VR in the Classroom: From Immersion Experiences to Creating 360° Video

This poster showcases multiple deployments of virtual reality (VR) and 360° video for undergraduate classrooms that took place, and continue to take place, at Molloy University. We showcase five pedagogical examples of virtual reality ranging from low touch techniques (describing both the use of simpler, more accessible forms of technology and the production of projects) to high touch techniques (meaning more advanced forms of digital technology and the complexity involved in the production) in order to demonstrate the range of skills that these options offer for engaging in virtual reality for educational outcomes, VR development and storytelling. By working within the low to high touch range, we demonstrate how VR need not be reserved for only the most well-funded programs and students.

The pedagogical activities have been divided into "Doing" and "Making" categories for ease of discussion. However, multiple of these technologies can and do work well together (such as the Google cardboard and Panoform or GoPro and Meta Quest 2). For each technology, we provide information about the cost in USD (as of Summer 2023), the additional requirements needed to implement these technologies in a classroom setting, and a general description that outlines any relevant specifications, pros and cons, and suggested pedagogical contexts for use. We additionally included QR codes that link to resources, assignments, and examples of student work using the respective technologies.

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DOING

Google Cardboard

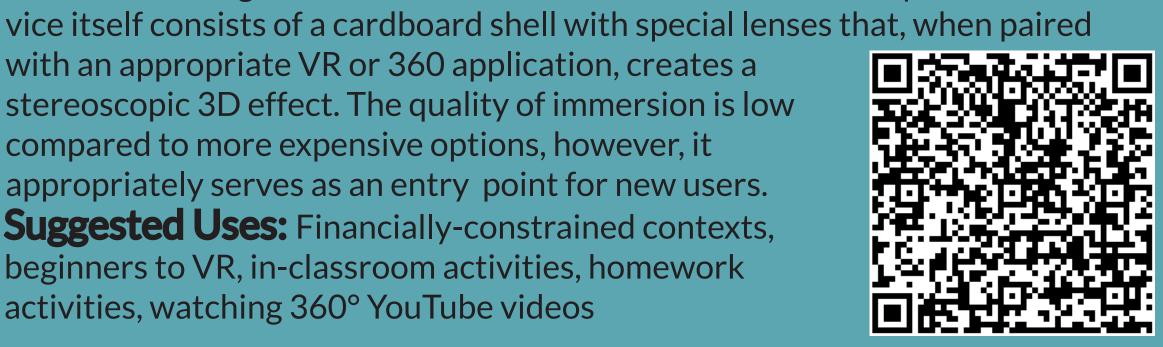
Cost: \$9.99+ USD

Additional Requirements: Smartphone, Internet/

YouTube access, some space **Description:** Google cardboard is an affordable and accessible open-source VR headset designed for use with most Android and iOS smartphones. The de-

with an appropriate VR or 360 application, creates a stereoscopic 3D effect. The quality of immersion is low compared to more expensive options, however, it appropriately serves as an entry point for new users.

Suggested Uses: Financially-constrained contexts, beginners to VR, in-classroom activities, homework activities, watching 360° YouTube videos

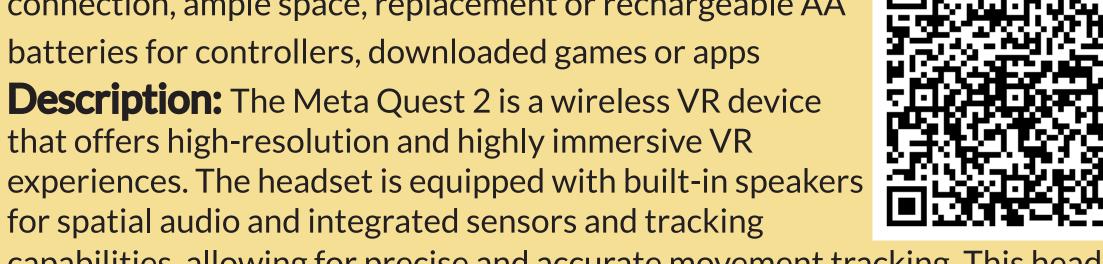


Meta Quest 2

Cost: \$299-\$349 USD

Additional Requirements: Meta account, internet connection, ample space, replacement or rechargeable AA batteries for controllers, downloaded games or apps

Description: The Meta Quest 2 is a wireless VR device that offers high-resolution and highly immersive VR experiences. The headset is equipped with built-in speakers



capabilities, allowing for precise and accurate movement tracking. This headset provides opportunities for both full body and seated play— in either case plenty of space is needed to ensure the best (and safest) experience. The included controllers are ergonomic and intuitive to people with prior gaming experience. This enables users to interact with virtual objects and environments more naturally, enhancing the sense of presence and immersion. The Meta Quest 2 offers an extensive content library with a wide range of VR games, experiences, and applications to purchase. This device requires an account with Meta to use it. When using multiple Meta Quest 2 headsets logged into the same account in a classroom setting, apps cannot be used by multiple users simultaneously. Over time there may be many software and hardware updates that must be downloaded and applied for the device to work properly.

Suggested Uses: Gaming, simulation, immersive videos and experiences, used as part of in-class activities





MAKING

Panoform

Cost: \$0 USD

Additional Requirements: Internet access,

Smartphone, Google Cardboard, paper, writing implements

Description: Panoform is a simple, low-tech, and affordable VR system for an introduction to iterative design thinking in VR development. This browser based application allows users to upload sketches and images, designed on grids that



are available for download through the panoform site, and then view them in a 360° environment using their martphone with a Google Cardboard (or similar) headset. Suggested Uses: Early VR prototyping, art and/or

design projects, classroom or community events where participants display a wide range of experience levels



GoPro Max



Cost: \$449-499 USD

Additional Requirements: Micro SD card, mount, GoPro or Insta360 app for



footage stitching, editing software and knowledge of editing **Description:** These are two common examples of consumer-grade 360° cameras that can shoot both traditional footage and 360°. Scan QR code for more detail.

Suggested Uses: Student-level 360° video projects, digital tours, projects where both traditional and 360° panoramic footage may be desirable

Labpano Pilot One

Cost: \$1800 USD

Additional Requirements: Tripod or mount, USB cable or WiFi for data transfer, editing software and knowledge of editing

Description: The Labpano Pilot One is a professional-grade 360-degree camera designed for capturing high-resolution immersive content (up to 8k) with exceptional image quality and precision. Equipped with four high-resolution lenses, the Pilot One captures the full 360-degree field

of view and includes internal storage with the option to add more. Further, the Pilot One supports live streaming, allowing users to share their 360-degree content in realtime with an online audience.

Suggested Uses: Professional-level 360° video projects, digital tours, 360° live streaming virtual events and live broadcasts





