

The Use of Virtual Reality Technology in Pharmacy Training

Stephen Hilton, University College London;
 Fateha Al-Emran, Shane Costigan, Health Education England;
 Stuart Dark, Clare Linkins, Frimley Health NHS Foundation Trust



1 Virtual Reality - A New Approach to Training

Simulation and immersive learning technologies are developing rapidly to meet the current and future requirements of health and care globally.^{1,2} Whilst the covid-19 pandemic has enabled us to become more accustomed to asynchronous learning, the effective use of technology enhanced learning to support workforce development, in particular the use of virtual reality (VR) technology has the potential to reframe how we train our workforce moving forward.

UCL School of Pharmacy, HEE, and Frimley Health NHS Foundation Trust, have collaborated to scope the use of VR technology, to support education and training for pharmacy undergraduates and early career pharmacists within London, Kent, Surrey, and Sussex.

Conclusions

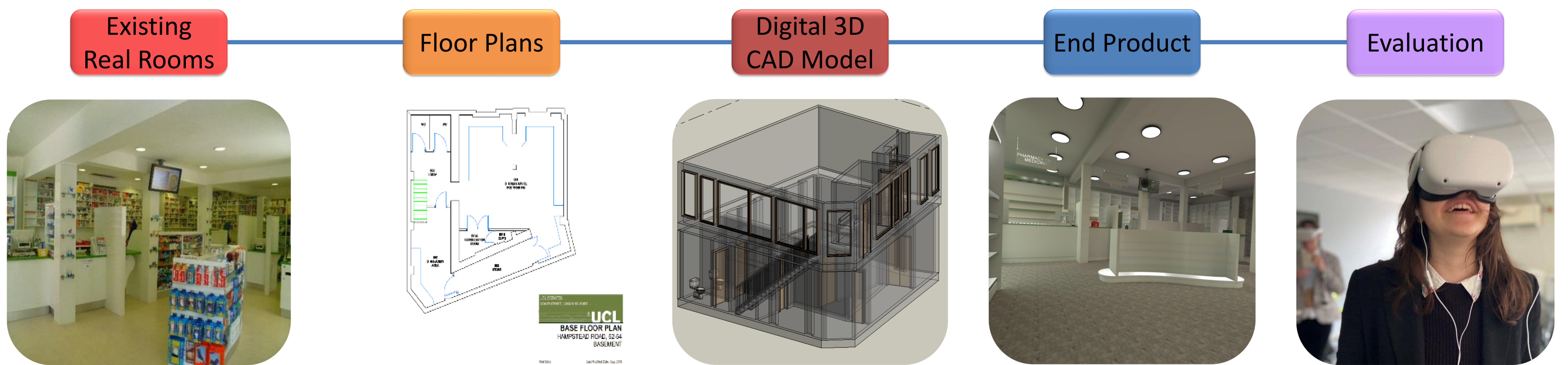
The VR multi-user platform has been shown to be flexible and powerful enough to facilitate easy access from users globally.

Platform and user guides enabled over 400 novice users to access the VR Pharmacy rooms and laboratory training environments during the study.

The digital twin environment enables information to be retained more strongly.

This platform is an incredible training resource that is as close to real life as possible and will continue to improve.

2 Workflow: From Reality to Virtual Reality



3 Use of Virtual Reality in Undergraduate Pharmacy Training

In this project we digitised both Greenlight Pharmacy at UCL and laboratories in UCL School of Pharmacy so that we could explore wider training opportunities in Virtual Reality. Structural models of the rooms and buildings were created in Unreal engine and a multiplayer platform created so that users could meet others in VR. Oculus Quest2 headsets were purchased as part of this project to explore their connectivity, both locally at internationally. In this manner, we were able to explore access across multiple countries and time zones and to understand minimum distance between users when using the headsets

Our Vision of Virtual Reality:

"Send Headsets, not People"

Real time Interaction

As close to real life as possible

Digital Twin Training – real/ VR

Seamless/ Borderless Approach

Enables immediate Communication in real time

Digital Twin Approach – VR used to mirror real life

- Reduces Carbon Footprint –
- **Accessible for all**
- Increased memory retention of tasks
- Safe Training Environment
- Accessible Worldwide – Simultaneous

1 The VR solution:

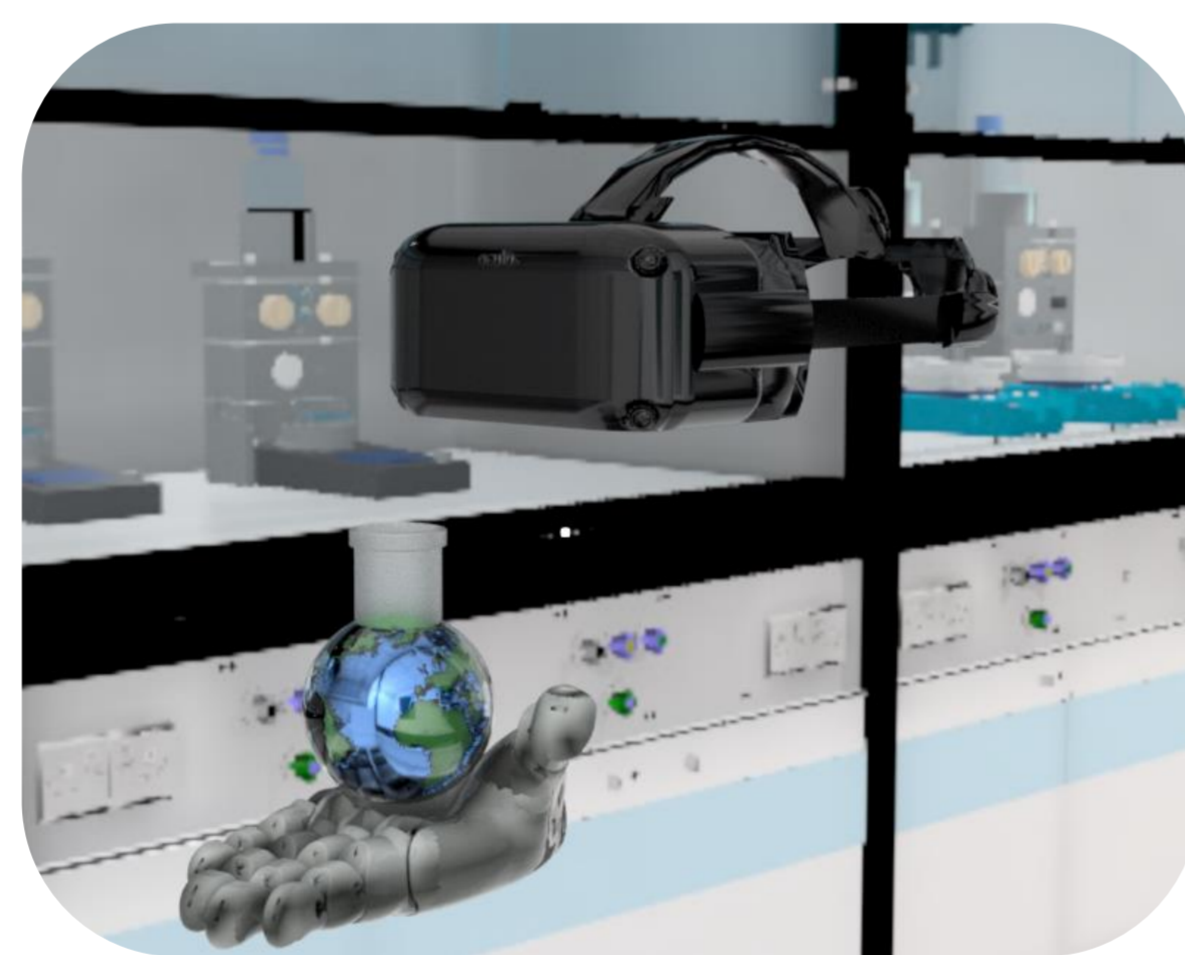
Digital Virtual Platform using technology based learning and training.

2 Comparable Training:

We seek to *train Pharmacists to comparable levels*. Access to equipment/ training spaces should not be a limiting factor.

3 VR Based Collaboration:

Digitized equipment can be accessed in VR at the same time



Digital Twin Laboratories

From reality to Virtual Reality – using exact digital model replicas, laboratory environments were replicated and the equipment inside digitized. Below are examples of the real laboratory and digitized twin on the right.



Digital Twin Pharmacy

In the digital Pharmacy model, we needed to replicate two floors, with movement and sound passing through all aspects of the rooms. Using this, we were able to carry out orientation and training.



References

1. HEE National Strategic Vision for simulation and immersive technologies in health and care. November 2020. <https://www.hee.nhs.uk/sites/default/files/documents/National%20Strategic%20Vision%20of%20Sim%20in%20Health%20and%20Care.pdf>
2. The Topol Review. Preparing the healthcare workforce to deliver the digital future. An independent report on behalf of the Secretary of State for Health and Social Care. February 2019. <https://topol.hee.nhs.uk/the-topol-review>