Virtual Reality in the Universal Design for Learning classroom

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Session Agenda

I. Brief Review of Universal Design for Learning Framework  
II. Virtual Reality in a UDL Classroom  
III. Diving Into Expeditions  
   A. Example for Elementary Grade Students  
   B. Example for Middle Schools Students  
   C. Example for High Schools Students  
IV. Your Turn - Interactive Expeditions Demonstration  
V. Creating Your Own Experiences
Universal Design for Learning (UDL)

Universal Design for Learning (UDL) provides a blueprint for creating instructional goals, methods, materials, and assessments that work for everyone—not a single, one-size-fits-all solution but rather flexible approaches that can be customized and adjusted for individual needs.
Learner Variability

FOR A FAIR SELECTION EVERYBODY HAS TO TAKE THE SAME EXAM: PLEASE CLIMB THAT TREE
UDL Is Effective because...

● Learning is unique to individuals. There is no average learner, variability is the norm.
● Learning is the dynamic interaction of the student with the environment. Abilities are not fixed but continuously shift in reaction to the environment.
● Emotional engagement to learning is not “would be nice” but is a critical component of the process.
Augmented Reality

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

Computer-generated simulation of a three-dimensional image or environment that can be interacted with in a seemingly real or physical way by a person using special electronic equipment, such as a helmet with a screen inside or gloves fitted with sensors.
VR in the UDL Classroom

1. VR Expands but Does Not Replace UDL Lessons
2. VR provides multiple means of representation and can provide visualizations that used to be impossible
3. VR provides multiple means of engagement and creates opportunities for experiential learning
Google Expeditions and HOMiDo Headsets
To view a list of Google Expeditions

Download the Google Expeditions app and use the search tool (easiest way!)

This is the hall of humanity's first steps into space. A statue of Yuri Gagarin, the first man to orbit around the Earth, and a replica of the Sputnik, the first artificial Earth satellite, welcomes visitors to the Memorial Museum of Cosmonautics. These events spurred the Space Race, a competition between Cold War rivals, the Soviet Union (USSR) and the United States (US), for supremacy in space technology.

**Beginner Question:** How would you feel seeing a person falling out of the sky in an orange suit if you did not know how that was possible? What’s the strangest thing you’ve ever seen?

(Answer: Examples include: I would feel ecstatic/scared/excited/etc.)

**Intermediate Question:** How are artificial satellites used today?

(Answer: Artificial satellites yield many purposes including: communications and television, telephone calls, Global Positioning System (GPS), meteorology, and map making.)

**Advanced Question:** What are the benefits of sending humans
Coral reefs are diverse ecosystems found in tropical waters. They provide food and habitat for thousands of marine species. The reef also protects the mainland from strong waves created by storms. The Great Barrier Reef is one of the largest living structures on Earth. Visible from space, it provides habitat for thousands of species of invertebrates, fish, reptiles and mammals.

**Algae**

Single celled algae, called zooxanthellae, which live within the coral providing it with energy and nutrients. The algae also contributes to the color of the coral. Without it the coral would appear white.

**Corals**

Corals are composed of colonies of animals related to sea anemones. Their rocklike appearance comes from the calcium carbonate they secrete. This substance becomes the foundation on
Paused by teacher
VR in Elementary (K-5)
VR in Elementary (K-5)

Students worked in pairs for the following reasons:

- There are 20 sets of Goggles in the kit and not all work properly at the same time
- This allowed students to give their eyes and brains a break to prevent motion sickness
- Students not using the VR goggles had time to complete UDL worksheets
VR in Elementary (K-5) - UDL worksheet

<table>
<thead>
<tr>
<th>Name ____________________</th>
<th>Date ______</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="emoji" alt="I saw" /></td>
<td><img src="emoji" alt="I learned" /></td>
</tr>
<tr>
<td><img src="emoji" alt="I wonder" /></td>
<td></td>
</tr>
</tbody>
</table>
VR in Elementary (K-5)
VR in Elementary (K-5)

VR lessons completed with MPS Elementary students include:

- Rainforest in Borneo
- Forms of energy
- Ancient Egypt
- Visit to a recycling plant
- American National Parks
- American History museum
- Underwater Animals
Forms of Energy
Expedition Example
VR in Middle School (6-8)

WHAT IS AVID?

AVID stands for **Advancement Via Individual Determination**

"AVID's Mission is to close the achievement gap by preparing all students for college readiness and success in a global society" - Avid Center

AVID is a national program designed to help students in the "academic middle." AVID's goal is to build key academic skills and attitudes that will help students gain admission to and be successful in 4-year colleges and universities.
VR in Middle School (6-8)
VR in Middle School (6-8)
VR in Middle School (6-8)

Students toured various colleges. They were able to see things like the campus, dining halls, dormitories, library, athletic fields etc.

VR college tours are gaining popularity

Students then compared and contrast colleges on a worksheet
VR in Middle School (6-8)

**AVID:**
Virtual Reality College Fair

**Directions:** Use the space below to record notes about your virtual reality college visit. You should record a minimum of 3 things/college visit. Notes may include:
- Impressions
- Facts
- Questions / Things You Wonder

<table>
<thead>
<tr>
<th>College</th>
<th>College</th>
<th>College</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berkley</td>
<td>Berkeley</td>
<td>Berkeley</td>
</tr>
<tr>
<td>There are little bees everywhere. Why is it called an &quot;International House&quot;? How many girls go there? Why would they have a pub?</td>
<td>WHY IS IT SO BIG?</td>
<td></td>
</tr>
</tbody>
</table>
College Tour Expedition Example
VR in High School

Used in a classroom with several students with IEPs, ELL

Robots lesson, combined with a group video and classroom discussion
VR in High School
Explore A Car Factory Expedition Example

Explore a Car Factory

10 scenes

Step 2: Stamping

Start
The MPS UDL/VR Project

Minneapolis Public Schools has been awarded a virtual reality grant (VR) from MDE to promote inclusion and Universal Design for Learning (UDL) in classrooms. The virtual reality kit (20 student and 1 teacher device) will be used in MPS classrooms to promote inclusion and includes training and support.

Teachers are able to sign up to use the VR kit and provide a universal, immersive learning experience for all students. A calendar is available to know when the kit is available to use. If you have any questions please email spedtech@mpls.k12.mn.us.

Sign Up to Use the Kit

Virtual Reality Grant from MN Department of Education (MDE)

The Minneapolis Public School district has been awarded a virtual reality grant (VR) from MDE to promote inclusion and Universal Design for Learning (UDL) in classrooms. This survey is to determine your interest, need, and capacity to pilot the virtual reality kit (20 student and 1 teacher device) in your classroom to promote inclusion. As part of this project you will receive training and support from a MDE designated mentor, as well as use of the kit to incorporate into a lesson/unit with your teaching.

This survey is confidential.

* Required

Email address *
How much does a VR kit cost?

Our kit cost $7800 and includes 20 sets of goggles, 20 Google Magellan devices, a teacher tablet, router, all necessary cables and charges, an all day training, and a sturdy carry case (kit weighs 75 pounds!)

We purchased our kit through Tierney

You can do it cheaper--create your own kit (Google Cardboard, used tablet, used devices etc)
Your Turn - Interactive Expeditions Demo

- Rainforest
- Baseball
- Recycling
Creating Your Own VR Experience

You can create your own VR by using;

Google Cardboard camera app

Google street view

Using a 360 camera
Questions?

Thank You For Your Attention!