From Another Perspective:
Conducting Supervised Agricultural Experience (SAE) Visits Virtually

OP McCubbins
Texas A&M University
2116 TAMU, 242 AGLS
College Station, TX 77843
opmcc@tamu.edu

Trent Wells
Southern Arkansas University
MSC 9418, Agriculture (AGR) 208
Magnolia, AR 71753
ktwells@saumag.edu

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Introduction

As a historical component of the school-based agricultural education (SBAE) programming model (Phipps, Osborne, Dyer, & Ball, 2008), supervised agricultural experiences (SAEs) were designed to serve as a project-based learning application for students (Smith & Rayfield, 2016). SBAE teachers expect students to learn a wide range of skills as a result of their SAEs (Ramsey & Edwards, 2012). Likewise, agricultural industry representatives indicate students should learn numerous technical skills through their SAEs (Ramsey & Edwards, 2011). High-quality SAEs have the potential to make sizable economic impacts (Hanagriff, Murphy, Roberts, Briers, & Lindner, 2010).

SBAE teachers are vital to the structure of SAEs as supervisors and mentors who help students facilitate their own knowledge and skill development (Rubenstein & Thoron, 2015). Eck, Robinson, Ramsey, and Cole (2019) identified effective SBAE teachers should use SAEs as an opportunity to provide instruction for students. However, adequately supervising SAEs often presents challenges for teachers, such as adding work-related stress (King, Rucker, & Duncan, 2013) and impacting the number of hours spent working throughout the calendar year (Hainline, Ulmer, Ritz, Burris, & Gibson, 2015) due to factors such as travel time to SAE sites, completing SAE-related paperwork, and so forth. In lieu of traditional on-site SAE visits that necessitate the consumption of valuable resources (e.g., time, fuel expenditures, vehicle wear and tear, etc.), perhaps an alternative method of SAE visitations, such as the use of virtual reality (VR), should be considered as a viable, practical solution.

VR presents numerous opportunities to impact educational practices. Designed as an immersive experience for the user, VR can be adequately used for a wide range of educational applications, including skill-oriented training, individual assessment, and virtual tours. VR has much potential to positively impact our daily lives even in the minutest ways (Bailenson, 2018). From an SBAE standpoint, VR could have much to offer. Considering SAE supervision recommendations recently issued (The Council, 2017), technology-based methods such as VR should be considered to help improve the SAE supervision process. Streamlined, efficient SAE supervision practices could be beneficial for both teachers and students.

How it Works

A 360-degree camera was used to capture images at various points throughout the physical location of a local student's poultry production SAE. The AggieXR Lab at Texas A&M University packaged these images into a virtual tour via Tour Creator, a Google platform for building immersive, 360-degree tours. Text descriptions and points of interest (POI) were included on the 360-degree images to further describe specific components of the SAE. POIs provided an explanation of what is typically done (e.g., feeding, cleaning, maintenance, etc.) and / or a two-dimensional image of an aspect of the SAE. The packaged "Virtual SAE Visit – Poultry" was distributed to local in-service and pre-service SBAE teachers to view. The virtual visit can be viewed on a browser (computer or mobile) or on the Google Expeditions app. Using

the Google Expeditions app allows users to place their smartphone into a VR viewer, providing the immersive aspect of the virtual SAE visit. Google Cardboards, a low-cost VR viewer, was provided for teachers to view the content.

Implications

The reception to virtual SAE visits has been overwhelmingly positive. Pre-service teachers have noted the potential this supervision technique has on time management. They also identified potential uses in other areas of the SBAE program, such as for virtual field trips. In-service teachers also had positive reactions to the virtual SAE visit, also identifying the time-saving potential of this technology. It is important to note conducting virtual SAE visits is not meant to replace traditional, on-site SAE visits. Rather, the intention is to serve as another tool in SBAE teachers' toolboxes. The *SAE for All Teacher Guide* (The Council, 2017) notes SAE supervision does not have to occur via an on-site visit in each instance and technology can be used to be improve efficiency. By leveraging this type of technology, virtual SAE visits offer several benefits, such as: (1) alleviating administrative burden on SBAE teachers, (2) reducing the amount of travel time for SAE supervision, which can allow SBAE teachers to visit, albeit virtually, more students' SAEs, and (3) reduction of fuel consumption and vehicle wear and tear in comparison to traditional on-site visits. Policies and procedures concerning SAE supervision by SBAE teachers may need to be updated to reflect this advancement in technology.

Additionally, students can develop knowledge and skills relating to technology while planning and building their own virtual tours. To prepare for a more connected world, students need to develop competencies to leverage technology in meaningful, productive, safe, and respectful ways (Office of Educational Technology, 2017). Teachers can use this technology to provide opportunities for students to create authentic products for authentic audiences. Emphasizing these types of tasks can assist in developing the requisite skills students need to successfully navigate a more connected world.

Future Plans, Advice to Others, & Costs

We are continuing to refine the process of building virtual SAE visits. We are developing a handbook SBAE teachers can use to have their students take responsibility for creating their own virtual SAE tours. The handbook will include recommendations for building a 360-degree camera kit, step-by-step instructions for capturing 360-degree footage, organizing digital assets, and building the virtual tour. The AggieXR Lab is building a repository of virtual SAE tours for teachers to use when teaching their students about SAEs. We hope to adapt / develop SAE curricula to supplement virtual SAE visits for use in SBAE and agricultural teacher education programs. We plan to expand the testing of virtual SAE visits to additional local teachers to help establish and refine best practices for completing virtual SAE visits using this new format. The 360-degree camera (Ricoh Theta Z1: $1,000), monopod (Ricoh Monopod: $125), and VR viewers (Google Cardboard: $10) were readily available through AggieXR Lab. The primary cost associated with this project was time. For those needing to acquire the equipment to carry out the project, we would recommend purchasing a Ricoh Theta V 4k camera ($376), a light stand ($20) to mount the camera on for capturing 360-degree assets, and a VR viewer ($10). The Tour Creator platform is free and requires only a Google account use.

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