What role do simulations play in engaging students?
The Team

Paul Driver:
Director of Simulation-based Learning

Dr Marques Hardin:
Learning Technologist for Simulation
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.
Dale’s Cone of Experience (1969)

- Direct, Purposeful Experiences
- Contrived Experiences
- Dramatized Experiences
- Demonstrations
- Study Trip
- Educational Television
- Motion Pictures
- Recordings, Radio, and Still Pictures
- Visual Symbols
- Verbal Symbols
- Symbolic Experience (Learning through Abstractions)
- Iconic Experiences (Learning through Observation)
Simulations help to stimulate student interest:

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

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

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 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 deepen clinical, analytical, and critical thinking skills


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

- Frustration - challenges are too hard
- Boredom - challenges are too easy

Skills

Difficulty
Building Context

Places
People
Things
Information
Actions
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
Full 3D Environmental Scanning and Modelling
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

paul.driver@aru.ac.uk