

Virtual Reality: The "Reality" Behind This Immersive Technology



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Overview

- What is Virtual Reality (VR) & Augmented Reality (AR)
- Types of Virtual Reality
- Technology Associated with VR & AR
- Benefits of VR Training
- Effectiveness of VR Based Learning
- How Chesapeake Employers Insurance is using VR
- Live VR Demonstration

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VR vs. AR

Virtual Reality (VR):

- Immerse users in an entirely computer-generated environment but allows the individual to navigate the environment as if they were physically there.



Augmented Reality (AR):

- Interactive experience of a real-world environment into which sensory information (sound, video and graphics) are overlaid or augmented.
- Also known as mixed reality.

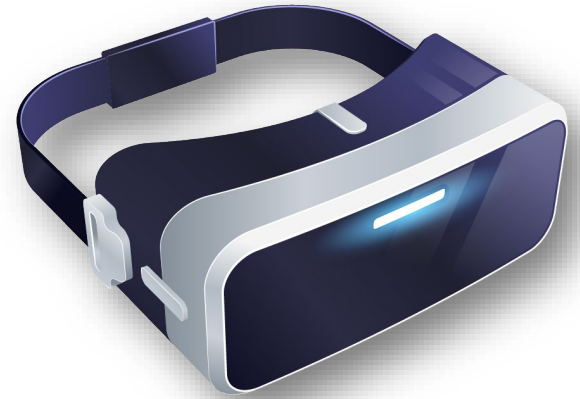


Types of Virtual Reality

- **Desk-based VR:**
 - Uses computer monitor(s) as the platform and displays a 3D virtual world on desktop screen(s) without any tracking equipment.
- **Immersive VR:**
 - Relies on special hardware to withdraw users from the physical world and provides an immersive environment.
- **3D game-based VR:**
 - Computer-based, game-like training scenes through the integration of visual, interactive, network and multi-user operating technologies.
- **Building Information Modelling (BIM)-enabled VR:**
 - Relies on the model so users can access BIM data to simulate construction, processes and operations in an immersive, more detailed way.

Technology Associated with VR & AR

VR/AR both use headsets, also known as head-mounted displays (HMD), to deliver content.



Virtual Reality Tech:

- HMD are devices worn on the head or as part of a helmet and have a small display optic in front of one, or both, eyes.
- There are many kinds of HMD in the market; the most common include unibody devices or separated devices made up of a VR headset and smartphone.

Augmented Reality Tech:

- AR devices typically are optical head-mounted displays (OHMD), which are transparent goggles or glasses that allow augmented content and digital information to be superimposed on the display.

How does Virtual Reality Enhance Safety Training?

OSHA's "Resource for Development and Delivery of Training to Workers" guide describes the basic principles of how adults learn.

- *Adults are voluntary learners*
- *Adults learn needed information quickly*
- *Adults come with a good deal of life experience that needs to be acknowledged*
- *Adults need to be treated with respect*
- *Adults learn more when they participate in the learning process*
- *Adults learn best by doing*
- *Adults need to know where they are heading*
- *Adults learn best when new information is reinforced and repeated*
- *Adults learn better when information is presented in different ways*

VR based training programs allow adults to learn by:

- Presenting information in a new way
- Participating in the learning process and physically doing
- Reinforce new information and repeat safe working practices

Benefits of Virtual Reality Training

- **Cost Effective & Reduced Training Times**
 - Training can be conducted practically anywhere
 - Reduces the amount of equipment needed to provide effective hands-on training
 - Can be used to test & evaluate job applicants
 - Faster reset times in between trainees
- **Better Memory Retention**
 - “This immersive experience can lead to better memory retention, according to the results of a 2018 study published in the journal *Virtual Reality*.”
- **Safe, Repeatable Interactions**
- **Actionable Data Insights**
 - Most VR training simulators can record data allowing employers to see how the employees are progressing and any specific areas that may need more attention or additional training.
- **Real-world experiences without real-world dangers**
 - An interim step between the classroom and the real world.

Who is Using VR Based Safety Trainings?

- **Construction** - Inspections, fall protection, ladder usage, equipment operation
- **Warehousing** – Inspections, forklift operations, Lock-Out/Tag-Out
- **Manufacturing** – Product assembly, equipment operation
- **Retail** – Customer interaction, active shooter, processes and procedures.
- **Health Care** – Patient lifting, surgery and processes, trauma
- **Emergency Services and Defense** – Active shooter, emergency simulation training
- **And Many More!**

Effectiveness of VR - Learning Study

- PwC, a leading professional services network, wanted to test whether VR would be as effective for training leadership, soft skills or other human-to-human interactions. Does it have advantages over traditional classroom or e-learning methods?
- Selected employees from a group of new managers took the same training (between February 2019 and January 2020) in one of the three following settings:
 - Classroom
 - E-Learning
 - VR-Learning



Results of PwC VR - Learning Study

- 40% of the VR-learners saw an improvement in confidence compared to classroom learners and 35% improvement over e-learners to act on what they learned after training in VR.
- VR-learners completed training 4 times faster than classroom training.
- VR-learners felt 3.75 times more emotionally connected to the content than classroom learners and 2.3 times more connected than e-learners.
- VR-learners were 4 times more focused during training than their e-learning peers and 1.5 times more focused than their classroom colleagues.

Additional Case Study - 1

As part of their onboarding and ongoing training, Hilton Corporate Team Members put on Oculus headsets and complete several modules that highlight the complexity and physicality of hotel operations

As a Result:

- With VR, Hilton can reduce in-class training from 4 hours to 20 mins.
- 87% of employees who went through VR training, changed their behaviors



Additional Case Study - 2

With a goal of reducing the risk of workplace injury, DHL deployed a VR tool that uses live-action animation to simplify complex tasks.

As a Result:

- 100% reduction in lost time due to injury
- 32% reduction in reported near misses
- Higher incident reporting rates.



How we utilize Virtual Reality

- Our VR programs are designed to be used in conjunction with classroom style trainings.
 - Our programs help to reinforce and test the knowledge discussed in a formal training presentation.
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VR Headset: Meta/Oculus Quest 2

Current Available Trainings Courses:

- General Hazard Identification for Construction Sites
- Lock-Out/Tag-Out for Electrical Safety
- General Fall Protection
- Scaffolding Safety Inspection
- General Industry Site Inspection
- Pilot Light Safety (residential boiler)
- Residential Construction Ladder Safety

Residential Construction Ladder Safety

- We consistently see serious injuries during residential construction operations, including falls from roof tops and ladders.
- We worked with our VR software provider to develop and build a new training program specific to ladder usage in residential construction.
- The goal of this program is to re-enforce basic ladder fundamentals including:
 - Ladder selection
 - Ladder inspections
 - Ladder placement
 - Ladder climbing
 - Use/inspection of a fall arrest harness



Residential Construction Ladder Safety



Residential Construction Ladder Safety



General Hazard Identification for Construction Sites



General Industry Site Inspection



Lock-Out/Tag-Out for Electrical Safety



General Fall Protection



Any Volunteers?



Questions?

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