

**Is it Really that Hard? Developing Immersive Experiences Through Virtual Reality**

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### **Is it Really that Hard? Developing Immersive Experiences Through Virtual Reality**

Virtual Reality (VR) is an emerging media that allows users to have the feeling of being transported to areas of the world or to be in unique situations where they may never be able to travel or experience. Although there are varying definitions for what VR is, most users in the education and communication community define VR as a headset device that the viewer will wear allowing them to view and sometimes interact with 360-degree video or imagery. The headset blocks out other visual and auditory distractions, allowing the learning to be fully immersed in the new virtual environment (Belisle & Roquet, 2020). Although the use of VR for entertainment and gaming is becoming more mainstream as these devices are more affordable to the average individual, the use of VR as an education and communication tool is in its infancy. However, there is enormous potential for VR to complement standard education and communication channels, and researchers have found VR to be an effective way to increase environmental and agricultural awareness and encourage action (Ahn et al., 2016; Nelson et al., 2020). Agricultural educators can utilize VR technology as a new teaching tool to develop immersive learning experiences for students. Rather than taking an entire class on a field trip or study abroad, educators can bring these experiences into the classroom, thus saving money and allowing additional experiential learning opportunities for students (Yildirim et al., 2020). However, educators may not believe appropriate VR content exists for their unique classroom needs (Marks & Thomas, 2022). Therefore, this abstract explores different approaches to developing virtual learning experiences that allow educators to tailor the experiences to their classroom objectives while acknowledging various levels of knowledge with technology and access to resources.

### **How it Works**

There are several options available for educators to capture images to create VR content. One straightforward approach to creating VR is simply using smartphones set to “Panorama Mode” to capture still images of the location they are wanting to showcase. Additionally, a GoPro Max or Insta360 ONE X2 camera can be used to capture 360 videos and/or photos. After the video and photo content is captured, the video needs to be edited and transferred to a web-based hosting platform or directly transferred to the VR headset. If there are multiple clips that need to be edited together, video editing software like Adobe Premiere Pro can be used to add scene transitions and text to the video. Once media content is ready to be transferred to VR, the next decision is to select the platform that will “host” the content. There are several different hosting options for VR content that developers can select depending on their skillset. One option is a direct (or “sideloading”) method to transfer the content to the VR headset. The Meta (previously Oculus) Quest 2, can be connected to either a PC or iMac using a USB C cable. The images or video can then be transferred directly from the computer into the media folder on the headset. Another option is to upload the 360 videos directly to a video-streaming platform, like YouTube. The YouTube app can then be downloaded to the Meta Quest 2 and users would have to navigate to the app and select the video they wish to watch. An alternative way to develop the VR content would be to use an application, like Google Street View on smartphones or the Wander app in the Meta Quest 2, to upload images to a specific map location and even link locations together to create a virtual tour. Once the content is created, users need to determine how to view the VR experience. Options range from cardboard/plastic viewers that hold a smartphone to a VR headset that includes a screen and handset. For a VR viewer, users would need to open the appropriate app or YouTube video on their smartphone to access the content before placing it into the viewer. If using a headset, like the Meta Quest 2, students would need to navigate to and

open the YouTube or Wander App to find the VR content. However, the sideloading method would allow students to simply put on the headset and press a button on the handset to begin the VR experience.

### **Results to Date/Implications**

We have found success using the previously described methods to develop immersive VR content to be used in the classroom. One example includes when a GoPro Max was used to capture video content during a research trip to Guatemala. These 360 video clips were edited in Adobe Premiere Pro to create a 2-minute video that students were able to view using a Meta Quest 2, thus bringing Guatemala to the classroom. Similarly, we have used Insta360 cameras to tour various farm operations and labs around campus to develop virtual field trips that can be integrated into science curricula. Because these videos were hosted on YouTube, students could view the video on their smartphones using a VR viewer or by using the YouTube app on the Meta Quest 2. However, instructing students how to navigate to YouTube while in the virtual environment proved to be challenging compared to using the sideloading method. We have also involved students in the development of these VR experiences by having them take panoramic photos around campus with their smartphones using the Google Street view app to develop virtual tours, which can then be viewed through the Wander app on the Meta Quest 2.

### **Advice to Others**

The process used to implement immersive content in a classroom will vary dependent on the availability of hardware as well as the educator's familiarity with media capturing and post-production. As such, we described methods that could be implemented under varied knowledge levels or access to technology. Capturing content for use in VR 360 is most accessible when working with images. Capturing images using GoPro Max 360, Insta360, or smartphone panoramas allowed for limited post-production knowledge. Additionally, smartphone apps and VR viewers can be used as a cost-effective approach for developing and viewing VR content; however, the quality of the immersive experience will be slightly diminished. For the more advanced user, there is the option to capture content that requires more post-production prior to transferring the content to VR. Working with 360 videos in a video editing program, such as Adobe Premiere Pro, requires the use of an additional software plugin (a downloaded addition to the video editing program) as such this method requires some advanced knowledge of video editing in addition to working with plugins. Additionally, images can be edited in Photoshop to remove content (such as tripods or people). This requires knowledge of tools such as spot healing. The easiest method to get content direct to the VR headset is through sideloading. For the intermediate skill level there is the option to upload content to a web-based hosting platform. However, preparing students to interact in VR will require a couple of variations for headset training. If images or video are directly transferred to the headset, students will require limited training to experience the immersive VR. Additional training is needed for students using apps within the Meta Quest 2 to help them access the content. In our case, we found that the pre-installed app "First Steps" was an excellent immersive experience that taught students how to navigate in VR.

### **Costs/Resources Needed**

Smartphones can be used to capture panoramic images and view VR content. GoPro Max (\$399.98) or the Insta360 ONE X2 (\$429.99) can be used to capture 360 videos. Useful apps for developing VR experiences include the Adobe Premiere Pro (\$20.99/month), Wander App (\$9.99), Google Street View (free), and YouTube (Free). The VR content can be viewed through a Meta Quest 2 (\$299) or on a smartphone using a VR viewer (\$6 to \$30 on average).

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