Teaching Professor Online Conference

SYNCHRONOUS: OCTOBER 25-28, 2022

ASYNCHRONOUS: OCTOBER 29-DECEMBER 31, 2022

How the Metaverse Can Improve Student Engagement and Learning: Using AR and VR in the Classroom

JJ Wallace PhD

Assistant Professor of Health and Exercise Science at Transylvania University in Lexington, KY.

Objectives

- What is AR/VR?
- How can AR/VR be used effectively?
- Implications and Issues of AR/VR use in the classroom.

What is AR/VR?

What is the Metaverse?

What is your experience with AR/VR?

https://www.menti.com/al3578gzbydv

Augmented Reality

Technology that superimposes a computer-generated image on a user's view of the real world, providing a composite view.

Augmented Reality

Augmented Reality

IKEA Place

Augmented Reality

SketchAR

Augmented Reality

Human Anatomy Atlas

Virtual Reality

A computer simulated 3D environment that enables users to explore and interact with their environment.

Virtual Reality

Two Types of VR Experiences:

- Passive
- Active

Virtual Reality (Passive)

YouTube VR

Virtual Reality (Passive)

Quill

Virtual Reality (Active)

Ann Frank House

Virtual Reality (Active)

VirtualSpeech

Virtual Reality (Active)

Google Earth VR

The Metaverse

A virtual-reality space in which users can interact with a computer-generated environment and other users.

The Metaverse

Meta Horizon Worlds

https://www.youtube.com/watch?v=02kCEurWkqU

How can VR feel so real?

IMMERSION!(1)

Vision

View moves with head!

Auditory

Spatial Audio – mimicking sounds in the real world.

Touch

Hepatics (Hands)

Embodiment Research

Research tells us the more you feel as if the virtual body is yours, the more you believe the experience is really happening! (2)

How VR Can Be Used Effectively

Computers & Education 147 (2020) 103778

Contents lists available at ScienceDirect

Computers & Education

journal homepage: www.elsevier.com/locate/compedu

A systematic review of immersive virtual reality applications for higher education: Design elements, lessons learned, and research agenda

Jaziar Radianti [a], Tim A. Majchrzak [a,*], Jennifer Fromm [b], Isabell Wohlgenannt [c]

[a] University of Agder, Kristiansand, Norway
[b] University of Duisburg–Essen, Duisburg, Germany
[c] University of Liechtenstein, Vaduz, Liechtenstein

Assessed 38 Articles → 2016-2018

VR In Higher Education Systematic Review (2020)

Outcomes

VR In Higher Education Systematic Review (2020)

Recommendations

VR In Higher Education Systematic Review (2020)

education sciences

MDPI

Review

Use of Augmented and Virtual Reality in Remote Higher Education: A Systematic Umbrella Review

Krisjanis Nesenbergs *, Valters Abolins, Juris Ormanis and Artis Mednis

Cyber-Physical Systems Laboratory, Institute of Electronics and Computer Science, LV-1006 Riga, Latvia; valters.abolins@edi.lv (V.A.); juris.ormanis@edi.lv (J.O.); artis.mednis@edi.lv (A.M.)

* Correspondence: krisjanis.nesenbergs@edi.lv

Review of VRs Impact on Engagement and Performance (2021)

Engagement	Performance

• 6 Interventions
  • 6 +
	• 24 Interventions
	  • 11 +
	  • 7 -
	  • 6 No change

- Cannot replace in person/on site experiences.
- Virtual Lab Experiences +
- Improved Social Contact in Remote Settings/Classrooms
- Novelty increases interest…
- …BUT if students/teacher not prepared it can hinder learning.

Review of VRs Impact on Engagement and Performance (2021)

VR In the Classroom Review (2021)

Deep and Meaningful E-Learning with Social Virtual Reality Environments in Higher Education: A Systematic Literature Review

by Stylianos Mystakidis [1,*], Eleni Berki [2] and Juri-Petri Valtanen [3]

[1] School of Natural Sciences, University of Patras, GR-2504 Patras, Greece
[2] Faculty of Information Technology, University of Jyväskylä, FI-40014 Jyväskylä, Finland
[3] Faculty of Education and Culture, Tampere University, FI-33100 Tampere, Finland
* Author to whom correspondence should be addressed.

Appl. Sci. **2021**, *11*(5), 2412; **https://doi.org/10.3390/app11052412**

Received: 4 February 2021 / Revised: 2 March 2021 / Accepted: 4 March 2021 / Published: 9 March 2021

VR In the Classroom Review (2021)

Review of 33 Articles

2005-2018

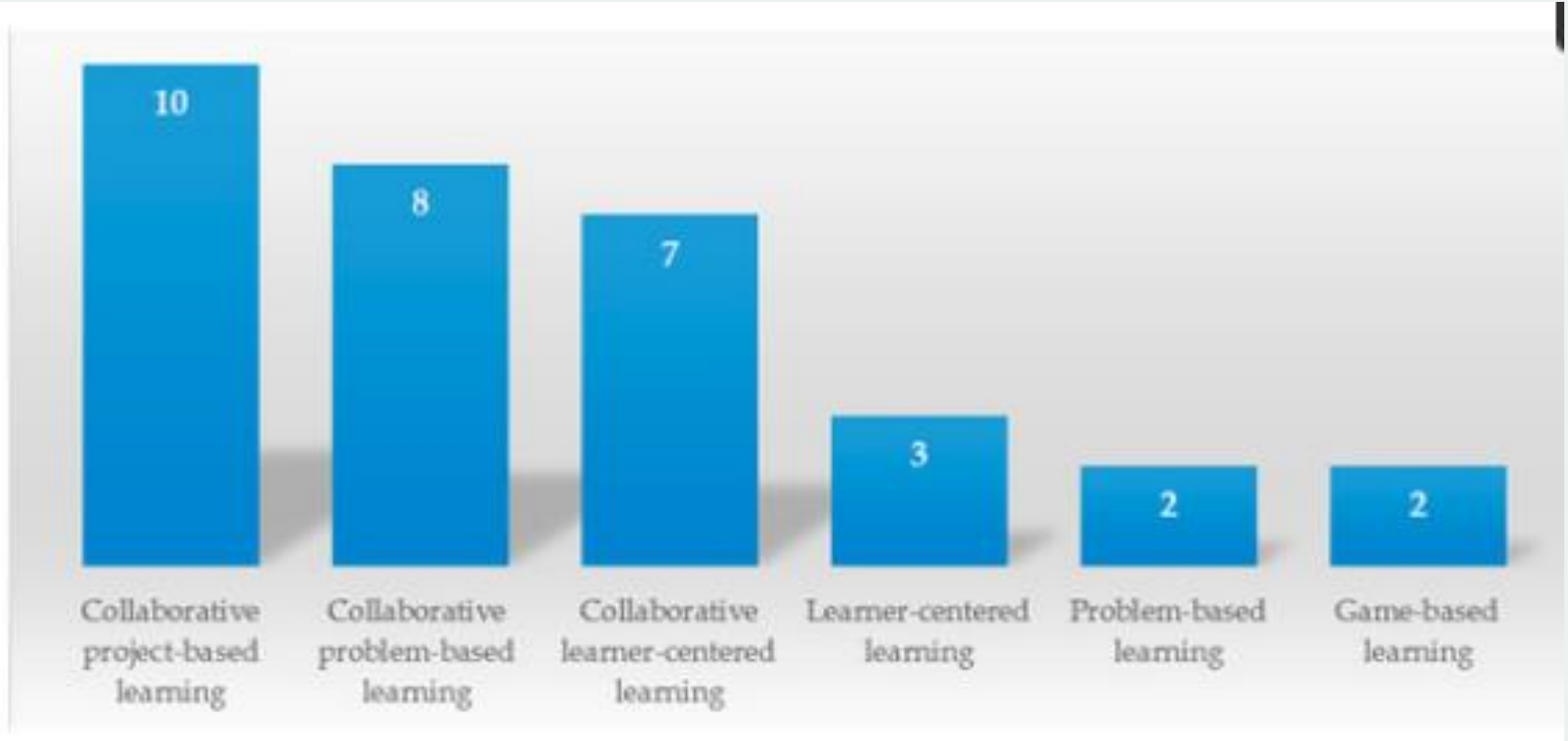
Topic Fields

- Language
- Computer Science
- Business
- Education
- Science
- Engineering

Assessed Design Methods

28/33 Positive Results for VR

VR In the Classroom Review (2021)



VR Best Practices 2022

(3)Article Link

Towards Routinely Using Virtual Reality in Higher Education

January 2022

DOI:10.24251/HICSS.2022.011

Conference: Proceedings of the 55th Hawaii International Conference on System Sciences (HICSS) · At: Maui, Hawaii, USA

Project: Virtual Reality in Higher Education: Application Scenarios and Recommendations

Authors:

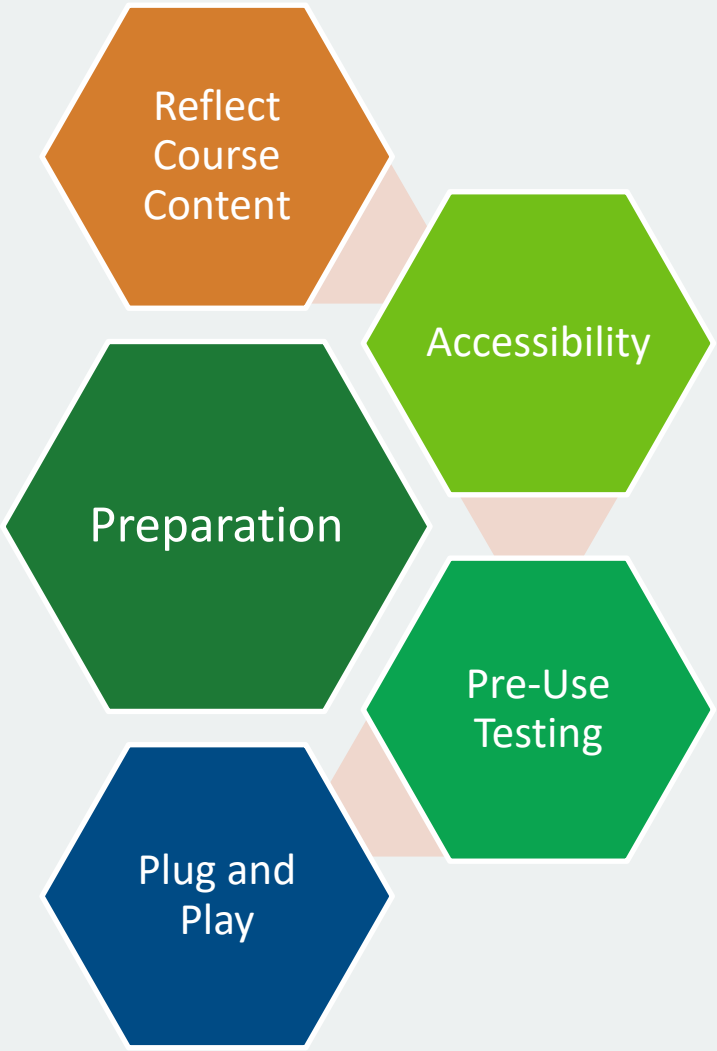
Tim A. Majchrzak
Universitetet i Agder

Jaziar Radianti
Universitetet i Agder

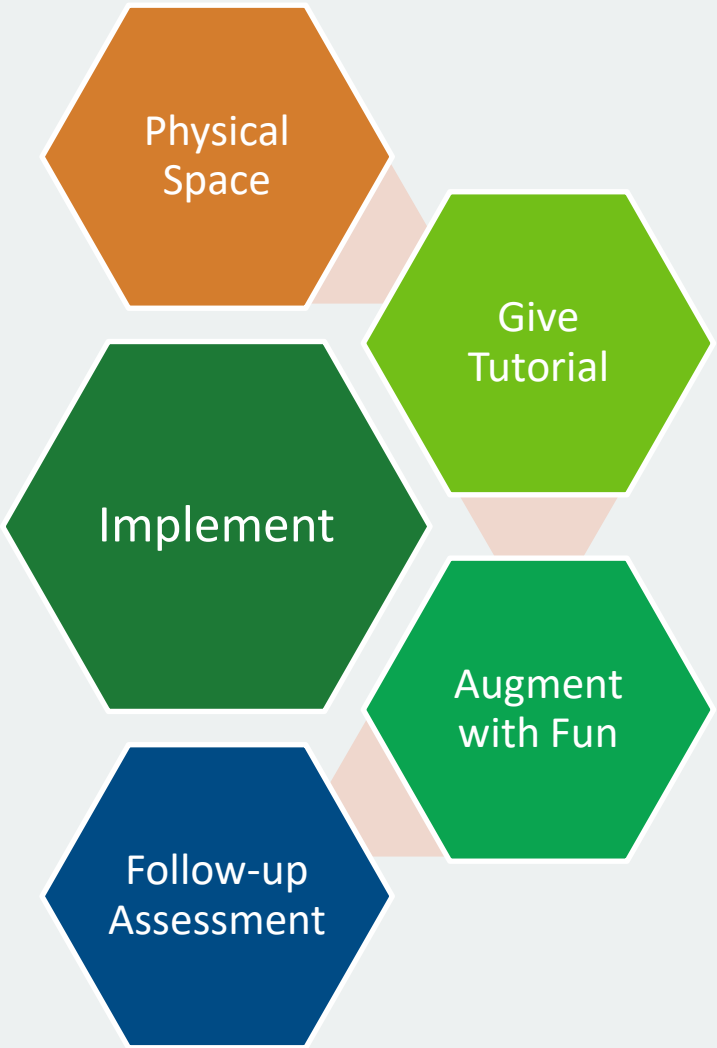
Jennifer Fromm
University of Duisburg-Essen

Michael Gau
University of Liechtenstein

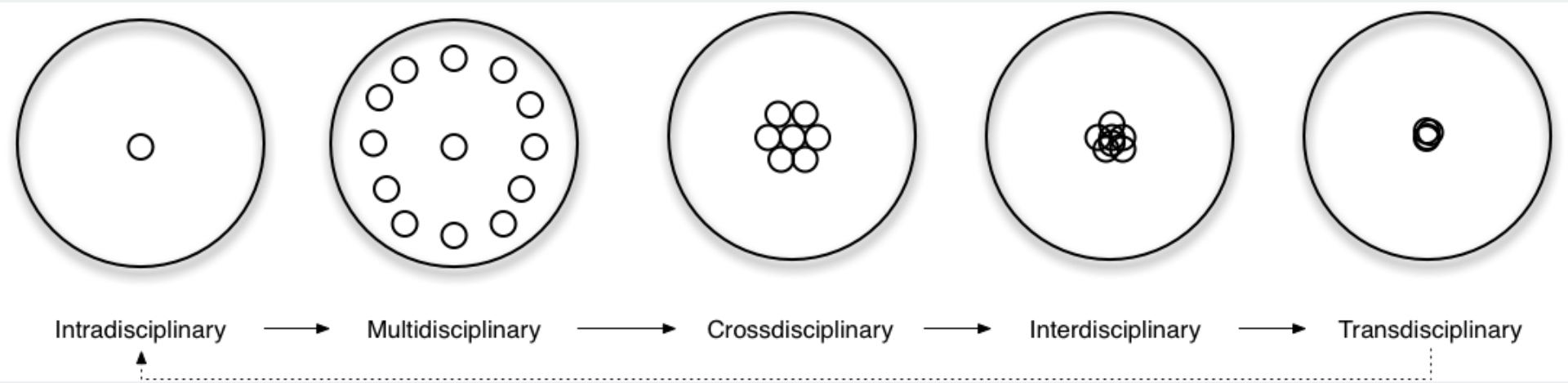
(3)Article Link



(3)Article Link

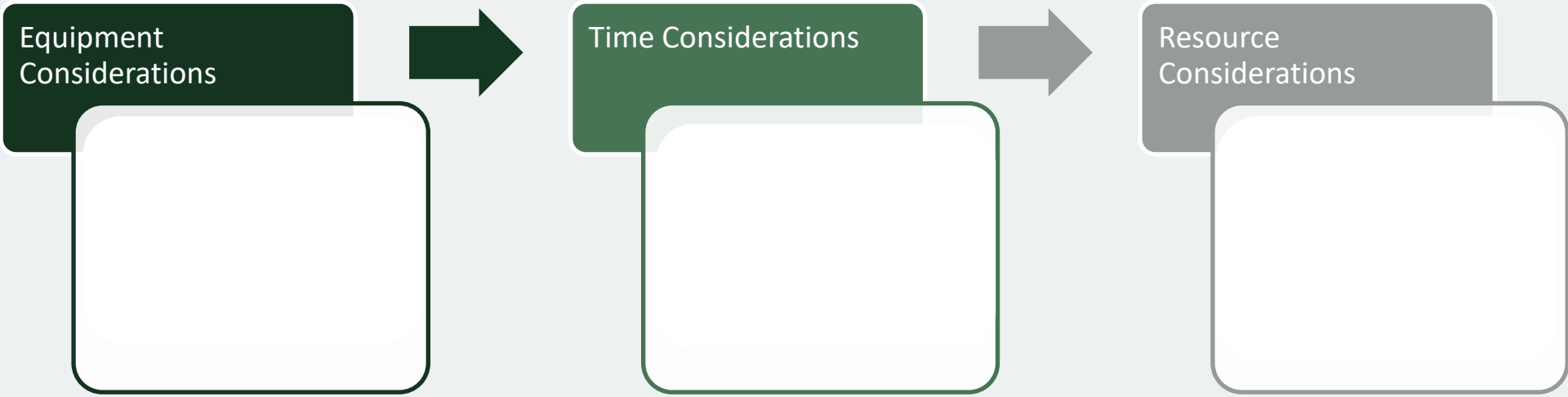


VR is a tool for collaboration!

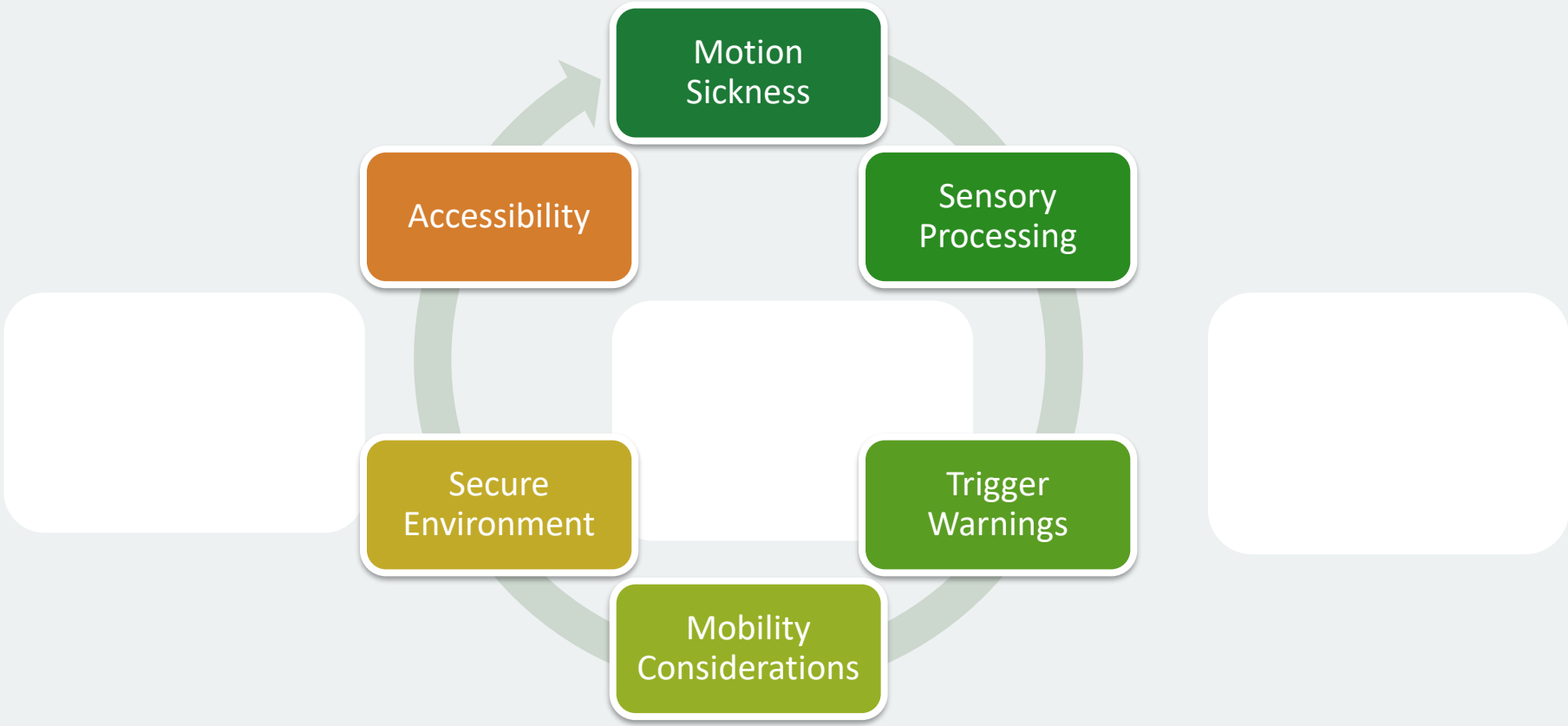


VR can be used across disciplines!

Implications and Issues of AR/VR use in the classroom (3).



Implications and Issues of AR/VR use in the classroom



How Can You Use VR In Your Classroom?

Link

VR Workshop Webpage

THANK YOU, QUESTIONS?