

OUTSTANDING TEACHING, LEARNING AND
ASSESSMENT



TECHNICAL SKILLS NATIONAL PROGRAMME

Virtual Reality Package Guides
Created by: Myerscough College
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In Partnership with:



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INTRODUCTION

In preparation for the T-levels and the changes in education, in relation to work experience and employer engagement, we focused on using sustainable Virtual Reality technology to enhance student practical skills in preparation for employment via their work experience settings. Through scenario based learning packages and application of learning in real life industry settings which are developing with both educational and industry leaders.

We focused on the Equine, Agriculture and Sportsturf Industries, strengthening employer and educational partnerships, existing and new, through employer engagement and input to address perceived skills gaps by the industries using Virtual Reality.

WHY DO WE USE IT IN EDUCATION?

We chose Virtual Reality to allow for a more immersive feel, to give the students an experience. Traditionally Virtual Reality is the computer-generated simulation of a three-dimensional image, or environment, that can be interacted with in a seemingly real or physical way by a person using special electronic equipment, such as a helmet with a screen inside or gloves fitted with sensors. For the purposes of this project Virtual Reality is inclusive of 360° videos and images to create real life experiences, as this created a more realistic, contextual and immersive experience for students. These videos are then overlaid with interactions to create a Virtual Reality 360° package where students can choose their own learning pathway and there are options which allow for supplementary information to also be available to allow for wider learning.

The Virtual Reality packages were co-designed with the industries and the e-team, based on the skills gaps employers identified. As the packages varied depending which industry they were for, it meant that a user guide would be best to allow for anyone to be able to use them outside of the project. After being reviewed by industry partners, students and tutors the packages were implemented in sessions. Implementation worked collaboratively between tutors and Myerscough's e-team, with support in-class and using other technology in the sessions to allow for tech-submersion. For this project we concentrated on using the headsets in sessions. However the variety of UIs for the same Virtual Reality package meant that when headsets weren't available, tutors and students could still access the package via other means (phones, tablets and computers). Also in some areas where the groups were smaller, the tutors enjoyed using the VR package on a whiteboard and using it as a class activity for discussion points.

INCLUSION

This project has focussed on using technology that is accessible, sustainable and affordable so there are some special considerations when creating and implementing Virtual Reality. In the later stages of the project we worked with our partner Ambito Beaumont college to discuss inclusion and accessibility for the Virtual Reality packages we had created. As the packages were already developed and being used with students this is advice we are applying in future package development, but do currently adhere to for application of using Virtual Reality with students where possible. The following considerations were suggested from Fil McIntyre and Craig Brown from the Assistive Technology team at Ambito Beaumont College when creating and using VR with students:

Physical Access:

- Users may not be able to turn to view 360° videos and images. For wheelchair users, spinning in wheelchair is an option, with consideration for Health and Safety.
- Some users may want option of headset even if can't turn/raise/lower head. Can the controller be used to navigate?
- Dwell/staring option in the VR package to select options may be hard for some, so have option of click controller to choose options.
- For severely physically impaired users, access switches may be required to select rather than Dwell or controller navigation.
- Vision – ability to see text if at fixed size.

Cognitive access:

- Record speech support for any on screen text – click/dwell to have speech read out.
- Symbol support for some users – may need permission to insert symbols if Widgit then guidance here: <https://www.widgit.com/symbol-design-and-licensing/symbol-licensing.htm>
- Ability to record interaction and identify stressful point for learners.

Other considerations:

- Epilepsy – no flashing images and think about smooth movement in videos and images, for those with epilepsy triggered by movement.
- Understanding – Discussion/assessment around real vs. virtual world.
- Opt out – remind students that they can take the headsets off when they feel uncomfortable. This is good for those who may get sensory overload.

HOW TO USE VIRTUAL REALITY

Within this guide are the different ways to use the VR packages including via phone, online link and headsets. Things to consider when using Virtual Reality from a teaching and learning standpoint are the following:

Q. Do we have strong Wi-Fi and enough bandwidth?

A. IT infrastructure you have available to you? Some places may have more Wi-Fi than others which allows for mobile devices, and good bandwidth allows for use on computers. So you have to ask, is the place I'm holding the session at have strong Wi-Fi or enough bandwidth?

Yes – Then the options for phones, tablets and on screen can be used.

No – headsets work offline so are the better choice for offline or areas of weak Wi-Fi.

Q. What device will we use to access the VR?

A. There are multiple devices to use to access VR experiences. What are you trying to achieve? Is it an immersive experience for students to get lost in, a Virtual tour or consider the following;

- **Phone** - Apps or Online link?
- **Headset** - Tethered (relies on Wi-Fi/bandwidth and another computer to run the Virtual Reality) or headset with offline capability?
- **Desktop** - Online link with smartboard or individual screens?

Q. Does my chosen device work for all my learners?

A. The choice of device depends on what you're trying to achieve and relies on the following considerations; Is it inclusive for all your learners? Which stimuli do your students respond best too (audio, visual, reading/writing or experience based)?

Yes - Carry on and use the device that you've chosen.

No - If not then use a mix of different devices (tablets, phones, headsets) if possible to accommodate for all your learners, as well as having alternative tasks.

HOW TO USE VIRTUAL REALITY ONLINE LINKS

Opened on Desktop:

Open the link using a desktop computer (e.g. via a desktop web browser or desktop email client):

- User is redirected to the VR experience web page. The project can be launched in 360° by clicking on the Play button.

NB: If the link is opened on a non-compatible browser, an invitation to update is displayed.

Compatible browsers include: Google Chrome and Firefox.

Opened on desktop with a screen/ whiteboard/ projector:


- After you press play you can use the mouse to move around the 360° package.

Opened on desktop with an interactive smartboard:

- After you press play you can use your hands on the smartboard to move around the 360° package, as well as a mouse.

NB: This project will be updated as time goes by but will remain the same link, as the link updates to the same link when the WondaVR package is updated. (When creating your own WondaVR packages keep in mind that the online link of the project will remain the same every time and will update when you update it on your compute).

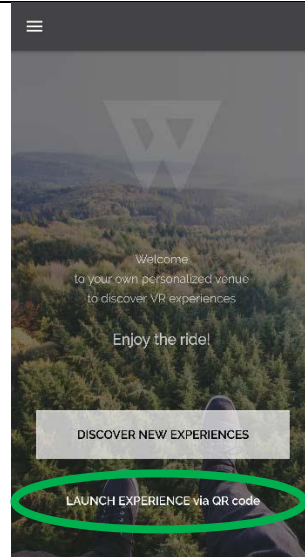
MOBILE PHONE

You can download the app to either iOS (Apple) or Android phones. Go to the app store for your device and search for the Wonda VR app  For more information on installation go [here](#).

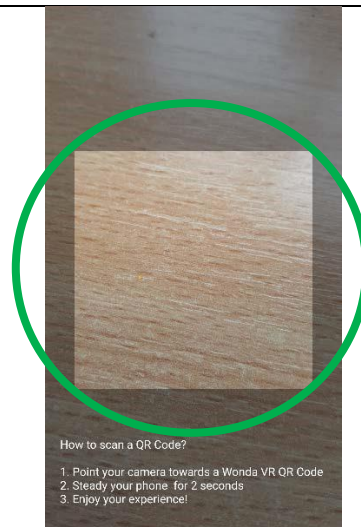
To use the app:

Open the WondaVR app and you should be presented with the following screen.

Choose **Launch Experience via QR Code** to access the VR resource through QR codes.

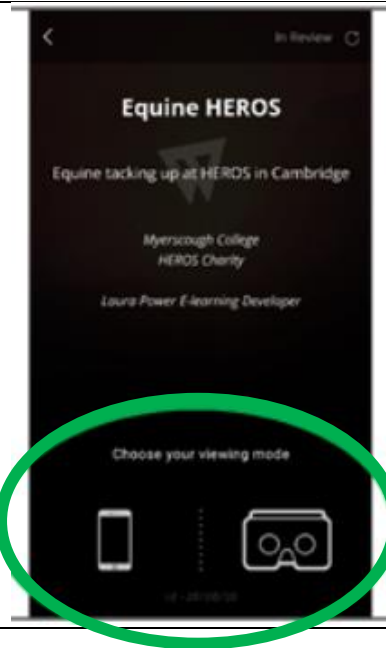


QR Code option will bring up the following screen, which you use the lighter area in the middle to scan the QR code:



Once you scan the QR code it will open up the project in the example across in the **Equine HEROS package**.

You can use the icons at the bottom to choose whether to view the resource just using your phone or as a headset for a cheaper VR headset, for example [Google Cardboard](#). This may vary on resources available, you can choose whichever way you or your students prefer to experience the package.



NB – you can download an offline version of the experience on the app, however this does take up memory on the device it's downloaded on. To find out more about it [here](#).

To find out more about launching the experience in a headset such as Google Cardboard you can go [here](#).

HEADSETS (TETHERED AND STAND ALONE)



Stand alone phone headsets (like Google Cardboard):

This varies on device type, please use the links to see the phone specific guides below:

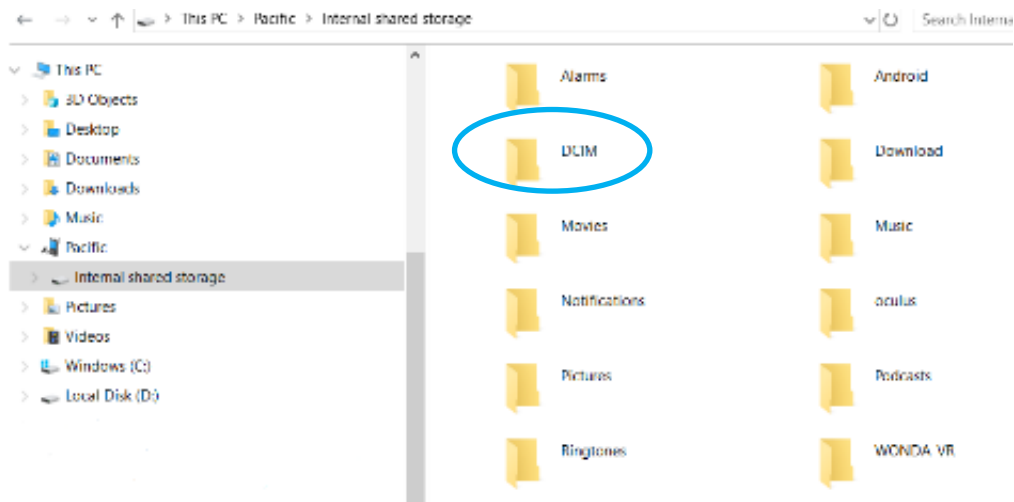
[Launching Experience in Apple Devices \(iOS\)](#)

[Launching Experience in Android Devices](#)

Stand alone Head Mounted Display (like Oculus Go):

Non-WondaVR based:

For those that don't have WondaVR the 360° videos can be downloaded and tailored to suit your institute's needs. To use 360° video within a headset, without interaction, you can use the internal storage on the headset and transfer the Mp4 videos across and view them in the files on the device.

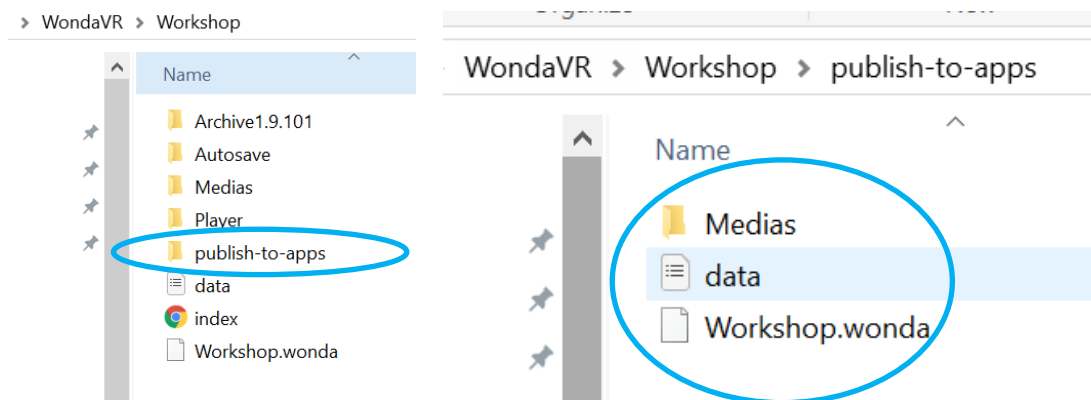


WondaVR:

You will need to have a registration key to download and use the app on a headset, this is linked to your WondaVR account. You can find the registration key with instructions via emailing support@wondavr.com and letting them know which headset model you are using.

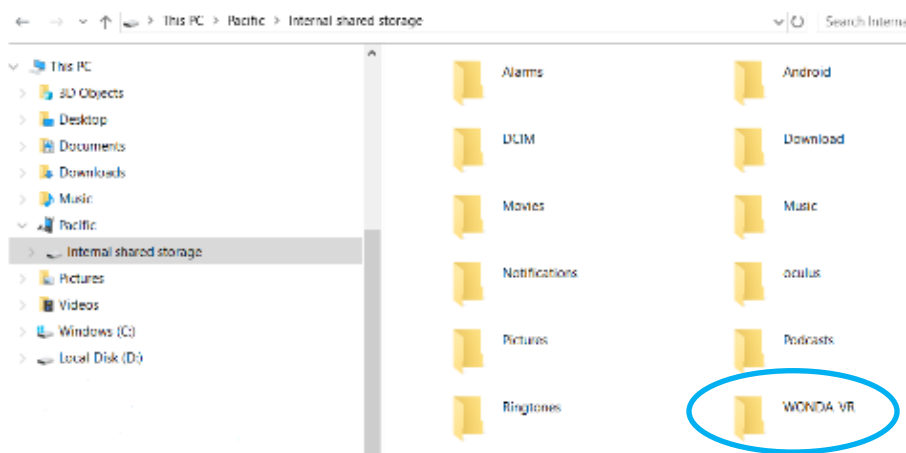
You can also find more information on setting up the WondaVR app on standalone headsets, such as Oculus Go, [here](#).

Once you have the WondaVR app downloaded onto the headset, go to the WondaVR documents and click on the publish-to-apps resources in the WondaVR files and upload them to the **WONDA_VR** folder on the headset.



If a **WONDA_VR** folder isn't automatically created on the headset for WondaVR when you've used the registration key, follow these steps:

- Plug the headset in to a desktop, open the headset to view the folders
- Create a folder on the headset called **WONDA_VR**.
- Move the packaged to apps folder into the **WONDA_VR** folder on the headset.
- On the headset when you launch the WondaVR app it should automatically launch the package.



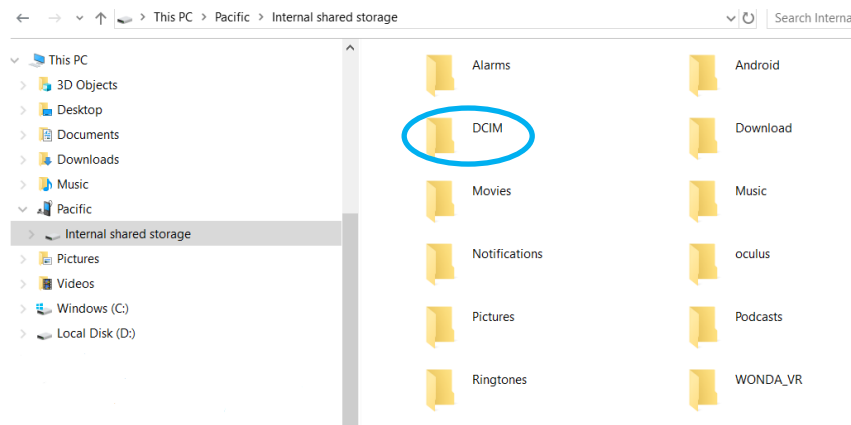


Non-tethered Head Mounted Display (like Oculus Rift):

Tethered headsets are headset which are connected to another computer, or device, and cannot be used on their own.

Non-WondaVR based:

For those that don't have WondaVR the 360° videos can be downloaded and tailored to suit your institute's needs. To use 360 video within a headset on its own, without interaction, you can use the internal storage on the headset and transfer the Mp4 videos across and view them in the files on the device. Or use the streaming software which comes with your wired headset.



WondaVR:



With Wonda VR it is possible to instantly view your project in your favourite HMD such as the Oculus Rift, HTC Vive or Windows Mixed Reality using the Wonda VR WebVR player.




For further information on tethered headsets and mixed reality, you can go [here](#).

ONLINE VR RESOURCES

These resources can be used in colleges and areas where there is strong wi-fi on any device. Preferences for links include using Google Chrome, Safari or Firefox for the browser when accessing the links.

Links to 360° videos: <https://vimeo.com/user81657196>

Area	Topic	QR Code (for use with WondaVR app)	Online Link
Agriculture	<p>Milking: This package includes a milking routine, for afternoon and morning routines specific to Lodge Farm at Myerscough College.</p> <p>Navigation: After intro screen, the navigation is broken down into 4 sections:</p> <ul style="list-style-type: none"> • Morning routine • Afternoon routine • Milking parlour • Wash down <p>The student can choose which section to go through/start from, or start at the morning routine and work their way through. This is done through gazing at the option they want for a few seconds. It can then be played through, following prompts to go to the next sections/diverging into other options within the package.</p>		https://go.wondavr.com/N0qVhbozmQ
Equine	<p>Myerscough Tacking up: This package includes tacking up in a riding school at Myerscough College and an industry setting specific to HEROS Horse Charity in Oxfordshire.</p> <p>Navigation: This is a package which can be played through, following</p>		https://go.wondavr.com/Su8SOMfAiO

	the yard staff and prompts to go to the next sections.		
Equine	<p>HEROS (tacking up industry setting): This package includes tacking up in an industry setting specific to HEROS Horse Charity in Oxfordshire.</p> <p>Navigation:</p> <p>This is a package which can be played through, as it is more of an experience and observation.</p> <p>There is an option for bandaging a horse, which is selected by staring at it. This is located in the stable.</p>		https://go.wondavr.com/MHK4gEUbyQ
Sportsturf	<p>Health and Safety: This package includes identifying health and safety hazards/risks in a workshop.</p> <p>Navigation:</p> <p>The student gazes at what they think the Health and Safety hazards are (for a few seconds) and this will bring up text if they are right.</p>		https://go.wondavr.com/nAsnI0HMNP
Sportsturf	<p>Pre-start Machinery Checks: This package includes pre-start machinery checks on specific Sportsturf equipment.</p> <p>For this package the only equipment is the open cab Kabuto tractor. (This will be built up on the future).</p> <p>Navigation:</p> <p>After intro screen, the student choses the equipment they want to look at through gazing at the equipment.</p>		https://go.wondavr.com/jQZCNHAENP

	<p>This will then bring up new navigation that is broken down into 2 sections:</p> <ul style="list-style-type: none"> • Prestart Machinery Checks • Drive out <p>The student can choose which section to go through/start from, or start at the morning routine and work their way through.</p>		
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GLOSSARY

Term	Definition
360° Video	Video which encompasses 360° view (a view of the whole scene). This means that on a flat screen you can drag the scene around to see the whole experience.
Canvas	Myerscough College's LMS at the time of this project.
Google Cardboard	This is Google's lower end headset viewer for Virtual Reality packages made out of cardboard. It needs a phone or tablet device to work with.
HMD	Head Mounted Display is a device which is worn by an individual to display VR content.
LMS	Learning Management System - is a software application for the administration, documentation, tracking, reporting and delivery of educational courses, training programs, or learning and development programs. It is the successor to a VLE.
Oculus Go	Oculus Go is a stand alone headset viewer for Virtual Reality made by Oculus .
Oculus Rift	Oculus Rift is a tethered headset viewer for Virtual Reality by Oculus .
Tech-submersion	Using multiple and varied technology tasks to embed a trial technology so it doesn't stand out to the learners.
Tech-diversion	Using technology to distract from another activity (technology or not) to engage and focus the learner.
UI or UIs (User Interface)	User interface is the means by which the user and a computer system interact, in particular the use of input devices and software.
VLE	Virtual Learning Environment - A virtual learning environment (VLE) is a set of teaching and learning tools designed to enhance a student's learning experience by including computers and the Internet in the

	learning process.
WondaVR	This is a software package used to create interactions on 360° videos and images for the Virtual Reality packages.
VR	This is the abbreviation for Virtual Reality.