#Take5 #61 Breaking the Zoom gloom for students: hi-tech to lo-tech solution

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Technology Enhanced Learning, Playful and Creative Learning

This #Take5 post is brought to you from [Debbie Holley](#) and [Heidi Singleton](#), Bournemouth University, UK – who also delivered this as an engaging LD@3.

Challenge that 'Zoom Gloom!' (Wiederhold 2020)

Learners describe their 'best learning moment' as a 'flow' – a point of psychological deep involvement of immersion in an activity or a task, which results in deep learning and high levels of satisfaction (OU [Innovating Pedagogy](#) Report 2021). The Learning Development community are experts at creating these types of activities (see the amazing [LearnHigher](#) site); this post explores how we can further enhance our student offering through considering extending learning opportunities through simulations. Students report enjoying the added dimensions of more immersive learning experiences, yet only 20%, mainly in health care and engineering gain any 'real life' simulation experiences as part of their curricula (Jisc 2020 ['Student digital experience insights survey'](#) summarising the experiences of over 20,000 HE students and a range of 28 HE institutions). We ran an LD@3 session '**Using [Google cardboard to engage learners](#)**' to demonstrate how, with with very basic equipment (a SMART phone with internet access able to run 360 video clips from YouTube and Google cardboard – available from Amazon for around £5.00) we can all offer students those 'tasters' of a more immersive experience.

This blog outlines the technologies which can be used to create different kinds of learning experiences, all of which we tried out with our Nursing Students, and there is a resource list at the foot of the document.

Image credit: Google cardboard

So, starting off, what is this tech all about? VR and AR

Virtual Reality (VR) utilises a computer to generate a simulated environment, and these technologies can be defined by the following features: users interact through the agency of avatars; they have multiple users; they deliver the illusion of movement in 3D space; and they have interactive chat functions. Users are inside that replicated world, rather than experiencing an overlay of virtual space onto the physical world as in Augmented Reality (AR).

With AR you need to be in the setting, for example using AR on an iPad™ to bring a mannikin to life. AR can be accessed via a phone, or laptop or something more sophisticated e.g., Google glasses etc.
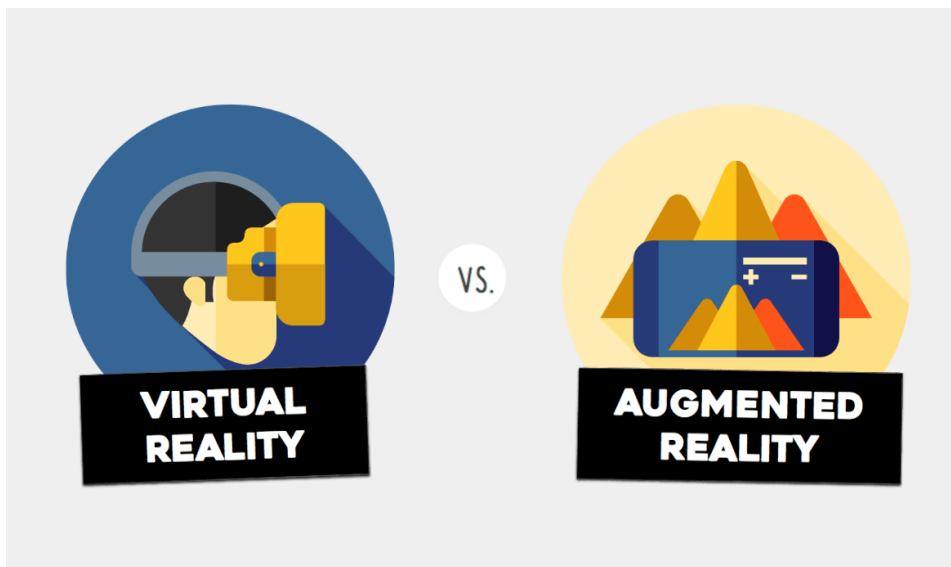

Diagram Credit; catchoom.com

With VR you can be anywhere on the planet and bring the content to you. Hence it is perfect for a lecture theatre setting or for use at home e.g., during a pandemic.

Within VR there are varying degrees of immersion available, starting with non-immersive e.g., accessed via a laptop, to more immersive e.g., low-cost headset for example Google Cardboard™ to fully immersive e.g., Oculus Rift™ and Magic Leap™.
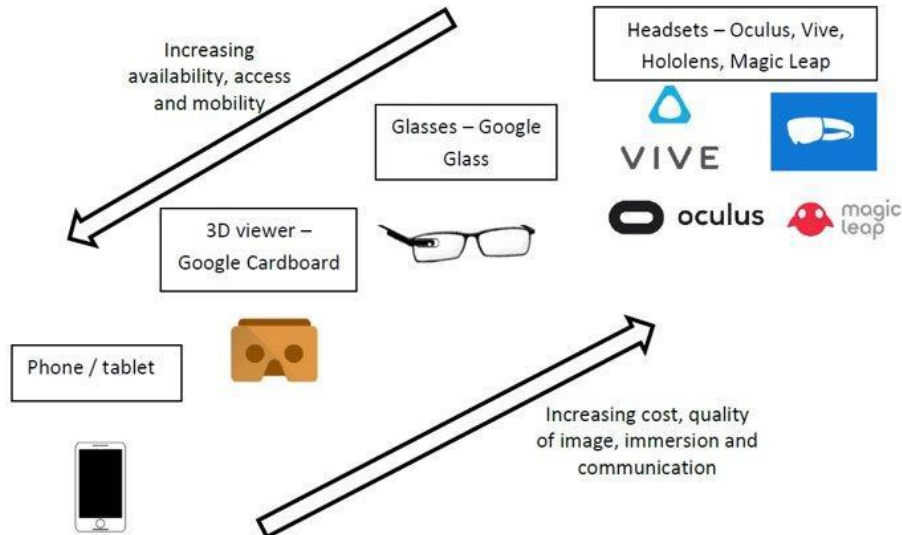

Figure 2. AR viewing devices

Diagram Credit: Holley and Hobbs 2020

Using Google Cardboard to experience a 360 immersive effect

This is Debbie modelling her mobile phone in a Google cardboard!

We use different free 360 videos on YouTube to help our student nurses visualise different aspects of their learning. We use the free app "A Walk-through Dementia" for students to experience what it is like for people with dementia, through their eyes. Students view the video using their own mobile phone and Google Cardboard™ headsets. The headsets cost around £5 and can be used multiple times. You can download the app following this link: https://www.awalkthroughdementia.org/.

We also use 360 videos and low-cost cardboard headsets for students to consider how they can be used with patients to distract them from unpleasant symptoms including pain, stress, and

anxiety. For this we have used 360 Waterslide (**Best VR 360 VIDEO** (Virtual Reality)) and Nature meditation (https://www.youtube.com/watch?v=7AkbUfZjS5k&t=10s).

Journey to the edge of space (Journey To The Edge Of Space (360 Video)

Sometimes finding the exact video from Youtube can be confusing, especially as these videos are in a particular 360 format. To make it easier for your audience or class, you can use QR codes as a trigger link to a 360 video on YouTube app. This is a helpful timesaver when you are teaching or presenting to a very large group. The instructions are below.

YouTube app

1. Scan the QR Codes with the camera or go to the YouTube app on your phone and type in which VR experience you would like (from the list below), for android phones download and use a QR code reading app.
2. Play the experience.
3. Then select the symbol to turn your screen into a split screen.
4. Place your phone into a google cardboard headset to view.

We prepare QR codes (and share how to do this a bit later!) for the students – when we were teaching F-2-F we had paper ones printed, but now we are online we just add them to our PowerPoints, and it is far easier for students to access. For example:

Code Blue

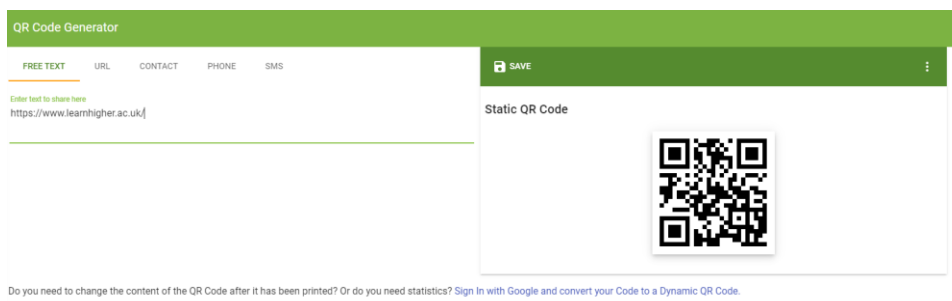In the YouTube app search: 360 Degrees: Code Blue

Or use link:
https://www.youtube.com/watch?v=2kMr7a5gA6s

Creating your own QR codes for sharing with students
- Select any website URL (copyright free and legal etc.!)
- Our example is the fabulous https://www.learnhigher.ac.uk
- Copy the code, and then google 'QR code generator'.
- It generates a QR code (an iPhone camera will trigger, or need a QR reader App on android)

Our students have enjoyed the fully immersive experience of using Oculus Quest™ headsets during seminars, again to explore how VR can be used to treat post-traumatic stress disorder and to aid wellbeing. These headsets are good value for money, at £299, because they do not need to be linked up to an expensive gaming computer they are stand alone.

Student using Oculus Quest™

We do also use our Oculus Rift™ for our best immersive experience though students do have to queue up to experience this due to it being connected to one of our expensive gaming computers.

Our Physiotherapy students using Oculus Rift™

Our VR Diabetes Case study

In addition to using the Oculus devices mentioned above, we also enable our students to experience VR simulations via their own laptops. VR Simulations are increasingly being offered as part of the educational experience and valued for their more authentic approaches in preparing for live clinical experience. VR has been proven to be engaging and it is something different to break up those long days of online learning, and death by PowerPoint. We conducted a study to evaluate student, academic and learning technologist (LT) experiences of a VR simulation.

What we did

Our aim was to find out if a VR-based simulation can improve learning about diabetic concepts. Data was gathered via pre and post testing and through focus groups with students, learning technologists and an academic. Our participants were Second Year Nursing students, across two campuses. Students were randomly assigned to one of two groups. Both groups completed an exercise, either via VR or a paper-based version, which was developed with the aim of improving student nurses' short-term knowledge of hypoglycemia (low blood sugar in diabetic patients).

The VR simulation was commissioned with Daden Ltd, who programmed the VR application based on the deteriorating patient script. After piloting, communication with Daden Ltd and reiteration, the low-cost proof of concept simulation was completed and was ready for use on students' laptops.

Students played the part of the nurse avatar who stayed within the ward side room. A handover gave the nursing student knowledge about the patient's condition, current medication and observations which had been recorded the night before. The handover also detailed the patient's history. When the student approached the patient, they were irritable and very sleepy. The student had to make a safe clinical decision about how to react and communicate with the patient. If the student made unsafe decisions, they were given instant feedback and that they needed to think again quickly because the patient was deteriorating. The patient began to look unwell if the student did not correct the patient's blood glucose quickly. They were then presented with clinical decisions in multiple-choice questions via pop-up text boxes. Each clinical decision was followed up with instant feedback so that the student could learn and improve. The student could complete the simulation multiple times and the lecturer was sent data analytics about each student's performance.

VR Diabetes simulation created by Daden Ltd.

What we found

In total 171 students completed both the pre and post-test surveys. The experimental group answered the post-test questions more efficiently, which is suggestive of short-term learning gain superiority in the desktop VR group. Statistical tests indicated that the VR simulation is an inclusive learning tool, regardless of students' age, computing experience or diabetic nursing experience.

Overall, the VR simulation was perceived as being an enjoyable and effective way of learning, though software instability and some initial difficulties in moving the avatar around were cited by students and LTs. These negative findings are the clues to any potential barriers to the scalability and sustainability of VR technology use in HE. In addition to being an engaging and effective way for students to learn, VR may deliver greater access to practice opportunities in HE, spanning the gap between the formal and practical learning– a vital step in developing students' proficiency.

The student perspective

Most comments and qualitative data were positive, of which the main findings were that participants found the VR simulation to be: "quick and intuitive to figure out", even if they had not played computer games in the past. This is significant because in the future, it is anticipated that online and distance learning modes will dominate; indeed, during the covid pandemic much of undergraduate nurse education was moved to online learning.

Many of the comments were about "making it real" and a typical opinion was captured in this comment: "It combines the advantages of a simulated ward with those of a drama role play, in that you can have the sense of urgency as well as deteriorating vital signs in the patient. If the patient is getting anxious and you need to take their blood pressure you could make your … (avatar) talk to the patient to calm them down. It really does make you really focused on the situation, and it makes it feel a lot more real."

Students discussed how they felt that using the VR simulation aided personalised learning, in which they could make mistakes and not be swayed by a group decision. They felt that they were often asked to respond to questions and activities as part of a group which meant that sometimes some learners switched off and some just gave the same answers as their friend. Our study found that students valued the rarer opportunities to work individually in HE learning sessions.

Previous research tends to highlight the collaborative affordances of VR technology. However, in our study the chance to learn at the student's own pace, repeating the exercise as necessary, and without the group pressures to select a response that they did not necessarily agree with, was valued. Students reported that the instant feedback and reinforcement of learning would improve confidence.

The staff perspective

The academic discussed a barrier to implementing VR: *"I think it is about investment, so if you are going to do this work in an HE setting you have got to have investment, not just in terms of money but also in time and appreciating the work people do."*

The software tested in this study was deemed to be of low fidelity due to its low-cost nature; despite this, students found themselves immersed in the virtual ward. This indicates that future iterations of such VR simulations do not necessarily need to be of high cost and high fidelity to be successful in improving student enjoyment and learning outcomes. We will finish with a quote from one of the LTs: *"Using this technology, is a really empowering way for students to be able to learn off campus… There are lots of positives around student engagement."*

You can view a walkthrough of the VR simulator here: [Fieldscapes Diabetes Walkthrough](#)

Getting started!

Nursing students using low-cost headsets and their own phones in a seminar.

A good starting point is to explore the youtube 360 clips we have shared with you, and then to see which other ones may be appropriate to your area (search youtube 360), students enjoy accessing small 'ready made' ones. Try using as an ice breaker activity with students, or with staff in a staff meeting to build your confidence. You may then get some ideas for resources you want to develop, and can reach out to your Learning Technologist team, or to apply for a small grant to try an idea out (ALDinHE have an annual call; Jisc have showcases for work with students).

To connect up with others:

- Jisc have an interesting set of 'future visions' where they set out what future scenarios for 2030:

[The hyflex plus university](#)

- ALDinHE have a whole list of events with resources, where the community talk about how they started to engage students using a range of technologies, we loved the one on MEMEs; everyone who presented is happy to be contacted about getting started.

Concluding thoughts:

Evaluating some of your ideas formally, running student focus groups, exploring some research, or even developing and sharing some resources as open education resources all help to capture the student voice and build innovations that can be shared with our community.

Link to LD@3 slides and video here:

Selected references:

Holley D., Hobbs M. (2020) Augmented Reality for Education. In: Peters M., Heraud R. (eds) Encyclopedia of Educational Innovation. Springer, Singapore https://link.springer.com/referenceworkentry/10.1007/978-981-13-2262-4_120-1 (You need to pay for the article or access through your library, BUT a very up-to date reading list on the link)

JISC Student digital experience insights survey (2020) https://www.jisc.ac.uk/sites/default/files/student-dei-he-report-2020.pdf

Wiederhold, B.K., 2020. Connecting through technology during the coronavirus disease 2019 pandemic: Avoiding "Zoom Fatigue". https://www.liebertpub.com/doi/pdfplus/10.1089/cyber.2020.29188.bkw

Biographies:

Debbie Holley is Professor of Learning Innovation at Bournemouth University. Her expertise lies with blending learning to motivate and engage students with their learning inside /outside the formal classroom, at a time and place of their own choosing. This encompasses the blend between learning inside the classroom and within professional practice placements, scaffolding informal learning in the workplace. She writes extensively about the affordances of technologies such as Augmented Reality, Virtual/ Immersive Realities and Mobile Learning.
https://staffprofiles.bournemouth.ac.uk/display/dholley

Heidi Singleton is a lecturer for the Children's and Young People's Nursing programme at Bournemouth University. Her expertise lies with designing learning to enthuse students and help close the theory practice gap. Heidi has recently completed her PhD thesis which was related to the use of virtual reality for undergraduate nurse education. Heidi's research interests include how technology can be used in healthcare. She is currently leading a project where virtual reality will be used to distract children from their intense eczema itch, to improve their quality of life. https://staffprofiles.bournemouth.ac.uk/display/hsingleton