What is virtual reality?

KS3 KS4 Ages 11-16 ⏰ 3 min read

Virtual reality (VR) is technology that immerses you in a simulated environment — one that feels, to varying degrees, as though you're actually there rather than sitting in your living room. It works by exploiting how your brain builds its sense of reality.

How does a VR headset work?

A VR headset places a screen (or two screens, one per eye) millimetres from your face, filling your entire field of vision. The image on each screen is slightly different — mimicking the offset between your two eyes — creating a stereoscopic 3D effect that gives depth. As you move your head, sensors (gyroscopes and accelerometers) track the movement and update the image in real time, so when you turn your head left, the virtual world rotates to match. This head-tracking is critical — delays of even a few milliseconds between movement and image update cause nausea.

Your brain constructs your sense of "being somewhere" from several signals: what your eyes see, what your ears hear, what your body feels (balance, movement), and how these all match up. VR hijacks the visual and auditory inputs and makes them consistent with a different environment. It can't yet fake the physical sensation of moving through space — which is why walking in VR while your body stays still can cause motion sickness. Your eyes say "I'm moving"; your inner ear says "I'm stationary." Your brain gets confused and your stomach objects.

What's the difference between VR and AR?

Virtual Reality (VR) replaces your view of the real world entirely with a virtual one. **Augmented Reality (AR)** overlays virtual elements onto the real world — like the Pokémon Go app placing creatures in your actual environment through your phone's camera, or AR glasses that display information in your field of view while you still see the real world around you.

What is it used for beyond games?

Medical training (performing virtual surgery before the real thing), military simulation, architectural visualisation (walking through a building before it's built),

therapy for phobias and PTSD, remote working and collaboration, education, and rehabilitation after brain injuries. The technology is still developing, but applications well beyond entertainment are already in use.