Emerging Technology:

Virtual Reality

Overview

Introduction

This training provides a brief overview of the technology Virtual Reality (VR)
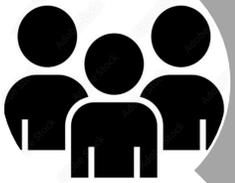
Audience

The target audience for this micro eLearning tutorial includes educators, instructional designer, and corporate trainers who are either new to VR or seeking to integrate VR into their instructional practices

Goal

The primary goal of this micro eLearning module is to equip learners with the foundational knowledge and understanding of VR.

* Explain the Foundations of Virtual Reality

* Identify the different types of VR and their application

* Analyze the benefits and challenges of implementing VR in instructional settings
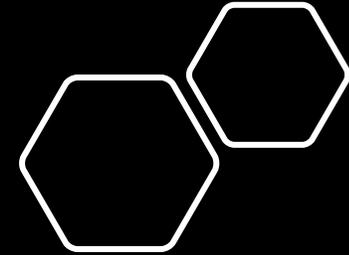
Introduction

Welcome to this micro eLearning module on Virtual Reality. Virtual Reality (VR) is transforming the way we engage with educational content by immersing learners in interactive, simulated environments.

In this module, you will explore the foundational concepts of VR, how the technology works, its benefits and challenges, and its future in instructional settings. By the end of this learning experience, you'll gain a deeper understanding of how VR can enhance engagement and learning outcomes in diverse educational and training environments.

Let's dive into the world of Virtual Reality!

- Zhang, M., Zhang, Z., Chang, Y., Aziz, E. S., Esche, S., & Chassapis, C. (2018). Recent developments in game-based virtual reality educational laboratories using the Microsoft Kinect. *International Journal of Emerging Technologies in Learning*, *13*(1), 138–159. doi:10.3991/ijet.v13i01.7773
- Hamad, A., & Jia, B. (2022). How virtual reality technology has changed our lives: An overview of the current and potential applications and limitations. *International Journal of Environmental Research and Public Health*, *19*(18), 11278. https://doi.org/10.3390/ijerph191811278
- Google. (n.d.). Google AR & VR | Home. https://arvr.google.com/
- YouTube. (n.d.). YouTube. https://www.youtube.com/watch?v=4nwQ36m9aDE
- Graphics: PowerPoint and Piktochart

Learning Objectives
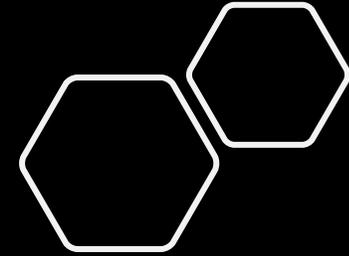
By the end of this eLearning course, learners will have the knowledge to:

- Learning Objective 1: Explain basic knowledge of VR, components, and technologies

- Learning Objective 2: Identify the different types of VR and their applications

- Learning Objective 3: Analyze the benefits and challenges of implementing VR in instructional settings

Format of materials: Audio, Video and Images
Technology used: Computer, Internet, PowerPoint
Resources:
- *History of virtual reality*. Virtual Reality Society. (2020, January 2). https://www.vrs.org.uk/virtual-reality/history.html
- Hamad, A., & Jia, B. (2022). How virtual reality technology has changed our lives: An overview of the current and potential applications and limitations. *International Journal of Environmental Research and Public Health*, *19*(18), 11278. https://doi.org/10.3390/ijerph191811278
- IMDb.com. (2018, March 29). *Ready player one*. IMDb. https://www.imdb.com/title/tt1677720/
- Google. (n.d.). Google AR & VR | Home. https://arvr.google.com/
- Graphics: PowerPoint and Piktochart

Foundations of VR

- **What is VR?**
- **Key components of VR systems**
  - Hardware (headsets, sensors, controllers
  - Software (VR application, platforms)

Virtual Reality (VR) is a cutting-edge technology that immerses users in a computer-generated environment. This environment can be designed to mimic the real world or create entirely new and imaginative settings, enabling users to interact with the virtual surroundings in real time.

VR has its roots in early 20th-century flight simulators, but it has rapidly evolved with advances in computing power, display technology, and motion tracking. Today, VR spans multiple industries, including entertainment, education, and training.

For example, the 2018 movie *Ready Player One* illustrates a futuristic vision of VR, where users enter an expansive virtual universe called "The OASIS." In this universe, they can experience limitless adventures and interact with other users through fully immersive, digital avatars. While this is a fictional portrayal, the film captures the essence of how VR aims to create realistic, engaging, and interactive virtual worlds.

In reality, VR is used to bring learners into simulated environments that feel tangible, offering opportunities for hands-on learning in a safe, controlled setting. From exploring ancient ruins to experiencing space travel, VR is changing how we perceive learning and interaction.

Types of VR

Categories of VR

- Fully immersive
- Non-immersive
- Semi-immersive

Fully immersive VR offers a complete escape into a virtual environment, while non-immersive VR allows users to interact with a digital world without full sensory immersion. Semi-immersive focuses on simulations such as in-flight training

Application of VR in different fields

- Education
- Healthcare
- Military training
- Entertainment

The applications of VR span various fields. In education, VR can transport students to historical events or scientific simulations, enriching their learning experience. In healthcare, it's used for training medical professionals in a safe and controlled environment. The military utilizes VR for realistic training scenarios, while the entertainment industry offers immersive gaming experiences.

Benefits and Challenges of VR in Instructional Settings

Benefits of VR in Education

- Enhanced Engagement
- Improved retention
- Safe training environments

It significantly enhances learner engagement by providing immersive experiences that make learning more interactive. Studies show that VR can improve knowledge retention, allowing students to better remember what they've learned. Additionally, VR creates safe environments for training, where users can practice skills without the risks associated with real-world scenarios.

Challenges of VR in Instructional Settings:

- High Costs
- Technical difficulties
- Accessibility

The costs of VR hardware and software can be prohibitive for many institutions. Additionally, technical difficulties may arise, from software glitches to compatibility issues, potentially hindering the learning experience. Accessibility is another critical consideration; not all students may have equal access to VR technologies.

- Zhang, M., Zhang, Z., Chang, Y., Aziz, E. S., Esche, S., & Chassapis, C. (2018). Recent developments in game-based virtual reality educational laboratories using the Microsoft Kinect. *International Journal of Emerging Technologies in Learning*, *13*(1), 138–159. doi:10.3991/ijet.v13i01.7773
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- YouTube. (n.d.). YouTube. https://www.youtube.com/watch?v=4nwQ36m9aDE
- Graphics: PowerPoint , Piktochart, istockphoto

Assessment

Students' will take a 3 question formative assessment after each lesson objective and the summative assessment will be a ten-question multiple choice quiz to reinforce learning and reflect on how they can incorporate VR as one of their educational strategies. Students must get 80% to pass on the summative assessment. Learners will be shown the correct answers to reinforce training if the questions are answered incorrectly.
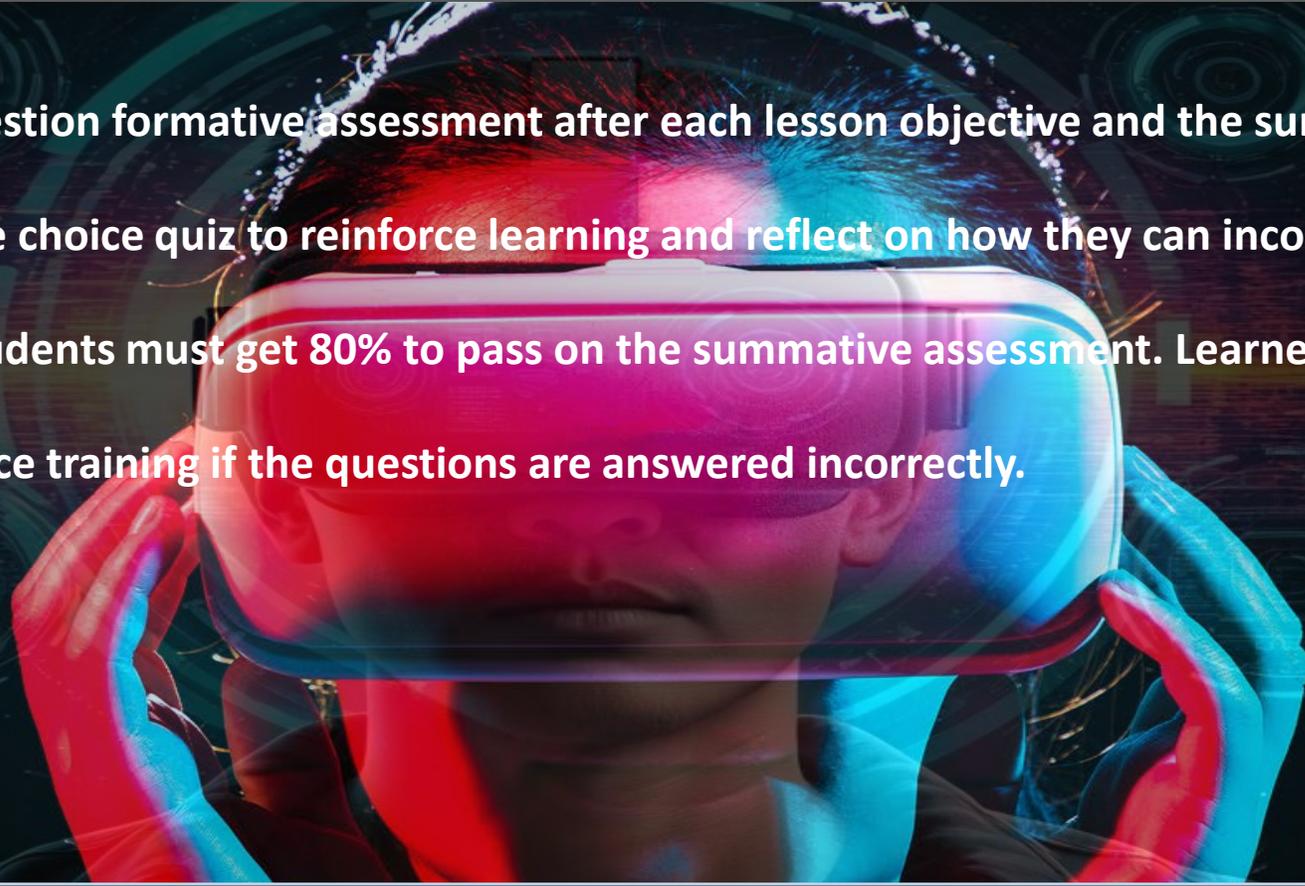
Objective addressed: LO1, LO2, LO3
Format of materials: Audio, Video and Images
Technology used: Computer, Internet, PowerPoint
Resources:

- Zhang, M., Zhang, Z., Chang, Y., Aziz, E. S., Esche, S., & Chassapis, C. (2018). Recent developments in game-based virtual reality educational laboratories using the Microsoft Kinect. *International Journal of Emerging Technologies in Learning*, *13*(1), 138–159. doi:10.3991/ijet.v13i01.7773
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Summary

Learners have the knowledge to:

- Explain basic knowledge of VR, components, and technologies

- Identify the different types of VR and their applications

- Analyze the benefits and challenges of implementing VR in instructional settings

THANKS FOR ATTENDING MY VIRTUAL REALITY MICRO ELEARNING COURSE

CONTACT
Leah Willis
LEWILLIS@SYR.EDU