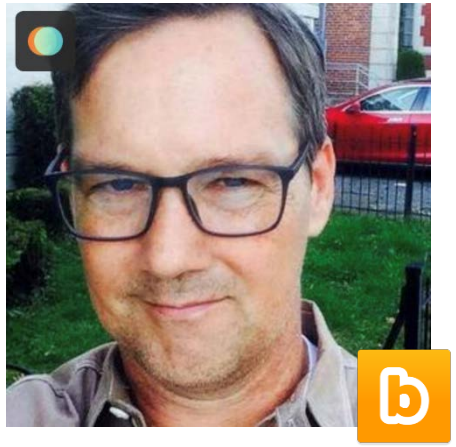
Th3 BuilD: *Immersive Learning Technologies*

2018 Innovations in Teaching & Learning



Jim McLean
Instructional Technologist
Multimedia
jmclean2@gmu.edu

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Michelle Verneman
Instructional Technologist
Online Learning Resources
mvernema@gmu.edu

What are Immersive Technologies?

Immersive technologies are those that simulate real world experiences, senses, and interactions through the use of digital content, allowing users to become active participants in the digital world.

Immersive technologies include:

- Virtual Reality
- Augmented Reality
- 360 Video
- Spatial Audio
- Gesture Recognition
- Global Positioning (GPS)

Why Do We Need This?

As **Immersive technologies** are becoming more popular and prevalent in education, teachers and professors have started to recognize the benefits of leveraging **AR, VR, and 360 video** and have begun to incorporate these elements into their lesson plans.

Immersive Technology provides opportunities to:

- Open new possibilities for research, learning, and promotion
- Build engagement and create excitement in projects or presentations
- Communicate with new immersive with interactive tools

https://er.educause.edu/blogs/2017/10/vr-and-ar-designing-spaces-for-immersive-learning

3 Ways Virtual Reality can Enhance Learning

Virtual reality has the potential to create a new language for experiential learning.

Maya Georgieva and Emory Craig of Digital Bodies talk about what VR can do for students and faculty.

https://www.youtube.com/watch?v=jRQzl8ewDMQ

3D Technology Spaces at Mason

Th3 BuilD

The Build is a collaborative space featuring 3D resources for the Mason community to explore the latest 3D technology.

3d immersive technology resources in **The3 BuilD** include:

- Makerbot Replicator 3D printers (2)
- Prusa i3MK2 3D printer
- Taz Lulzbot 6 dual extruder 3D printer
- Autodesk ReCap
- Makerbot desktop Scanner (3D modeling)
- Leap Motion VR Station 360FLY VR Cameras
- Ricoh 360 Degree 2k and 4K Cameras
- VR Headsets for Android and Android Phones (VR/AR)
- iMac 3D /VR/AR design/production Stations

Virtual Reality (VR)

Non-Immersive

- Leap Motion (desktop VR)
- ImmersiveTerf (Collaboration)
- Wearality Sky (Heads-up display

Semi-Immersive

- Liquid Crystal Shutter Glasses
- GeoFS Flight Simulator

Fully-Immersive

- Gaming: Oculus Rift & SkyRim
- Event Lab
- Microsoft HoloLens

Augmented Reality (AR)

Marker Based

- Blippar
- Aurasma (HP Reveal)

Projection Based

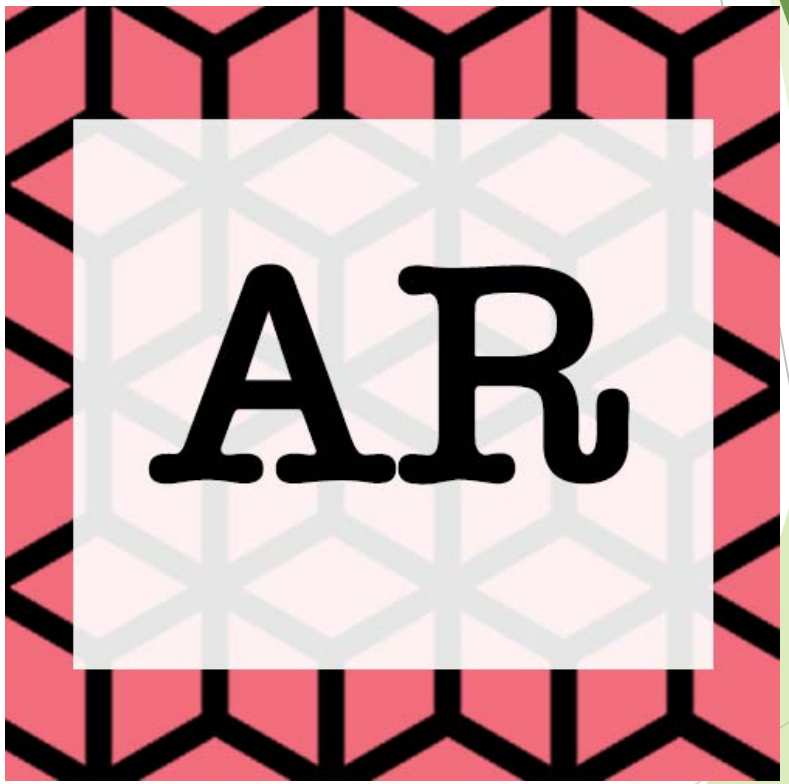
- Magic Leap Lightform

Superimposition Based

- Ikea Place
- Instagram/FaceBook Stickers

Markerless

- GPS



360° Video

Monoscopic

A standard 360 video is just a flat equirectangular video displayed on a sphere. Think of it like the face of a world map on a globe, but with VR your head is on the inside of the globe looking at the inner surface.

- Ricoh Theta V
- 360FLY

Stereoscopic

Stereoscopic 3D adds another level of immersion by adding depth data between the foreground and background. Your favorite 3D blockbuster films are typically shot with 2 lenses side by side, to give you a feeling of a different vantage point per eye.

- Live Planet Camera
- Lucid Camera
- Lytro Immerge

3D Printing and Design

We introduce Faculty and students to 3D fabrication technology to:

- Demonstrate Learning
- As a Study Aid
- As a Research Tool

Our approach is to get users immersed in 3D technology as quickly as possible.

- DOWNLOAD IT- Resource based
- GRAB IT- Introduction to Digital Capture
- DESIGN IT- Introduction to Design

Photogrammetry

Photogrammetry is the science of making measurements from photographs.

Types of photogrammetry

- Aerial
- Terrestrial and Close-range