

**Using Virtual Reality (VR) Technology as an
Alternative Approach to Traditional Ag in the Classroom Field Days**

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Introduction

As a simulation tool, virtual reality (VR) technology has the potential to help reshape our world and our view of it. Diverse and expansive in its applications, VR technology can be adapted for a wide range of purposes, including education. VR technology can address educational needs, such as psychomotor skill training and virtual field trips (Bailenson, 2018). Within the context of agricultural education, VR technology has been primarily applied to psychomotor skill training, as documented by several scholars (i.e., Byrd, 2014; Byrd et al., 2015; Wells & Miller, 2020a). Considering teachers have mostly positive opinions about VR technology (Wells & Miller, 2020b), the potential exists for VR technology to be employed elsewhere within agricultural education settings.

In recent decades, agricultural literacy has emerged as an important focus area (Kovar & Ball, 2013). Moreover, agricultural literacy has been identified as a priority area for agricultural education practitioners (Powell et al., 2008). Considering the scope of many traditional agricultural literacy activities, such as engaging directly with elementary school students, barriers to effectively implementing quality educational experiences frequently exist. These barriers can include time, human resource availability, and so forth (Bellah & Dyer, 2006). To help overcome these constraints, approaches such as using VR technology to provide educational experiences have been found to be effective without compromising learning and engagement integrity (Stohlmann, 2019). Perhaps VR technology could be leveraged to support agricultural literacy purposes as well.

How it Works

In recent years, we have been using VR technology as an alternative to a traditional agricultural literacy field experience for local elementary school students. From 2005 to 2018, our county Farm Bureau office, in cooperation with four local FFA chapters, hosted an Ag in the Classroom field day titled “Ag XPerience” for 25 urban elementary schools. At its peak, over 1,200 second-, third-, and fourth-graders were transported to the local county fairgrounds and traveled through six interactive stations exposing students to various aspects of production agriculture (i.e., beef, dairy, swine, sheep, machinery, and row crops).

Interest in the field day grew substantially in recent years, which resulted in increasing the event duration from one day to three days. As a result, our planning committee frequently encountered issues with scheduling, transportation, livestock procurement, and securing activity presenters and volunteers. The financial burden associated with this event was averaging approximately \$10,000.00 annually. These factors led the planning committee to reevaluate the goals of the project, which developed into an idea of bringing the “Ag XPerience” directly to the schools in lieu of taking students to the county fairgrounds. Because our committee wanted this new experience to be as immersive as possible, we decided to develop an assortment of VR technology-supported field trip videos using local farms and agricultural companies to provide an engaging agricultural education experience.

Upon partnering with a local media production company already using VR technology, we developed our first field trip video, which focused on seed corn production. We worked with a local seed corn production company and created three short videos addressing various aspects of the production process. We then collaborated with the local agricultural literacy coordinator to develop a curriculum that would accompany the videos when taking the “Ag Xperience” to the schools. The curriculum included lesson plans, hands-on activities, and an agricultural magazine for kids focused on the content area. The agricultural literacy coordinator would also schedule a guest speaker who would visit with an elementary school teacher’s class via Zoom to discuss each video’s content and directly engage with students.

Results to Date and Implications

Our initial VR field trip experience, focusing on seed corn production, was initially piloted in February 2020 prior to schools shutting down for the COVID-19 pandemic. We worked with five elementary school classrooms and engaged with over 100 students during this short time. Anecdotally, both teacher and student feedback were very positive. Students enjoyed using the VR technology and teachers appreciated us providing them with additional resources. We have several pending classroom visits scheduled. We have recently expanded our concept and have taken the VR technology to a regional farm show for attendees to use. Over the period of three days, approximately 500 individuals stopped by our booth and used the VR technology.

Future Plans and Advice to Others

We plan to focus the next VR field trip video on the dairy industry. We have created the video script and we have collaborated with a local dairy farm to begin filming soon. Our goal is to create a minimum of one video for each of the six areas we focused on during our former, traditional field day experience. Doing so would meet our agricultural literacy committee’s learning objective for exposing our target audience to the various facets of production agriculture. Should others attempt to conduct a similar project, we strongly recommend working with a media production company specializing in VR experiences. We recommend using a professional narrator or host for each video. We were fortunate to work with a local television personality who was enthusiastic about our project’s mission and about agricultural literacy.

Costs and Resources Needed

The initial cost of the seed corn production video was approximately \$7,000.00. In addition to the \$5,000.00 was invested to produce the first video, we purchased a new laptop computer for \$1,500.00 and an Oculus VR headset for \$500.00. We loan the laptop computer and the Oculus VR headset to schools requesting our videos. Unfortunately, this bottleneck effect has been a limiting factor to the scope of our project, as many schools we have worked with do not have VR technology available to them at this time. We have explored posting the videos online and allowing elementary school teachers to use more affordable options, such as Google Cardboard. However, Google Cardboard sets require smartphones to use. Our next contracted video on the dairy industry will also cost us \$5,000.00. While we do anticipate the video production costs will increase over time, we have found that it is still less expensive than hosting traditional field day events while increasing the potential impacts of our efforts.

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