## Virtual reality (VR)

Augmented Reality (AR): AR overlays digital content onto the real-world environment, blending virtual elements with the physical world. Users typically experience AR through a device such as a smartphone, tablet, or AR glasses. AR enhances the real-world view by adding virtual objects, text, or images, and it allows users to interact with and manipulate these virtual elements within their real environment. Examples of AR applications include Pokémon Go, AR filters on social media platforms, and industrial maintenance or repair assistance.

Virtual Reality (VR): VR creates a fully immersive digital environment that completely replaces the real world. Users wear VR headsets that transport them to a simulated virtual space. In VR, users are fully immersed in a computer-generated environment and can interact with and explore the virtual world. VR experiences can range from games and simulations to virtual tours and training scenarios. Popular VR devices include Oculus Rift, HTC Vive, and PlayStation VR.

Key differences between AR and VR include:

Immersion: VR provides a complete and immersive virtual experience by replacing the real world, while AR overlays virtual elements onto the real-world environment, allowing users to interact with both the virtual and physical worlds simultaneously.

Interaction with the Environment: In AR, users can interact with real-world objects and their virtual counterparts, whereas in VR, users interact with virtual objects and environments within the simulated world.

Hardware: AR experiences can be accessed using devices like smartphones, tablets, or dedicated AR glasses. VR typically requires specialized headsets that cover the user's field of view and may include handheld controllers for interaction.

Use Cases: AR is often used to enhance real-world experiences, such as adding information or virtual objects to a physical environment. VR, on the other hand, is commonly used for immersive gaming, virtual training, simulations, and virtual experiences.

Both AR and VR have unique applications and offer different experiences, but they share the goal of enhancing user engagement and interaction with digital content in various domains, including entertainment, education, healthcare, and industrial settings.

Virtual learning is a learning experience that is enhanced through utilizing computers and/or the internet both outside and inside the facilities of the educational organization. The instruction most commonly takes place in an online environment.

A virtual learning environment (VLE) in educational technology is a Web-based platform for the digital aspects of courses of study, usually within educational institutions. They present resources, activities and interactions within a course structure and provide for the different stages of assessment. VLEs also usually report on participation; and have some level of integration with other institutional systems.

For teachers and instructors who edit them, VLEs may have a de facto role as authoring and design environments.

VLEs have been adopted by almost all higher education institutions in the English-speaking world.

Lubarsky S, Thomas A. Thinking Inside The Box: Using Old Tools to Solve New Problems in Virtual Learning. Med Educ. 2020 Oct 9. doi: 10.1111/medu.14388. Epub ahead of print. PMID: 33034090.

Virtual reality (VR), sometimes referred to as immersive multimedia, is a computer-simulated environment that can simulate physical presence in places in the real world or imagined worlds. Virtual reality can recreate sensory experiences, including virtual taste, sight, smell, sound, touch, etc.

see Augmented reality.

## Indications

Virtual Reality Indications.

## Virtual Reality in Neurosurgery

Virtual Reality in Neurosurgery.

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