Immersive and Inclusive - Lessons from Embedding Virtual Experiences into Assessment

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Interactive Poll

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Have you heard of Assessment Innovation Fund before?

It's a joint grant fund by NCFE and Ufi.

Assessment Innovation Fund

The Assessment Innovation Fund (AIF), an NCFE and Ufi VocTech Trust initiative, drives innovation in vocational and technical education assessment.

AIF projects have involved over 3,000 learners and 200 educators, exploring VR/AR, digital badging, immersive scenarios, and online platforms.

Why Immersive Technology?

Enhanced Engagement & Motivation

- Immersive experiences significantly increase learner motivation and emotional involvement (Selvakumar & Sivakumar, 2023).

Active Learning & Deeper Understanding

- VR/AR foster deeper cognitive processing and retention through interactive learning (Analyti et al., 2024)

Safe Exploration & Risk-Free Practice

- Simulated environments enable experiential learning without real-world consequences (Garima Arora et al., 2024)

Accessibility & Inclusive Learning

- Immersive tech supports diverse learner needs and expands access to remote or differently-abled students (Bosman et al., 2024)

Authentic & Contextualised Learning

- Learners engage with lifelike, real-world scenarios that promote relevance and application (Nastiti et al., 2024)

Metaverse Learning – Case Study

About

- A company specialising in the design and development of immersive learning solutions.
- Creates realistic and interactive virtual environments for learners to develop practical skills and knowledge.
- Granted £50k from the AIF in 2024.

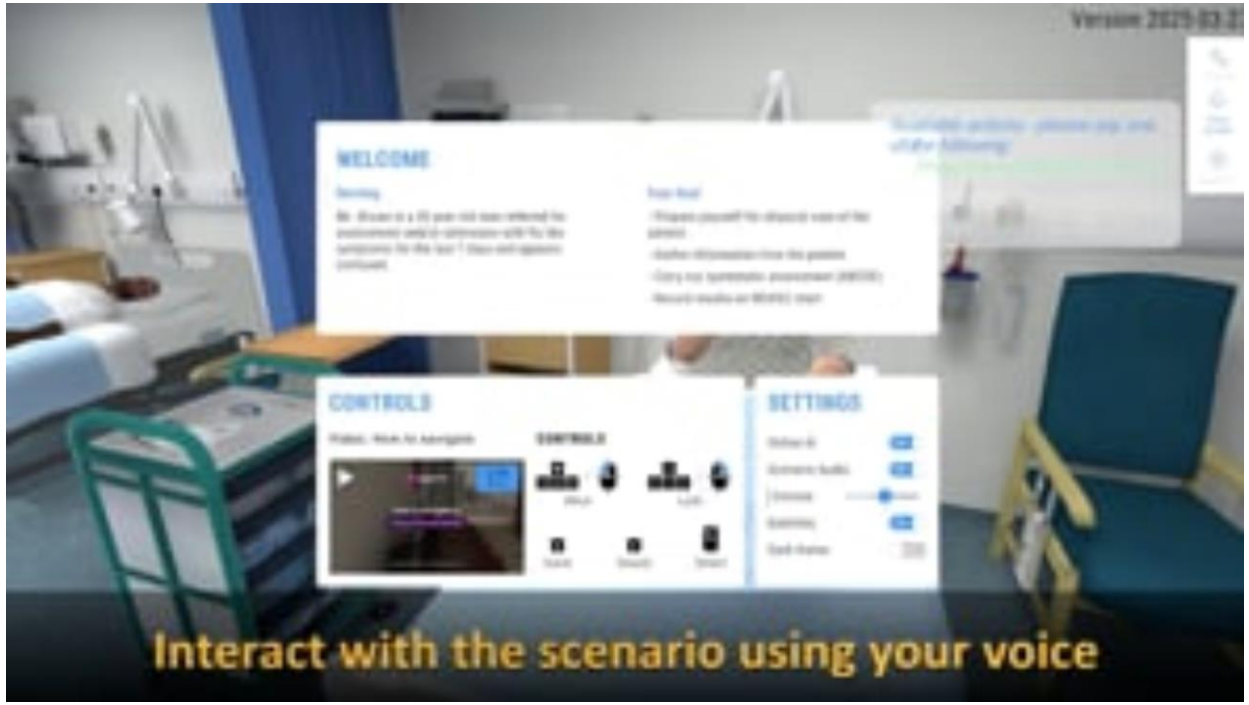
AI-Powered Adaptive Scenarios

- Specifically investigates how AI can be used to create personalised and adaptive learning experiences within immersive scenarios.
- Aims to develop a system where the difficulty and content of assessments adjust dynamically based on individual learner performance and needs.
- Seeks to enhance learner engagement, improve learning outcomes, and provide more effective assessment of skills and competencies.

Metaverse Learning – Case Study

Scenario

- A virtual 3D interactive scenario
- Healthcare related and based in a hospital ward
- Accessible online via a web-browser
- Aimed at vocational qualifications levels 5 / 6 (England and Wales) & levels 9 /10 (Scotland)



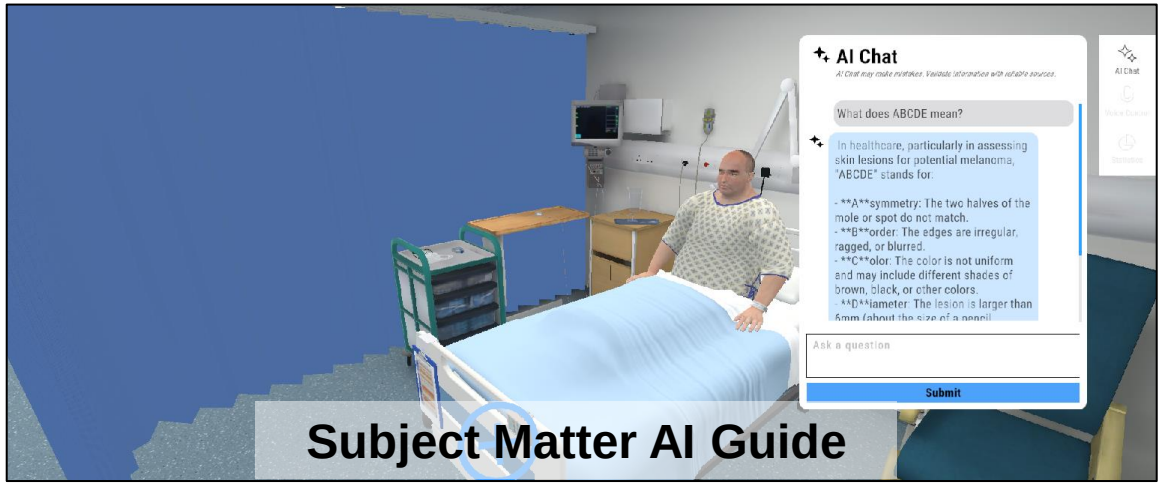
AI-Powered Technology

- Subject matter focused LLM using OpenAI GPT 4-0 mini for AI guide and question variety.
- Microsoft Azure Standard speech service for speech recognition and voice control
- "Whisper" Model, and SmolLM 135m (SLM) for local / offline support.
- Question difficulty algorithm based on multiple factors including response times, confidence levels, answer correctness, etc.

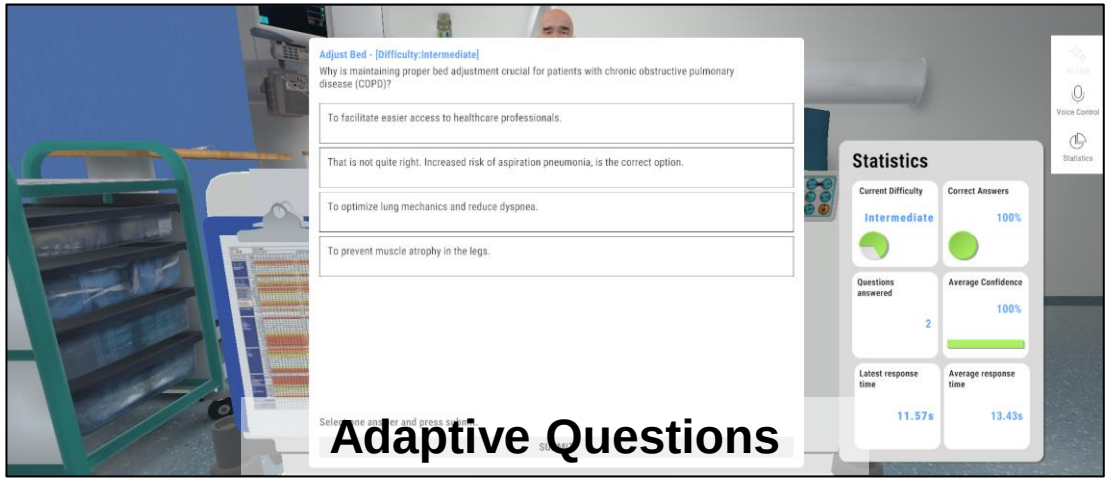
Metaverse Learning – Case Study

Features

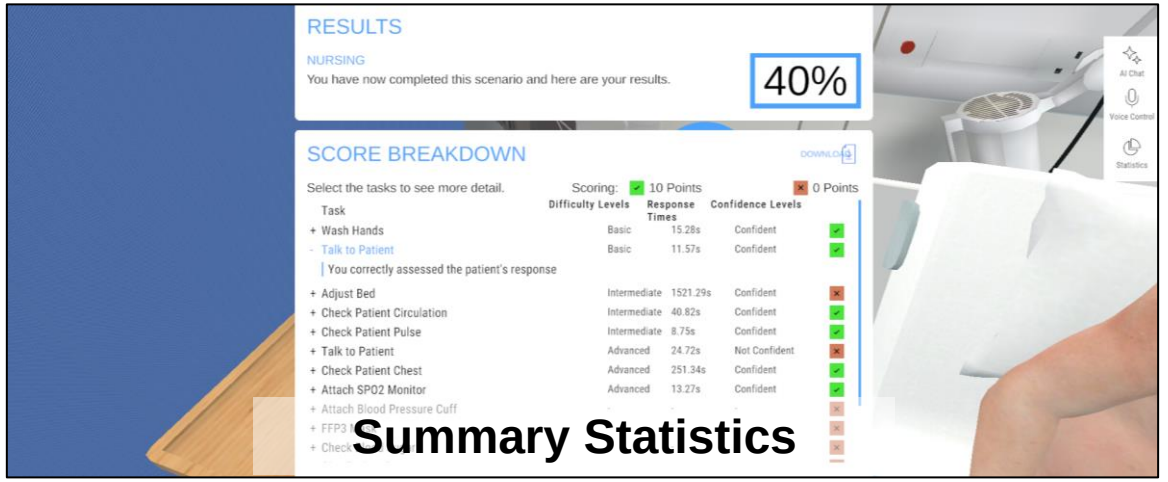
Voice Control



Subject Matter AI Guide



Adaptive Questions



Summary Statistics

Metaverse Learning – Case Study

Key Insights and Outcomes

- There are lots of UI / UX considerations in terms of ease of interaction with the features and understanding what they do, and how best to visualise statistics
- Given the use case of the learning environment, a lot of work was needed on optimisation and multithreading to ensure as seamless an experience as possible for the learner to avoid breaking the learning flow with slow processing.
- A lot of consideration went into supporting a local / offline approach, but the conclusion was that this would not yield the best user experience owing to the limited functionality, unreliable performance, and technical inaccuracies associated with significantly smaller and restricted learning models and speech recognition services.
- It's important to consider guardrails for the AI given its use in this context in a learning environment as well as having all the information related to due-diligence around the training of the AI, its references, and data sources. This helps to provide confidence to the educational organisations who would be interested in using the technology.

Learner and Tutor Feedback

- The project is still undergoing trial with real learners, however, initial feedback has been extremely positive and highlights the benefit of adaptive scenarios with personalised learning and increased accessibility through voice control.

40+ Ufi funded projects in VR

Inspired to apply VR and Immersive Technology to assessment?

48 projects funded in VR and Immersive Technology over 15 years across different sector, across all four UK nations

Some examples from 40+ Ufi funded projects

	Sector	What did VR allow them to do?
first step trust	First Step Trust Automotive maintenance	Allows users both to learn and to demonstrate success using VR without requiring high levels of literacy.
Chrome Angel	Chrome Angel Rail security	VR simulation game that creates staff awareness of railway security threats. Enables regular awareness training and assessment at scale.
bodyswaps	BodySwaps Communication skills	Performance Feedback App enabling trainees to save and share simulated performances and teachers or career advisors to review and feedback
eCom Scotland	Ecom Scotland VR Assessment authoring tool used by Edinburgh Forge	Assessors see exactly what the learner can see and measure their reactions in the virtual environment for Fife Bridge maintenance

...what did we find out about VR and Immersive learning?

Key questions to ask

1. What is the additional value you can bring to assessment by adding VR or other immersive tools? Don't expect VR to make everything engaging.
2. Are the VR or Immersive elements distracting from the learning?
3. Is there a clear journey for the learner from the start to the end point through the VR environment?
4. In what context will you be using it?
5. Have you considered accessibility?
6. What are you measuring and for whom?

Resources and slides

- Links to all the evaluation reports for the VR and Immersive projects from Assessment Innovation Fund
- Links to all of the Ufi VR projects
- Links to all research mentioned in this presentation
- Copy of the slides

Interactive Poll

What is your key takeaway from today?

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Questions and Answers

Thank you for your attendance