What role do simulations play in engaging students?

a.r.u. | Anglia Ruskin University

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Director of Simulation-based Learning

The Team

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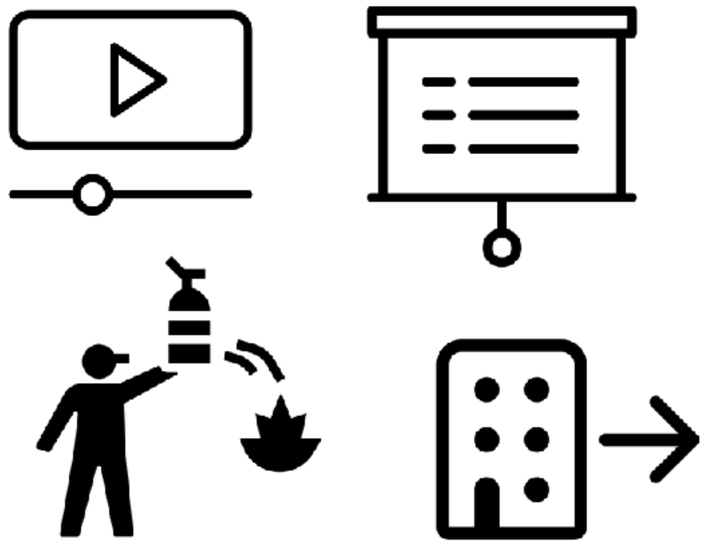
Consider:

What are videos good for?

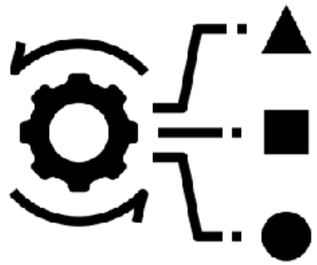
What are slides good for?

What are demonstrations good for?

What are field trips good for?



What are simulations good for (in your context)?



Aims of simulation-based learning

The simulation-based learning team in works collaboratively with academic colleagues to develop engaging digital **proxies** for practical experiences that a student is expected to encounter in real-life settings during their career.

We help with the identification of new opportunities to introduce simulation, advise on learning design and co-create scenario-based experiences.

Decision-making skills

Physical/motor skills

Communication skills

Observational skills

Problem solving

Situational awareness

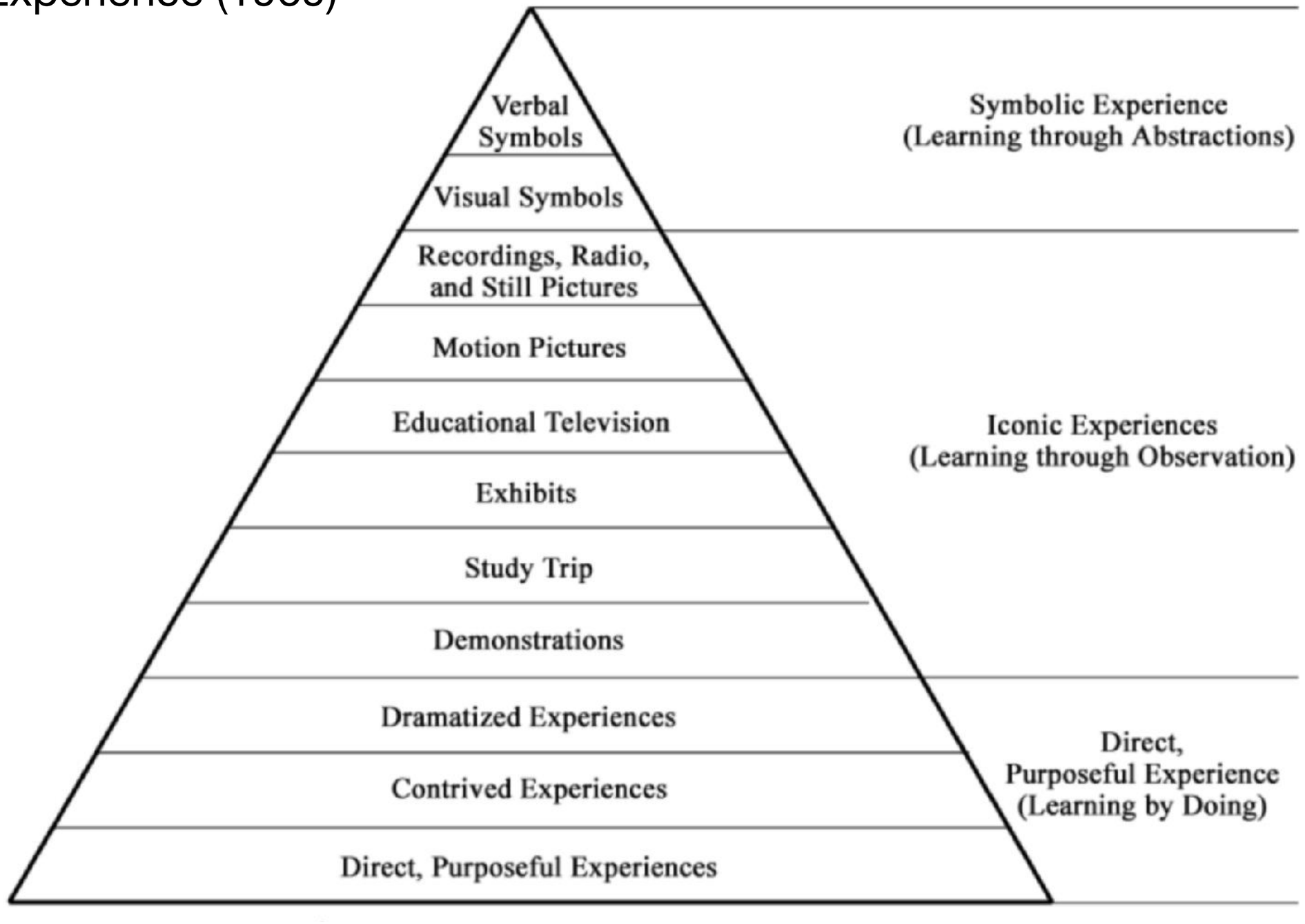
Object interactions

Processes

Empathy building

Dynamic systems

Dale's Cone of Experience (1969)



Simulations help to stimulate student interest:

https://doi.org/10.1177/1046878107311377
https://www.tandfonline.com/doi/full/10.1080/00221341.2014.937738

Simulations enhance the mastery of course materials

https://journals.healio.com/doi/10.3928/01484834-20131218-01
https://www.tandfonline.com/doi/abs/10.1080/15512160802202805

Simulations deepen clinical, analytical, and critical thinking skills

https://bmcmededuc.biomedcentral.com/articles/10.1186/s12909-016-0588-2

https://www.degruyter.com/document/doi/10.1515/ijnes-2013-0027/html

Simulations foster communication and collaboration skills

https://www.tandfonline.com/doi/full/10.1080/13504622.2016.1190959
https://www.tandfonline.com/doi/abs/10.1080/01463373.2013.822404
https://appliedvolc.biomedcentral.com/articles/10.1186/s13617-015-0030-1

Simulations help learners to appreciate the complexity intrinsic in real-world scenarios

https://doi.org/10.1177/1052562911411156 Links to an external site.
https://www.tandfonline.com/doi/full/10.1080/13504622.2016.1190959

Simulations involving virtual service users can increase clinical reasoning capabilities

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7432110/

Simulations can help students acquire and apply course-based knowledge

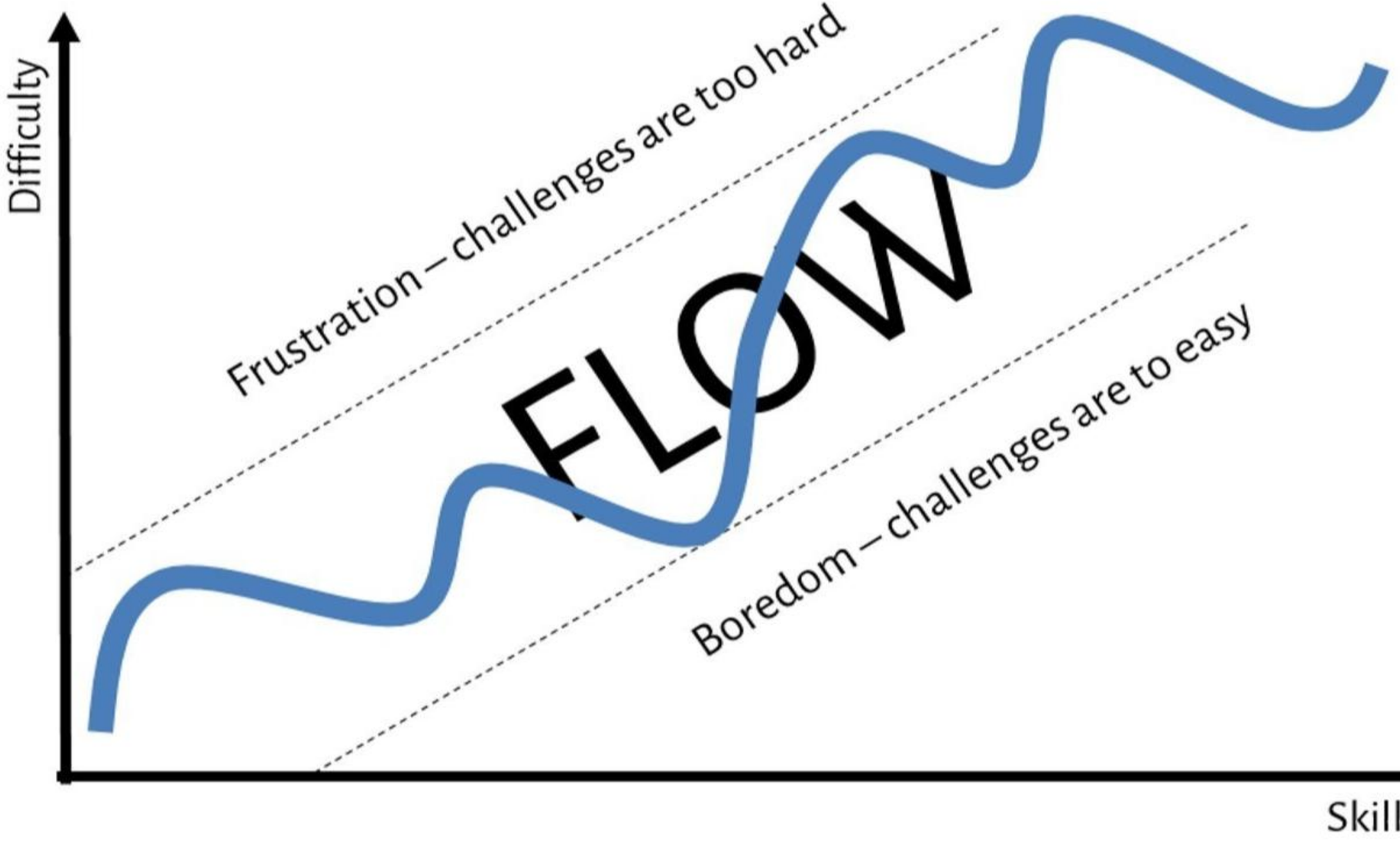
https://doi.org/10.1080/15512160500484119
https://doi.org/10.1186/s41077-018-0062-9

Authenticity and Buy-in

Simulations work best if learners buy into the premise. As such, one of the key challenges associated with building a successful simulation is crafting a learning environment that promotes student investment in the experience.

Many simulations are designed to offer learners a window into the interactions they will likely encounter in employment; therefore, their success as pedagogical interventions can hinge on their ability to authentically replicate these real-world interactions.

The Psychology of Optimal Experience



Mihaly Csikszentmihalyi

Building Context

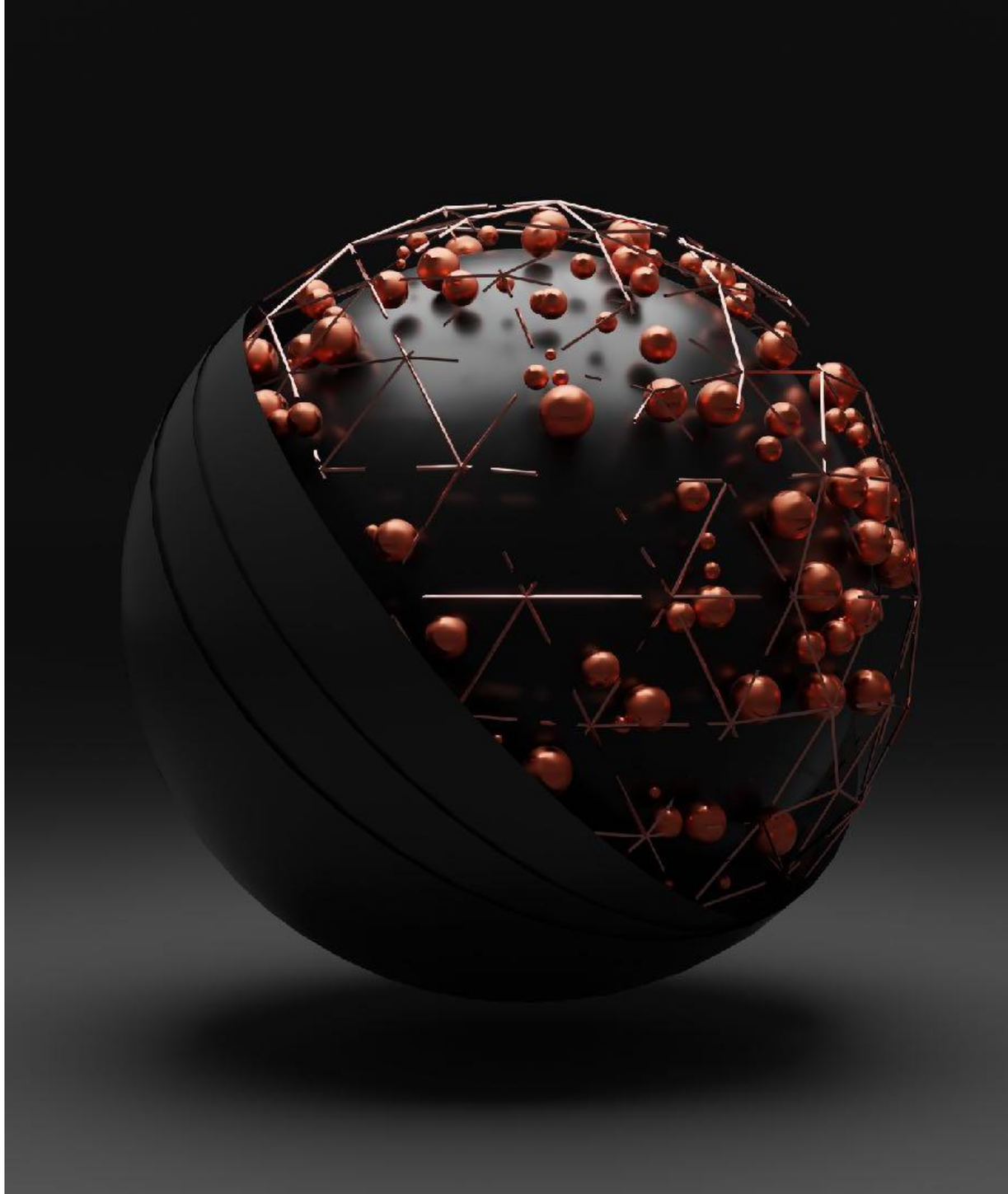
Places

People

Things

Information

Actions

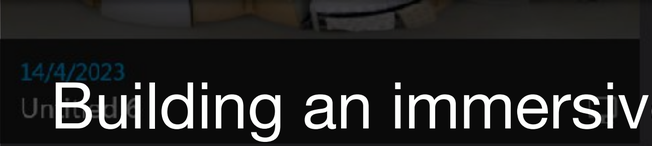


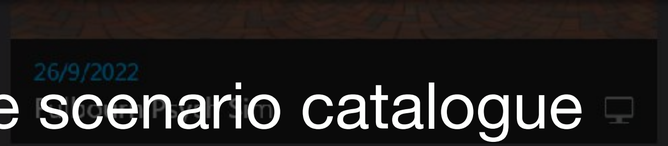
3D modelling
3D scanning
Generative AI

Now we have the tools and power to quickly depict people, environments and objects, while establishing the relationships between them we must consider:

- **Unconscious biases**
- **Prejudice**
- **Stereotyping**
- **Authenticity**
- **Ethics**

Building an immersive scenario catalogue


14/4/2023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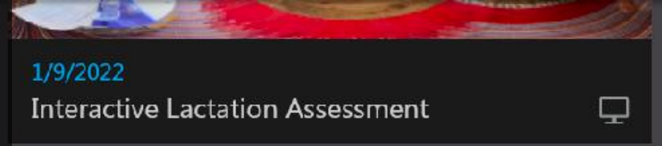
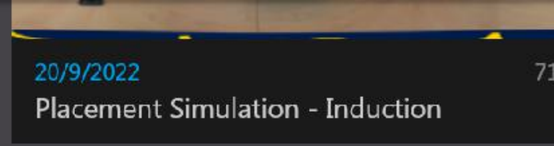

1/9/2022
Interactive Lactation Assessment


20/9/2022
Placement Simulation - Induction

5/5/2023 55.01 MB
ARU Samaritan's Hub

3/2/2023 230.49 MB
Simulated Learning Dev Project

3/11/2022 947.90 MB
Mental Health Simulation

4/9/2023
Maria's Home (No Audio)

29/11/2022 54.55 MB
3D Vista Demo

31/5/2023 136.36 MB
Maria's Home (SW)

30/9/2022 108.00 MB
The Interactive Lactation Assessment

13/7/2023
Mike's House

31/8/2022 6.82 GB
Placement Simulation - LAM Simulati...

10/10/2023 140.47 MB
Immersive Hub Demo

14/4/2023 164.15 MB
Maria's Home (SW)

13/10/2022
Cultural Competency

Full 3D Environmental
Scanning and Modelling

AI Co-development

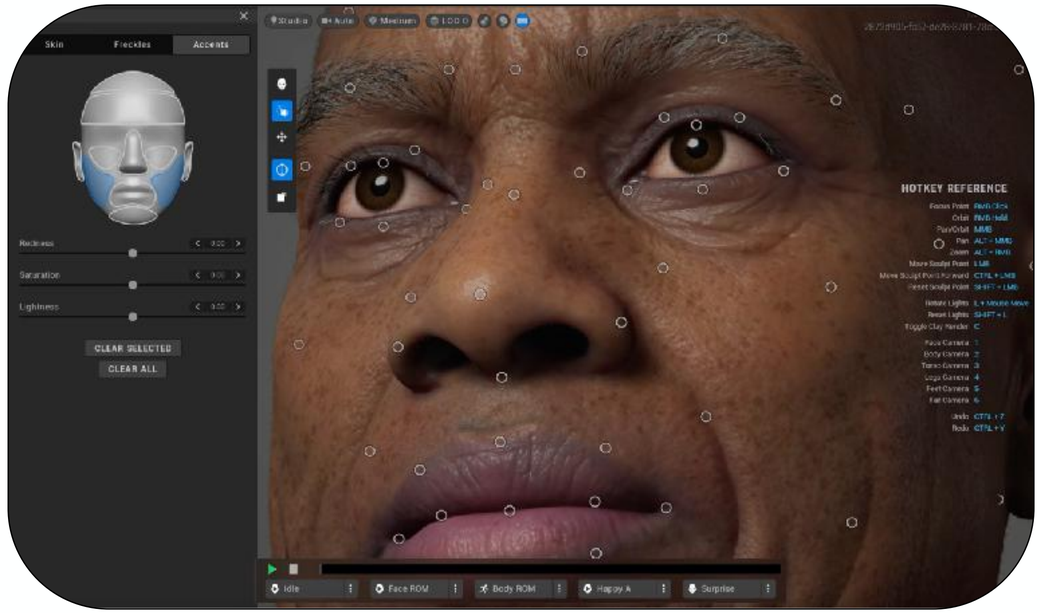
Digital Humans

Simulated peer & service user engagement

We can utilise a combination of photographs, audio recordings, artificial intelligence & digitally-generated humans to simulate encounters that may be experienced in the real world, but typically inaccessible to our students.

Simulation-based learning involving virtual service users has been shown to increase clinical reasoning capabilities among students (Watari, et al., 2020).

Breathing Life into Digital Characters



Digital Human
(example)

Low-tech composting

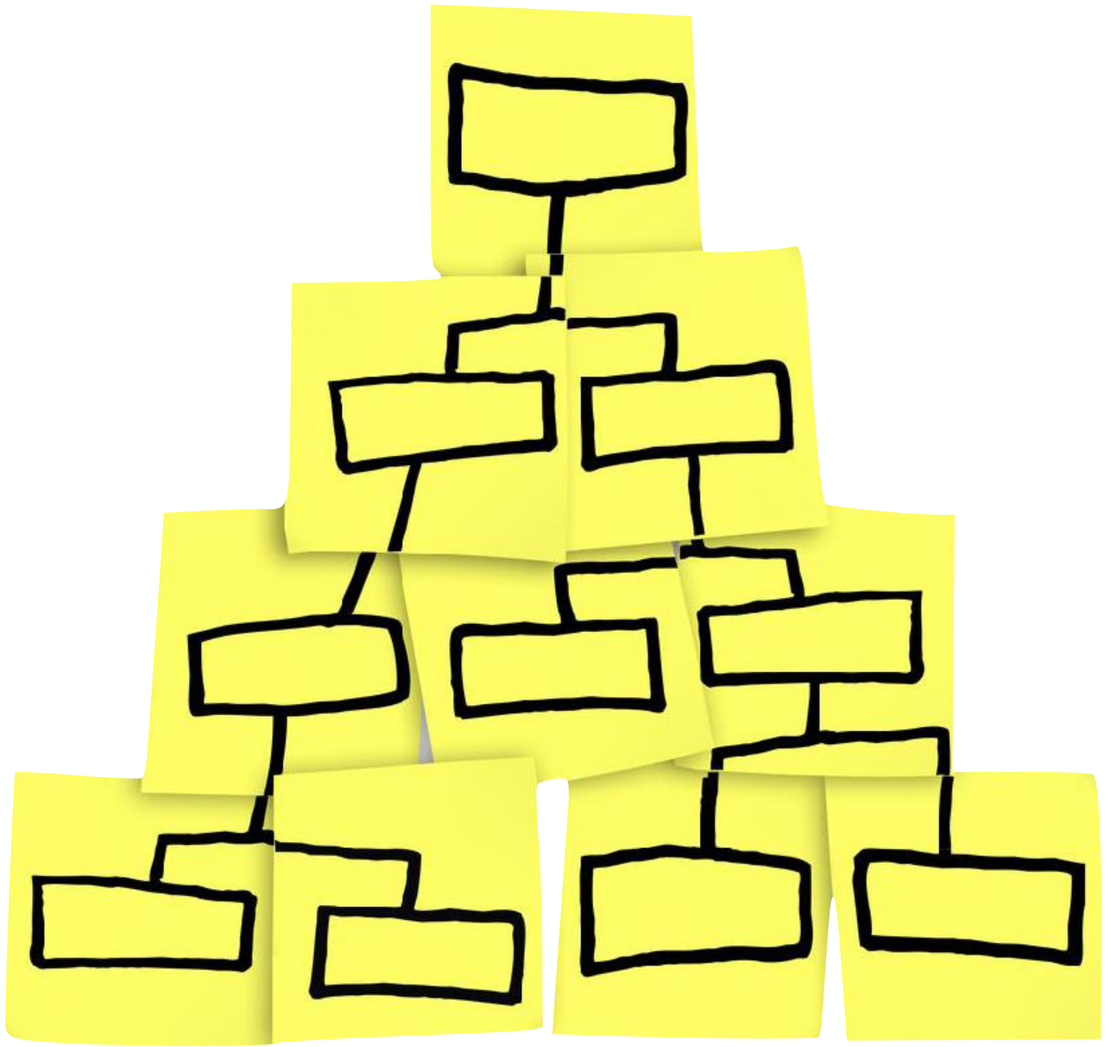
Immersive Media Rooms

Motion Capture with Digital Humans

Game-engine-based digital human (deployment example)

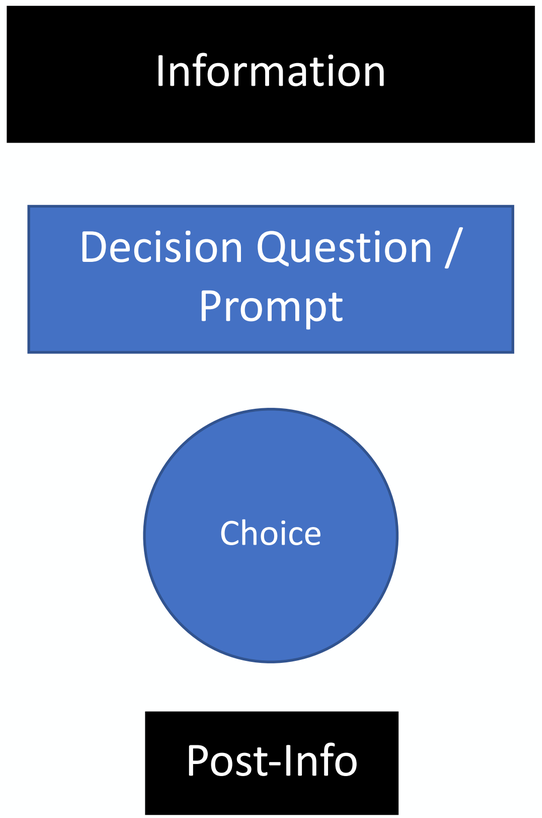
Content Development with the 6Cs

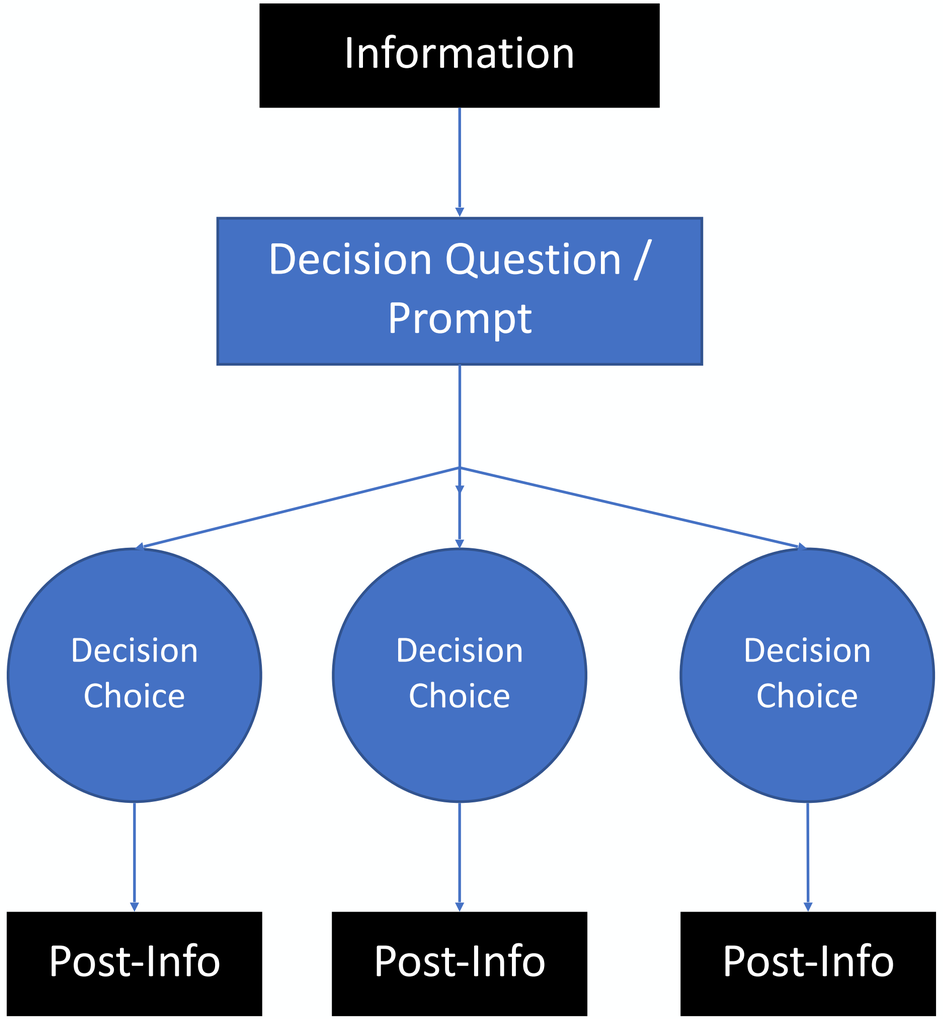
- Context
- Challenge
- Choices
- Consequence
- Contemplate
- Consolidation



A low-tech storyboarding technique

Branching scenarios with decision making



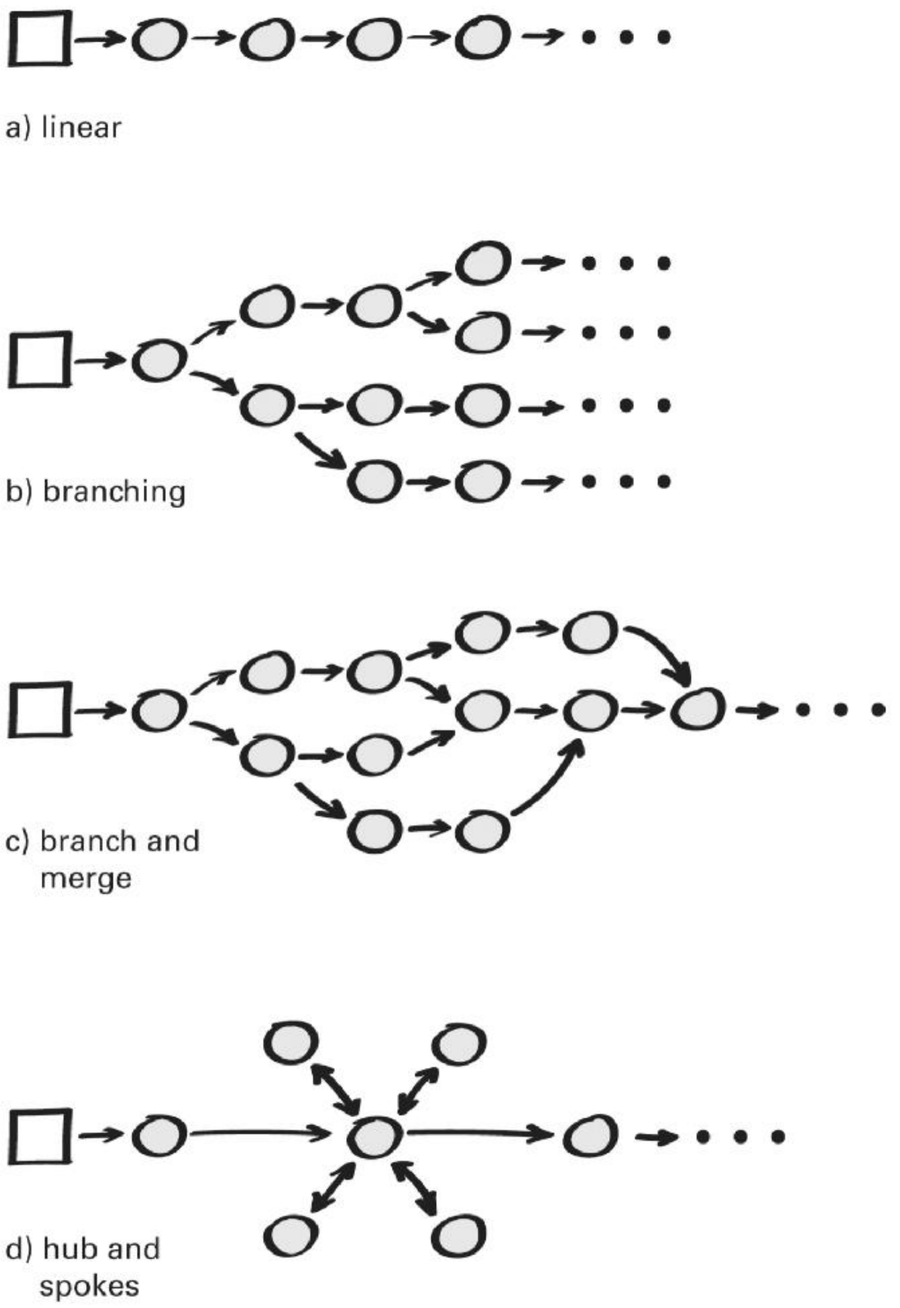


Basic Branching Scenario Structure

Planning a Branching Scenario
Choice Architecture

In the context of branching narrative simulations, the term “choice” refers to the kinds of decisions, challenges or actions the learner can undertake that can *alter the course* of the scenario.

Choices (and story elements) can link together in various ways to form basic patterns. Each one has its advantages and disadvantages, and will produce a different experience for the learner.



Thanks for listening

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