

DEFINED
ALIGNED



E-Learning, Technology
and Communications
UF | COLLEGE OF EDUCATION

ELEVATING THE COLLEGE OF EDUCATION

AR & VR in Education

April 23 | 12-1PM

DEFINED ALIGNED



E-Learning, Technology
and Communications
UF | COLLEGE OF EDUCATION

JANUARY 29 | 12-1PM

Helpdesk and Resource Hub

FEBRUARY 20 | 12-1PM

AI Integration

MARCH 26 | 12-1PM

Recruitment for Webinars

APRIL 23 | 12-1PM

AR/VR in Education

MAY 20 | 12-1PM

Personal Social Media as a
Promotion Tool

Presenting Today



Rachel West

Application Programmer II
rachel.west@ufl.edu



Jay Rosen

Application Programmer II
jayrosen@ufl.edu



Sami Wax

Producer II
wax@coe.ufl.edu



AR and VR Overview



Augmented Reality (AR)

Alters but does not completely replace how you perceive the world around you. It overlays digital information onto your real-world view.

Immersion: Partial

Technology: Smartphones, tablets, AR glasses.

Examples:

- Pokémon GO
- Amazon's Product Viewer





Virtual Reality (VR)

Replaces how you see the world around you, creating a simulated environment.

Immersion: Total

Technology: Head Mounted Displays (Meta Quest, HTC Vive)

Examples:

- Beat Saber (rhythm game)
- Meta Horizon (Metaverse)



Mixed Reality (MR)

Similar to AR, but the digital world can interact with the real world, and vice versa.

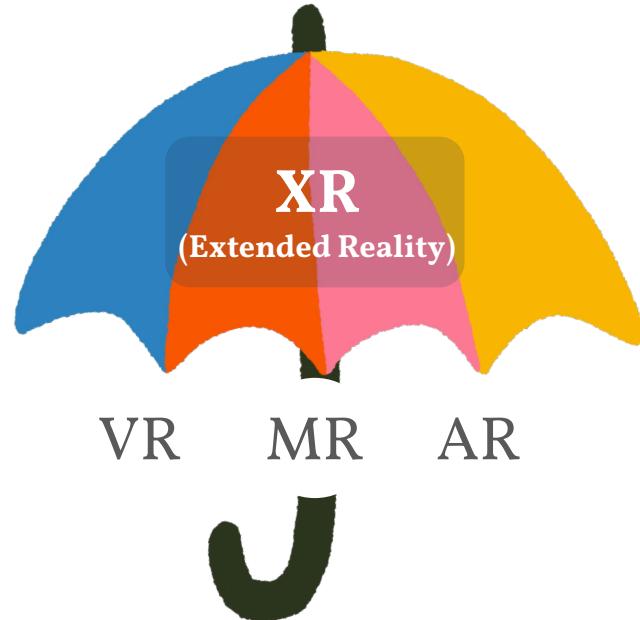


Immersion: Partial-Total (blurred)

Technology: Specific VR headsets (Meta Quest 3), Smart glasses



Meta Quest 3 Tech Demo



Extended Reality (XR)



Umbrella term for AR/VR, referring to any technology that alters the user's perception of reality.



AR & VR in Education



AR & VR Benefits

Accelerated Learning & Confidence
VR training can be up to **4x faster** than traditional methods, boosting learner confidence by as much as **275%**. [1]



[1] Virtual Speech. "Benefits of VR for Developing Soft Skills". <https://virtualspeech.com/blog/benefits-vr-soft-skills-training>



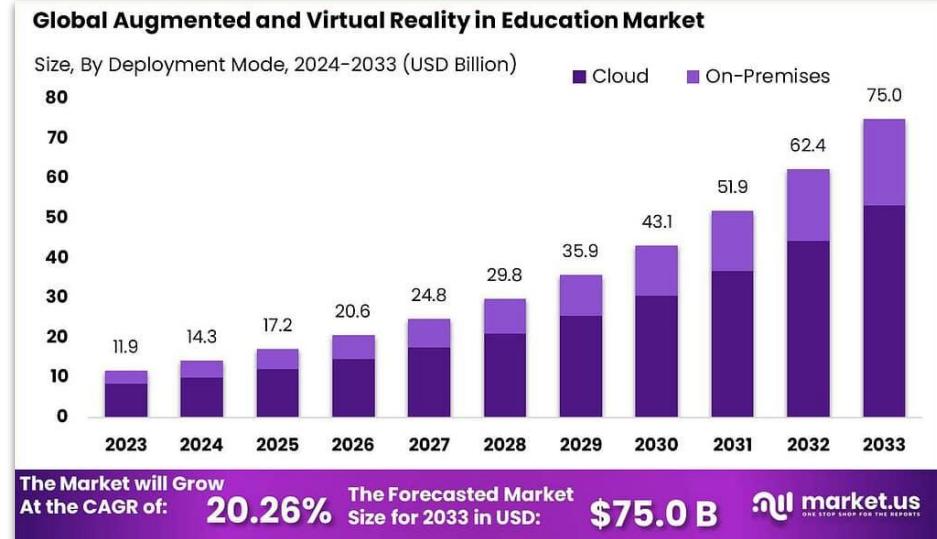
AR & VR Benefits

Rapid School Adoption

US K-12 school adoption of AR/VR was projected to surge from <20% in 2022 to over **40% by 2024**. [2]

Massive Market Growth

The global AR/VR education market is forecast to potentially exceed **USD 65-80 Billion** by the early 2030s. [3]

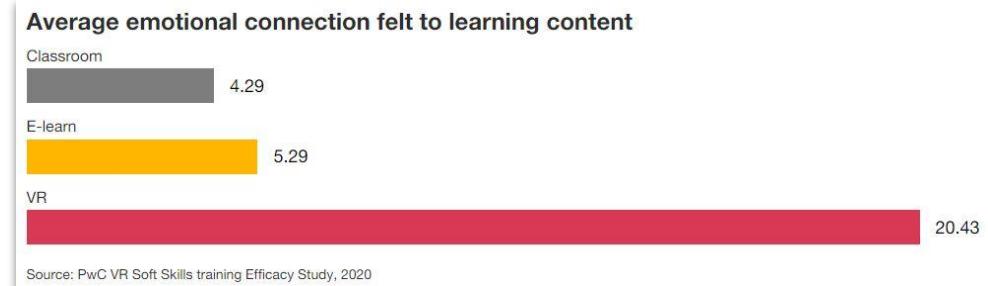
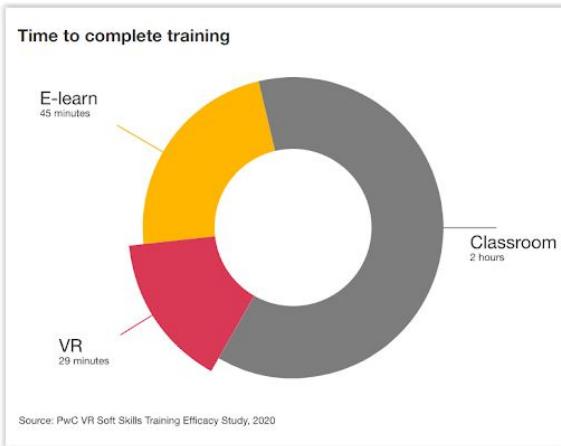


[2] Matsh Youth Development. "Emerging Technologies in Education: Statistics on AI and VR Adoption Rates in 2024". <https://www.matsh.co/en/statistics-on-ai-vr-adoption-in-education/>

[3] Market US. "AR and VR in Education Market To Hit USD 75 Billion by 2033" <https://scoop.market.us/ar-and-vr-in-education-market-news/>



AR & VR Benefits



[4] Virtual Speech. “VR Stats for the Training & Education Industry in 2025”. <https://virtualspeech.com/blog/vr-stats-training-education>



High-Level Examples

Training

- Medical procedures
- Patient interaction simulations
- Flight simulations for commercial & defense



Mass Virtual

Education

- Virtual field trips
- Immersive remote learning
- Tools for learning disabilities

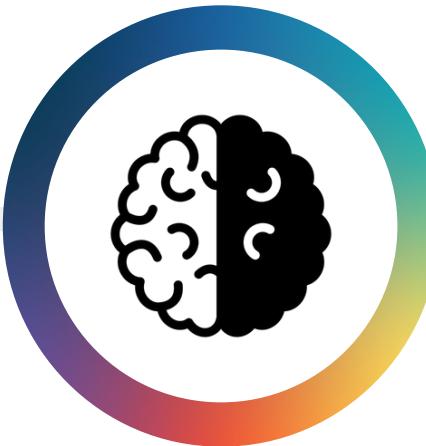


VERSE

Why Choose XR in Teaching?



**“Gamification”
Element**



**Improved
Immersion and
Learning**



Accessibility



AR & VR

@ UF College of Education



AR Expeditions

{newworldsreading}



About New Worlds Reading Initiative

The **New Worlds Reading Initiative** is a book distribution program in collaboration with Scholastic, particularly for reluctant and struggling readers.

New Worlds Reading's books and activities support students in:

- Strengthening literacy skills
- Building reading confidence
- Nurturing a lifelong love of reading

AR Expeditions: Project Reasoning



Problem

The NWRI program distributes books to families with struggling readers, but how do we **encourage them to engage** with these books?



Solution

An app that combines the magic of **augmented reality** with **literary games**, building upon themes of the NWRI books.

AR Expeditions Overview

Students explore exciting environments, interact with educational content, and foster a love for reading. AR Expeditions builds confidence and motivates children to build a deeper connection to literacy.

Target Audience : 3rd - 5th graders

Platform: Smartphones and tablets

Game Engine: Unity & AR Foundation



Ocean Experience



First of **four themes**, focusing on the **aquatic ecology of Florida**.



Split into “**mini-experiences**”:

- Aquarium
- Bubble Pop
- Coloring
- Fishing

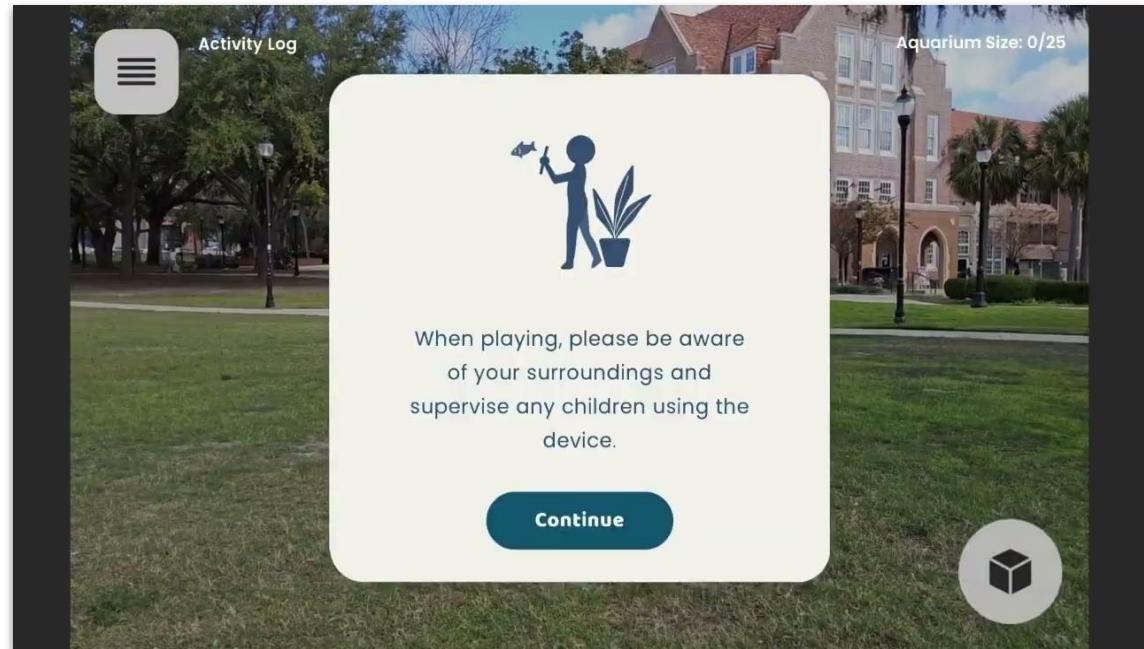


Aquarium

AR
EXP

Build a live ecosystem in your room, and watch animals interact with each other and their environment.

AR: Additive construction.
Life size animals swim in the space and plants become rooted to the ground plane.



Bubble Pop

Pop the bubbles corresponding to correct answers, strengthening your knowledge about Florida ecology.

AR: Bubbles and marine life fill the room. Can walk around to see new viewpoints.



Coloring

Color in your favorite sea creature, then watch it come to life as a 3D model.

AR: Animate the student creations, from 2D to 3D.



Fishing

Answer vocabulary questions to obtain lures, then use those lures to reel in fish.

AR: Transform the ground plane into a fishing pond and walk on the wooden dock.



AR Expeditions: Impact



- Ongoing research pilot at P.K. Younge Developmental Research School led by doctoral student Irene Kao and supervised by Dr. Nigel Newbutt
- 3rd grade test group found the app **exciting** and **engaging**, helped them **understand** the subject matter of the books
- Publication at *The Society for Information Technology and Teacher Education (SITE)*
 - “From Participants to Designers: Exploring Self-Efficacy through CoDesigning an Augmented Reality Application in a School”
- Forthcoming publication for *IEEE International Conference on Advanced Learning Technologies (ICALT)*
 - “Exploring Elementary Students’ Perception and Engagement of Reading using an Augmented Reality Educational Technology Application”



Virtual Environments for Realistic Simulated Experiences



About the Equitable Learning Technology Lab

Providing solutions to **real-world** problems with **cutting-edge** learning technologies.

Focusing on **collaboration**, **community engagement**, and **co-design research** for equitable and advanced technologies.



EQUITABLE LEARNING
TECHNOLOGY LAB

COLLEGE OF EDUCATION
UNIVERSITY OF FLORIDA

VERSE: Project Reasoning



Problem

Unfamiliar public environments can be **overwhelming**, particularly for individuals on the autism spectrum, leading to **less pleasant experiences, interactions, and potentially meltdowns.**



Solution

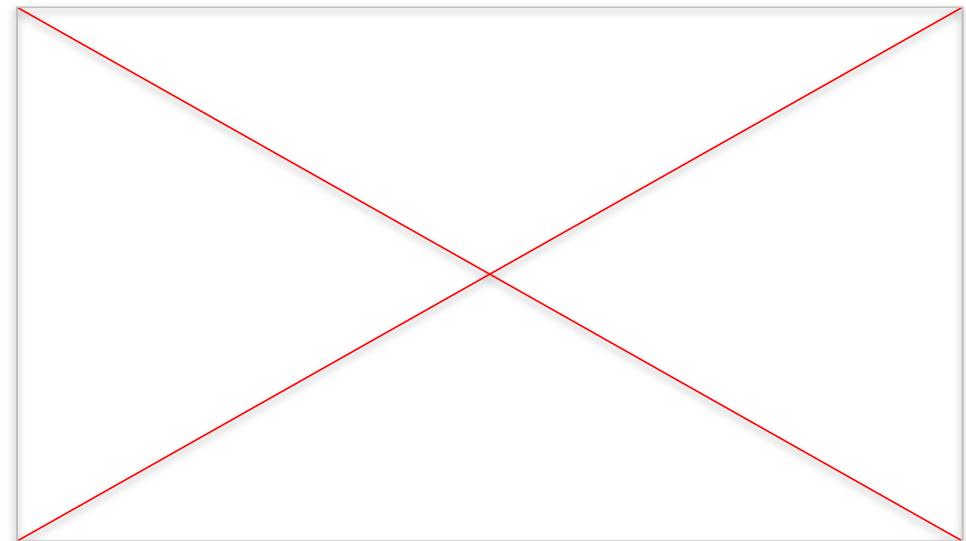
Prepare individuals for their visit by allowing them to **experience** these environments and **practice** common interactions through **virtual reality.**



VERSE Overview

VERSE is a collaborative project with the local community, co-designing virtual reality experiences for **practicing real-world skills** and **promoting accessibility and understanding**.

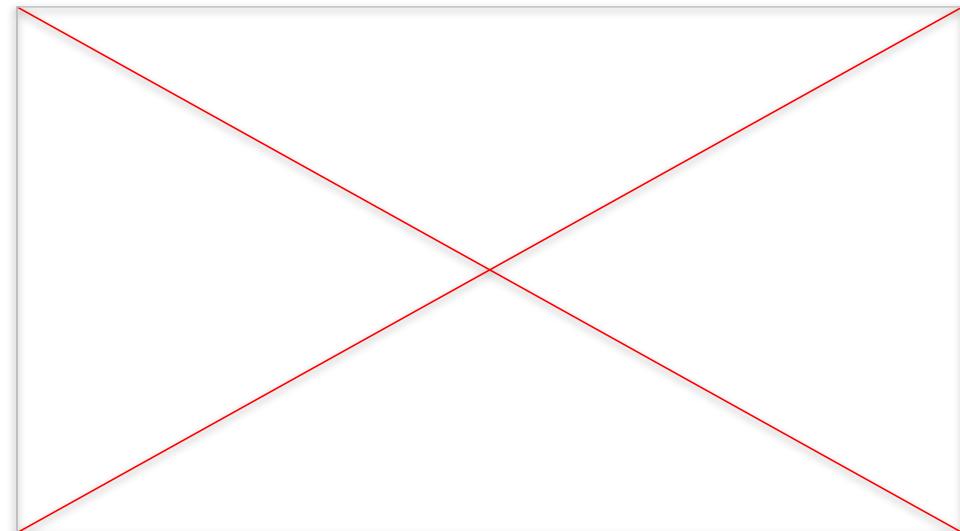
There are currently **3 experiences** to choose from, with the newest **Museum experience** to be the most immersive and interactive yet.





VERSE Co-Design Process

Our role: Unite all perspectives to create an interactive virtual museum experience that is engaging and accessible and supports how autistic participants naturally interacted in the exhibit space





VERSE Collaborators & Roles

Science education expert

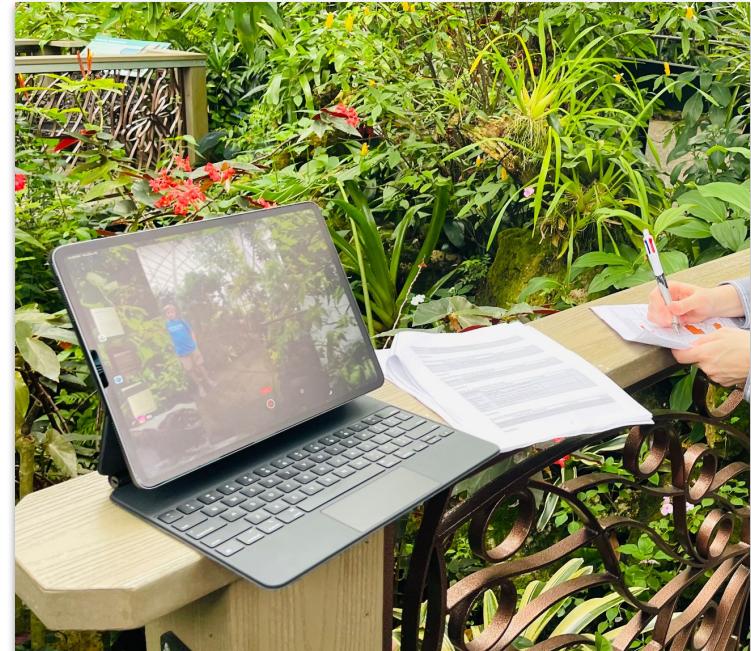
- Ensure learning goals are met and participant voices are being centered
- Document co-design sessions

Exhibit designers

- Facilitate filming at the museum
- Provide digital assets from the exhibit

Local autistic community

- Explore museum while being observed
- Engage in co-design sessions





VERSE Collaborators & Roles

Our role as educational technology experts

- Unite all perspectives in the build, centering the user and the info from co-design sessions
- Capture museum experience
- Implement digital assets from exhibit
- Develop interactive experience and ensure accessibility



VERSE Co-Design Process



Phase 1:
Data Collection

Phase 2:
Conceptualize &
Design

Phase 3:
Media
Production

Phase 4:
Interactive
Experience
Development

VERSE Co-Design Process



Phase 1: Data Collection

- Field notes & interviews from participants at physical museum

Phase 2: Conceptualize & Design

- Sequence & content structure based on participants
- Flowchart & decision tree

Phase 3: Media Production

- 360 filming for VR
- Audio recording
- Voiceover (English & Spanish)

Phase 4: Interactive Experience Development

- Develop sequence in Unity
- Interactivity & accessibility



Use of 360° Camera Technology

By using 360° photo and video capture we can create **immersive learning experiences** that are **accessible** on a mobile device, desktop/laptop, and VR headsets.

Insta360 X4 camera, Insta360 Studio edit, finalizing in Adobe Creative Cloud to implement in Unity for the interactive build.





VERSE: Impact

- **Guide participants' engagement** in the physical exhibit through cues in the virtual museum experience
- **Empower participants to explore** areas they previously might have avoided
- With the Florida Museum of Natural History closed for renovations, the VERSE immersions are the **only way to experience the museum**





Conceptualizing an XR application

When creating an XR application, what should I keep in mind?

How will the medium *enhance* learning of a particular subject?



Accessibility

As a public institution, we must first **maintain accessibility guidelines provided.**

- Captions & audio descriptions
- Language options
- Personalization

Due to the reliance of **camera movement** and possible **motion controls**, extra considerations should be taken for XR software.

- What kind of technology will be available to the audience?
- Are certain movements limited?
- What kind of space is needed?





Interaction Methods

Everybody had an **internalized perception** of how to interact with something.

- How would you mime taking a phone call? Rolling down a window?
- Where would you go to look for settings in an app? Or a login function?

User interface standards are based in **2D**, but how do you adapt them to a **3D environment**?





Interaction Methods

What is the **prime method of interaction?**

- Tapping on a screen
- Hand motion controls
- Controller buttons
- Movement / camera-based
- Gaze-based / eye tracking

Focus on **1-2 interaction types** to design core gameplay around.



Galactic Space Control



Fruit Ninja VR



Technical Limitations



- Computing power
- Access to hardware
- Motion sickness (VR-specific)
 - Excessive peripheral motion
 - Unexpected collisions
 - Screen effects, such as blurriness and chromatic aberration
 - Lack of haptics (wind, vibrations)



Best Practices



Know your
audience



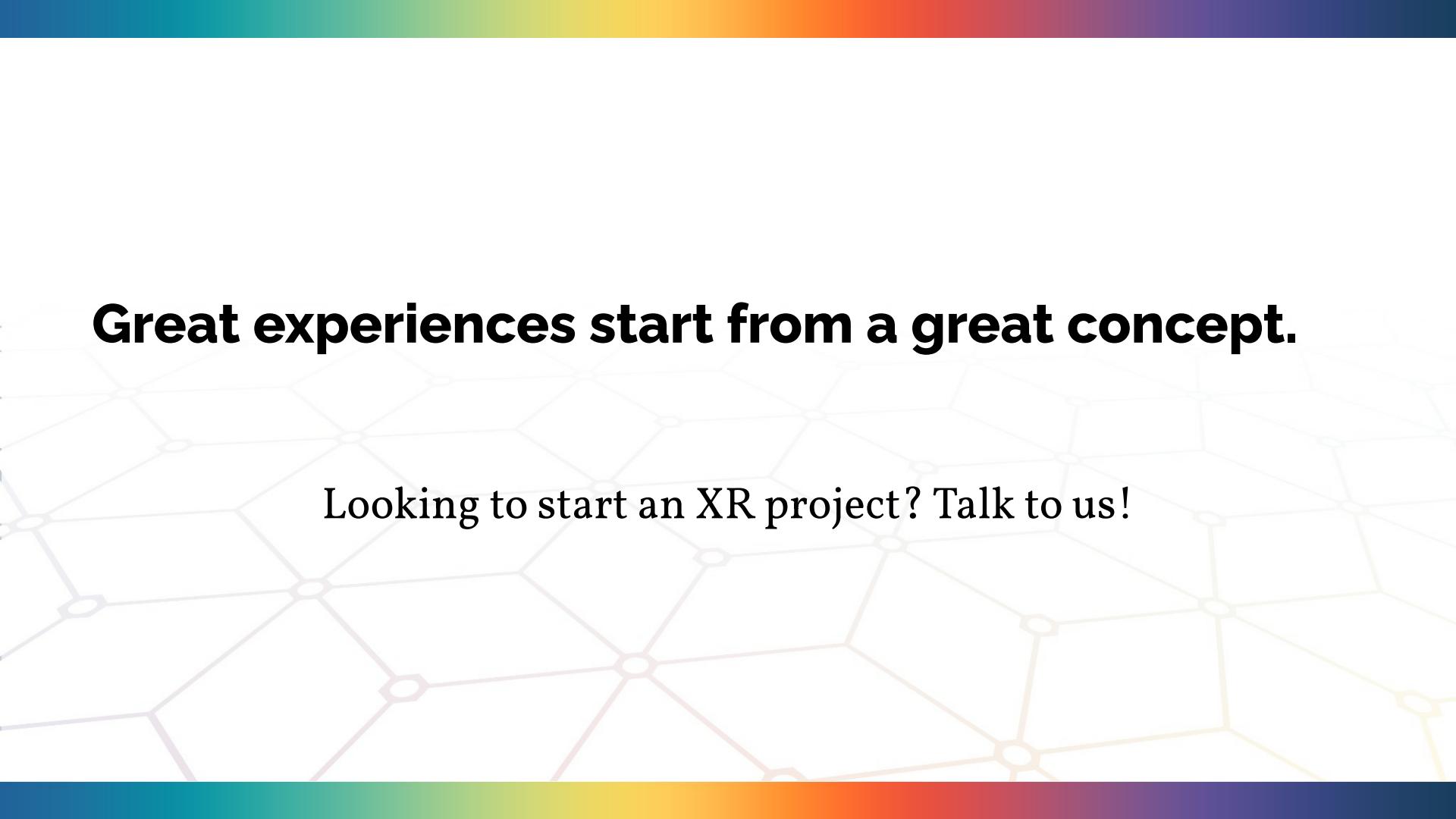
Design with
target platform
in mind



Minimize
interaction
complexity



Keep it
accessible



Great experiences start from a great concept.

Looking to start an XR project? Talk to us!

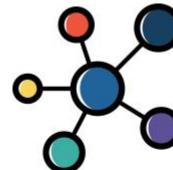


ETC Subteams



Instructional Design

Developing powerful online educational experiences using research, best practices and cutting-edge technology.



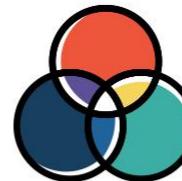
Communications

Researching, planning, implementing and evaluating campaigns designed to meet strategic objectives through collaboration.



Web & App Development

Bringing dynamic websites and applications to life through intuitive user-focused design and development.



Graphic Design

Creating beautiful and effective visual storytelling devices through expert use of design elements and professional practices.



Instructional Technology

Enhancing learning through innovative hardware, software, and emerging technology solutions.



Production & Animation

Delivering authentic and effective messaging in a variety of media designed to capture the hearts and minds of target audiences.



Looking for Assistance?

Types of Support

Multimedia

- Videography
- Photography
- Animation
- Podcasting
- Studio
- Graphic Design

Communications

- Press releases
- Social media campaigns
- Search engine optimization
- Copywriting

IT support

- Website hosting
- Server management
- Hardware support
- Software support

Grant development

- Logic models
- Idea generation

Development

- Website
- Software/Application
- AR/VR

Course development

- Canvas
- Articulate Rise
- Custom eLearning platforms
- Course mapping
- Course auditing
- Course graphics

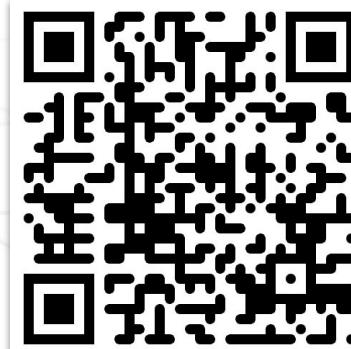
DEFINED ALIGNED

Thank you!

Questions?



COE Helpdesk
& Resources:



Presenting Today



Rachel West

Application Programmer II
rachel.west@ufl.edu



Jay Rosen

Application Programmer II
jayrosen@ufl.edu



Sami Wax

Producer II
wax@coe.ufl.edu