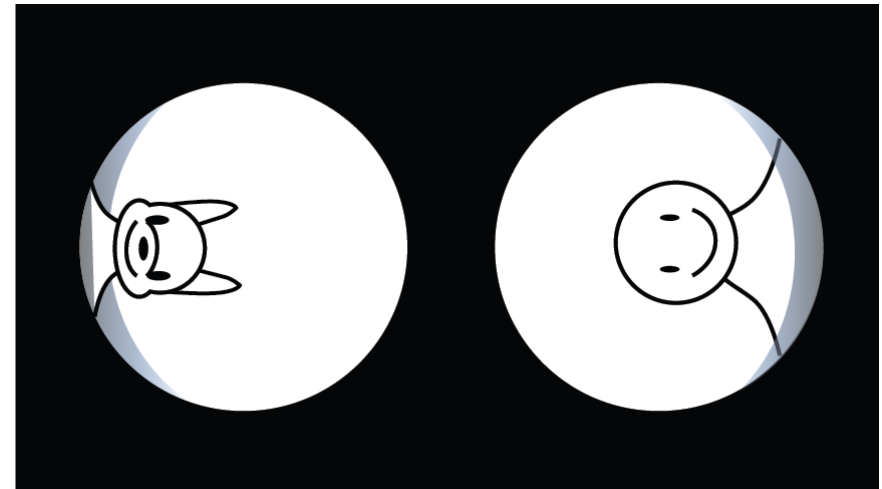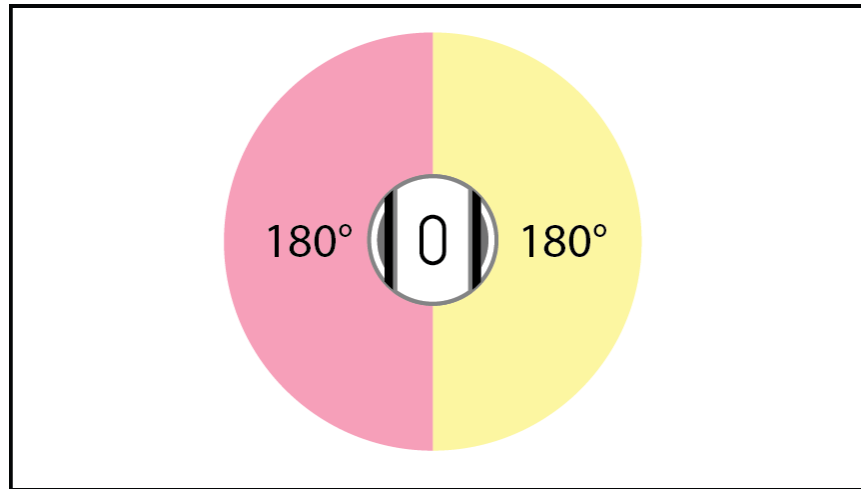
We want to avoid faces/ subjects in stitch-line

LUNCH TIME!

APPLYING SIMULATION IN TEACHING

Experiential Learning

"For the things we have to learn before we do them, we learn by doing them"

- Aristotle

- ***Process*** of making meaning from experience
- ***Identifies*** gaps in knowledge, skills and attitudes
- ***Promotes*** learning through ***reflection on doing (Schon, 1984)***
- ***Provides*** an opportunity to ***practice*** the way to new behaviours

VR Experiences
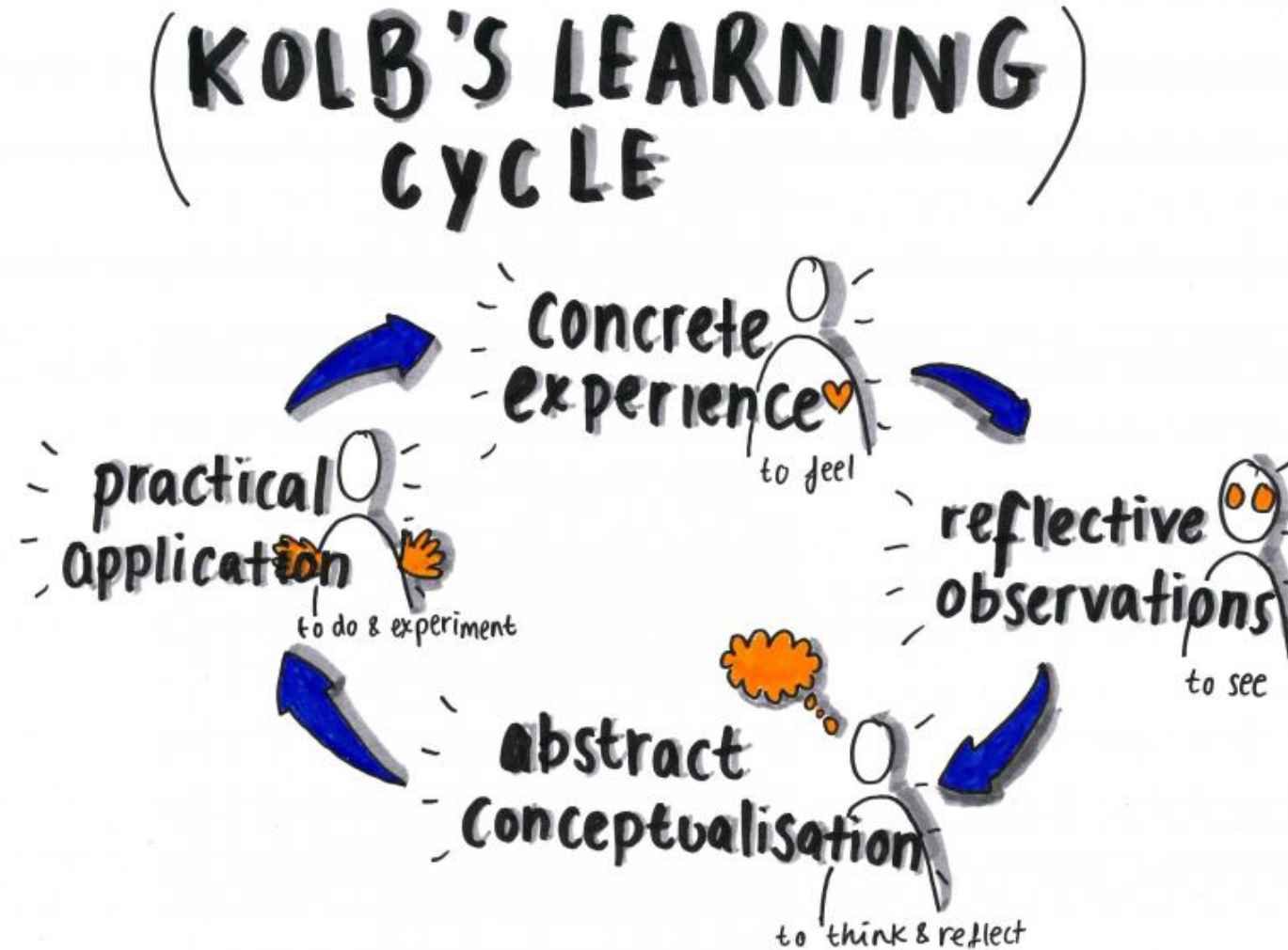
Offers the opportunity to go through the stages of the experiential learning cycle in a structured manner

Benefits of Simulation

- Validated educational tool
- Flexible and adaptable to individual learners
- Opportunity to learn, discover and practice in a safe environment
- Recursive (can practice as many times as is necessary)

Learner-centred education:
- Engages learners in the learning process
- Provides learners with the opportunity to reflect on how and what they are learning
- Encourages learners to ask questions
- Learners have some control over their learning process
- Is collaborative

Competency-based Learning

- Curriculum is based on expected professional competencies (knowledge, skills and abilities related to the performance of professional practice)
- VR pedagogy enables competency-based learning
- Turns knowledge/understanding into observable behaviours/actions
- Assists learners to be practice ready

Applications of VR as an Experiential Education Method

Skills:
- Practice and experiment with new skills
  - Develop empathy skills
  - Leadership development
  - Emotional intelligence
- Active learning develops cognitive, psychomotor and affective skills
- Identify gaps in understanding
- Apply and assess competencies

Any interactive context or environment can be simulated

Activities:
- Practicing Interviews
- De-escalating Ethical dilemmas
- Advocacy/ Activism
- Professional competence
- Patient-centred care settings interactions
- Collective learning

Psychological Safety

Physical Safety

Declare any potential for emotional reactions (define process if this should happen)

Resources are available to students on campus

Rules of conduct/expected behaviours (consent, respect for others, environment)

Set ground rules regarding touching

Review any possible physical elements

Equipment
- What will be used, how does it work?
- Is the equipment safe

Ensure sufficient space for the number of people involved; if stairs, tables, chairs, are these objects safe?

EXAMPLE COURSE IMPLEMENTATION

eHealth

- The syllabus & learning outcomes:
    - Develop knowledge and critical understanding of the interdisciplinary field of eHealth with a focus on Internet based Information Communication Technologies (ICTs) to assist in healthcare delivery in clinical care, community care, and public health
    - Describe and discuss traditional and emerging issues related to the ICTs
    - Explain and differentiate dominant eHealth applications
    - Describe the impact and benefits of eHealth on health and healthcare delivery
    - Describe and compare various methods used in e-Health research and evaluation
    - Discuss potential future applications of eHealth
    - Apply the learned knowledge to conduct a critical review of relevant literature for a specific application within an eHealth domain
    - Improve your ability to communicate information, arguments and analysis in the class discussions
    - Make decisions in a group context increasing personal responsibility and accountability

- Final project for which CVRriculum could be used an as alternative
    - Students will be assigned themes (eHealth domains) from which they need to select specific topics (an eHealth solution/ application).
    - Projects should reflect how the selected e-solution has changed how healthcare is delivered and/or experienced, the strengths, weaknesses, opportunities, threats and incorporate content learned throughout the course.

- How can "VR" be used to capture the goals and outcomes of the course?

Health Technology Assessment

- The syllabus & learning outcomes:
  - Develop knowledge and critical understanding of the key concepts in the field of Health Technology Assessment (HTA)
  - Understand why HTA is critical to our healthcare landscape
  - Understand the core methodologies used for evaluating systems in healthcare
  - Develop practical skills by designing an evaluation method or heuristic tool
  - Improve your ability to communicate information, arguments and analysis in the class discussions
  - Make decisions in a group context increasing personal responsibility and accountability

- Final project for which CVRriculum could be used an as alternative
  - The final paper should make an argument for or against (or highlight both sides) a new health technology; be sure to cover concepts taught in class, in the textbook, identify evaluation methodologies used and include additional information identified in professional documentation. Topics should address clinical effectiveness, economic analysis, and the larger social, and cultural consequences of adopting the health technology.

- How can "VR" be used to capture the goals and outcomes of the course?

IT'S YOUR TURN!

CVRriculum Sprint:

How do you think you might use VR to enhance your curriculum?

Think About:

- Take out your syllabus
- Select a project for which CVRriculum could be used an as alternative
- How can "VR" be used to capture the goals and outcomes of the course?

- Type of activity (Reflection, Presentation, Group Forum)
- Structure
  - Awareness of length of experience/ project
- Clear learning objectives with the activity
- Feedback model (evaluation of learning activities)
  - E.g. Reflection on the experience of conducting the project

Questions and debrief

Exit-survey

THANK YOU

Remember to send us your assignment outlines by Nov 28!

Example films with 360 camera

Link	Description	Creator
https://www.youtube.com/watch?v=yJirAiAWIng	English garden/backyard	Gus Pickett
https://www.youtube.com/watch?v=vBO8idWB2XA	Nature scenes timelapse with music	Gus Pickett
https://www.youtube.com/watch?v=8pcbkQR788s	Sunset over field, bird sounds	Gus Pickett
https://www.youtube.com/watch?v=-rzNgmy3u_A	River with canoes, insect + bird sounds	Gus Pickett
https://www.youtube.com/watch?v=955FrCmcrpA	Small brook/stream, tall grasses, insect + bird sounds	Gus Pickett
https://www.youtube.com/watch?v=5XJ3iiwSccA	Sunset, on hill, bird sounds	Gus Pickett
https://www.youtube.com/watch?v=xOawHIFItwA	In a river, flowing water sounds, man looking at stones in river	Gus Pickett
https://www.youtube.com/watch?v=hWyitvfvADo	Australian beach sunset	Paul Pichugin
https://www.youtube.com/watch?v=9CtpIYUGlgY	Algonquin park, campground, lake sunset	Chris Prouse
https://www.youtube.com/watch?v=ACzxG4I1TwM	Overlooking river on a small wooden bridge, Colorado	OutThere Colorado
https://www.youtube.com/watch?v=UiCrqWGb5-w	Babbling brook, summer, cicadas and water sounds	Jason Will
https://www.youtube.com/watch?v=oIVvI5_EaLo	Sulphur creek (cloudy water), trickling water sounds	Chris Willis
https://www.youtube.com/watch?v=qTZcSQdp5kI&list=PLHRUEpOmGcXmgIPeny2BIL1TxadfamRjh&index=16	California sunset over pacific ocean	Chris Willis
https://www.youtube.com/watch?v=UgmFpxj4fXo&t=15s	Cow farm	Andrey Borisov
https://www.youtube.com/watch?v=PbM0I23JZss	2 horses in grassy field, forest in distance	Real Virtual Movies
https://www.youtube.com/watch?v=hZD-aqYT0GE	Horses behind fence, summer day, bird sounds	Atomic Films
https://www.youtube.com/watch?v=Qtwm1Nx-Rw4	Skating in Vienna	Sygic Travel
https://www.youtube.com/watch?v=3RS662kREsQ&list=PLiV56GDjMd-PjIrqwzFhQcnyRiB_8zSJ3&index=5	Waterfall between rocks in forest	Relaxing Reality
https://www.youtube.com/watch?v=MNZsI8GX-iI	Outdoor classical symphony	Michael DeLuca