TunnelSkills Immersive Learning - VR User Guide

Access Into Tunnels Under Construction

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TunnelSkills

Emergency Response

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Shaft and Tunnel Construction

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Insights into Tunnelling – Past and Present

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Introduction

This document contains descriptions of the four VR applications in the TunnelSkills' suite of Immersive Learning experiences. Two of the applications take the form of game-like interactive scenarios, while the other two offer more cinematic experiences.

They all have the common goal of promoting awareness of tunnelling environments, the hazards associated with them, and the health and safety considerations you need to be aware of when working underground.

Before you start any of the experiences, if you have not used the Oculus Quest headset or VR before, please read the 'First steps' part of this document. If you are comfortable using a Quest headset, then feel free to skip that section and open the apps!

First Steps

If you have never used an Oculus Quest, or Virtual Reality before, there are some great applications for you to experience and learn the basics.

'First steps' is an experience that helps you get to know the Quest controllers by walking you through a series of short fun experiences.

More information can be found here on the Oculus website:

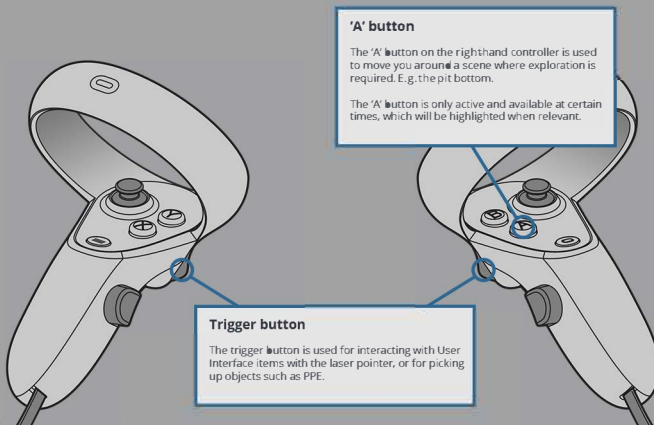https://www.oculus.com/experiences/quest/1863547050392688/

Oculus Quest Controllers

In each of the TunnelSkills VR experiences, you will be shown what buttons to use on the controllers. The application has been designed in such a way as to make interactions as natural and easy to learn as possible.

We have provided explicit instructions on a per scene basis in the following section. To help you prepare, the images here show you the Left and Right controllers with information on the main controller buttons and interactions.

'A' button

The 'A' button on the righthand controller is used to move you around a scene where exploration is required. E.g. the pit bottom.

The 'A' button is only active and available at certain times, which will be highlighted when relevant.

Trigger button

The trigger button is used for interacting with User Interface items with the laser pointer, or for picking up objects such as PPE.

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App 1 - Access Into Tunnels Under Construction

What is this?
This experience shows you the correct procedures to follow when entering a tunnel under construction. It also helps you to identify common hazards and safety features found in the pit bottom.

What will I learn?
In this experience you'll learn the following:
- Recommended Personal Protective Equipment (PPE) you should wear in the tunnelling environment
- The correct procedures to follow when entering/exiting the site and tunnel
- Health and safety considerations when in the pit bottom

How long will the experience last?
10-15mins (approx.)

Should I sit or stand for the experience?
This is a **standing** experience. If you can, try to find a 2m x 2m space in which to play it and ensure the area is free from obstacles.

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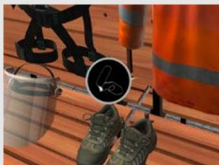# App 1 - Access Into Tunnels Under Construction

User tips

Start

When the experience first starts, here's what the welcome screen looks like.

Use your right controller to hover the laser pointer onto the 'Start' button and press the trigger button to begin.

Buttons

To select an answer or button, use the right controller to move over the item with your laser pointer and press the trigger button to select.

You will know that the answer is selected when the outline or font colour changes.

Picking Up Objects

To pick up objects in the changing room and tally hut, move your hand over them and hold down the trigger button. (The controller icon will appear over the first object you need to take in each environment as a reminder).

Next Icon

Selecting this icon takes you forward to the next location. Use your right controller to hover the laser pointer onto the icon and press the trigger button to select this action.

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App 1 - Access Into Tunnels Under Construction

User tips

Reticule | Tip

In the pit bottom area, green dots (reticules) will appear in the center of your vision when you look at a number of items here. You will see a white circle start to appear around the dot and then continue to fill up. Keep looking at the green dot until the white circle completes and reveals an information screen or a further prompt.

TRY IT!

Moving Around | Tip

Once in the pit bottom area, you'll gain the ability to move around freely. Press and hold the 'A' button on your right controller to make a line and target appear. Then, move the line and target over the location you want to move to and release the 'A' button to 'teleport' to that location.

Persistent Navigation Panels | Tip

Once in the pit bottom area, you'll see these panels if you look down at any point. They tell you how many items of interest you've discovered and how many safety alerts you've triggered.

ITEMS FOUND 1/6   SAFETY ALERTS 0

App 2 - Emergency Response

What is this?
This experience guides you on the correct procedures you should follow in the event of fire in a tunnel.

What will I learn?
In the experience you'll learn the following:
- The steps you should take to correctly prepare, activate and wear an MSA SavOx Self Rescuer
- The correct procedure you should follow to raise the alarm, make your escape, use any installed equipment to contain smoke or fire, and use the tally system in the appropriate manner

How long will the experience last?
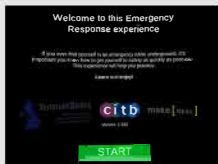5-10mins (approx.)

Should I sit or stand for the experience?
This is a **standing** experience. If you can, try to find a 2m x 2m space in which to play it and ensure the area is free from obstacles.

App 2 - Emergency Response
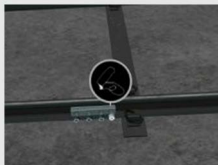
User tips

Start

Tip

When the experience first starts, here's what the welcome screen looks like.

Use your right controller to hover the laser pointer onto the 'Start' button and press the trigger button to begin.

Moving Around

Tip

At points within the experience, you'll gain the ability to move around freely. Press and hold the 'A' button on your right controller to make a line and target appear. Then, move the line and target over the location you want to move to and release the 'A' button to teleport to that location.

Flashing Objects

Tip

You can interact with objects that flash. This is mostly done by moving your virtual hands towards them and pressing or holding the trigger button on your controller. An icon will appear over the first flashing object in each location to prompt you to what you need to do next.

App 2 - Emergency Response

User tips

Icons and Chevrons

Tip

Selecting icons with arrows is a method for moving you to new locations in the experience; upwards or sideways. Use your right controller to hover the laser pointer onto the icon and press the trigger button to select this action. Sideways-facing chevrons are used to indicate the direction you need to travel.

Timed Events

Tip

Certain events within the experience are on a time limit, so be sure to act as quickly as is safe to do so – just like you would be expected to do in a real emergency.

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App 3 - Shaft and Tunnel Construction

What is this?

This experience takes you on 360° video walkthroughs of four different tunnelling methods:

- Tunnel Boring Machine
- Hand Mining
- Pipejacking
- Sprayed Concrete Lining

What will I learn?

In this experience you'll learn the following:

- The similarities and differences between the four different tunnelling methods
- Information relating to equipment and machinery used in shaft and tunnel construction
- Health and safety considerations; hazards, risks and control measures to be aware of when in these different tunnelling environments

The TBM, Pipejacking and Sprayed Concrete Lining walkthroughs show you scenes of different activities and processes taking place in these environments. The Hand Mining walkthrough has a similar format, but it also challenges the user to highlight some of the characteristics of the work environment and activities taking place and suggest any interventions or improvements that could be made.

App 3 - Shaft and Tunnel Construction

How long will the experience last?
15-20mins (approx.)

Should I sit or stand for the experience?
This is a **seated** experience. If you can, try to find a quiet and comfortable place
to sit. Swivel chairs make ideal seats as you'll need to look in all directions
throughout the experience.

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App 3 - Shaft and Tunnel Construction

User tips

Menu *Tip*

Here's what the menu screen looks like.
Use your right controller to hover the laser pointer onto the 'Enter' button of the experience you want to be taken to and press the trigger button to select this action.
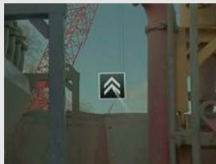

Next Icon *Tip*

Selecting this icon takes you forward to the next video/location. When you see the icon pulse, it means you've interacted with everything in the area and that it's time to move to the next location.

To select this icon, use your right controller to hover the laser pointer onto the icon and press the trigger button to select the action.

Information Icon *Tip*

Selecting this icon will tell you useful facts about the equipment, hazards, or machinery you're looking at.

To select this icon, use your right controller to hover the laser pointer onto the icon and press the trigger button to select this action. Once you have read the information that displays, close the dialogue box to move on.
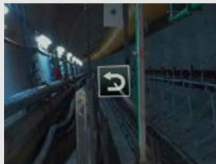

Previous Icon *Tip*

Selecting this icon takes you backwards to the previous video/location.

To select this icon, use your right controller to hover the laser pointer onto the icon and press the trigger button to select this action.

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App 3 - Shaft and Tunnel Construction

User tips

Persistent Navigation Panel

Tip

You'll see this panel if you look down at any point. It tells you how many information icons you've clicked on and it is also your way of returning to the main menu.

Use your right controller to hover the laser pointer onto the arrow in the top right corner of the panel and press the trigger button to return to the main menu.

App 4: Insights into Tunnelling – Past and Present

What is this?
This is an immersive 360° documentary where 12 tunnelling professionals share stories from their careers. These interviews are illustrated by photos and 360° video clips from tunnelling projects both past and present.

What will I learn?
In the experience you'll learn the following:
· How tunnelling has changed over the years
· What attracts people to a career in tunnelling
· Health and safety considerations to be aware of when working on tunnelling projects

How long will the experience last?
10-15mins (approx.)

Should I sit or stand for the experience?
This is a **seated** experience. If you can, try to find a quiet and comfortable place to sit. A swivel chair makes an ideal seat for this. This will allow you to look in all directions throughout the experience.

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App 4: Insights into Tunnelling – Past and Present

User tips

Start

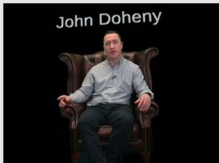When the experience first starts, here's what the welcome screen looks like.

Use your right controller to hover the laser pointer onto the 'Play' button and press the trigger button to begin.

360° Vision

When watching the film, be sure to look all around you to get the most from the experience.

Relax

After selecting the 'Play' button at the start of the experience, no further interaction is required. So, sit back and enjoy.

Troubleshooting

View off to one side?
Hold down the 'Oculus' button to reset the view.

Need to end the session?
Tap the 'Oculus' button to exit out of the app (note: progress will be lost if you exit mid-session).

Blurry vision?
Spend time adjusting the headset – the tighter it is to your head, the clearer your view will be. Also, try wiping the lenses with a microfibre cloth to get rid of any condensation build-up.

Losing controller tracking?
Hold down the 'Oculus' and 'A' buttons

Blue grid appearing in the scene?
You might need to reset the room boundary to give yourself more space. You can do this from the Oculus home screen.

Appearing at the wrong height in the scene?
The floor height might have been set incorrectly. You can reset the floor height in the Settings menu of the Oculus home screen.

Need More Help?   *Tip*

The Oculus support forum contains a wide range of troubleshooting tips...

https://support.oculus.com/2276002305794365/

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Contact Us
As a valued Make Real customer, our aim is to support you through any issues that you have. Whilst Make Real does not currently provide paid support services, if you are having a problem that is not covered in this guide, please contact us and we will endeavour to help.

About Us
Make Real create meaningful immersive experiences based upon business and learning objectives that are driven by solutions, not technologies.

We believe that immersive experiences are transforming the way we work, learn & play. We create collaborative serious games, VR and AR training experiences & other tools that support new ways of changing behaviours for the better.

Ben Dykes,
Client Services Director

ben.dykes@makereal.co.uk

Make Real Ltd
Floor 3
Plus X innovation hub
Lewes Road
Brighton
BN2 4GL

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Contact Us
For any general help, support or advise about the TunnelSkills Immersive Learning Project, please contact us by emailing:

immersivelearning@tunnelskills.org