We're Going Where? Creating an Interactive Virtual Tour of an Agricultural Facility

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Introduction/Need for Innovation

Experiential learning opportunities can help students of all ages increase their knowledge on topics, develop skills, and clarify personal values (Association for Experiential Education, n.d.). Field trips are a common way to facilitate experiential learning because they take students to locations and provide them with experiences that typically cannot be replicated in a classroom setting (Behrendt & Franklin, 2014). Despite the valuable learning opportunities traditional on-site field trips offer, they can be difficult to execute due to financial constraints, safety concerns, proximity to site, lack of Americans with Disabilities Act (ADA) compliant sites, as well as other logistical concerns (Cassady et al., 2008; Han, 2020).

To overcome these challenges, online, electronic, and virtual field trips options can be utilized as an alternative to traditional field trips. While each of these types of tours can vary in the kind of equipment used to create the tour, as well as the format and features of the tour, they each seek to simulate the intended site (Han, 2020; Klemm & Tuthill, 2003). Similarly, interactive virtual tours (IVTs) replicate tour locations by using 3-D spatial scanning technology while incorporating various multimedia and curriculum components to make the virtual tour as interactive and immersive as possible (Mead et. al, 2019). In addition to overcoming various logistical issues, using virtual tours in a classroom setting can "support experiential learning by providing more realistic, first-person experiences" (Han, 2020, p. 182).

The purpose of this poster is to describe the development of an IVT featuring an agricultural facility. This IVT is part of a larger project to create virtual tours of several agricultural and food science facilities.

How it Works/Steps

To create the IVTs, we first identified potential tour sites based on geographic proximity and industry contacts with the goal of highlighting a diverse set of locations. For the creation of the IVT described in this narrative, we first received permission to scan the facility and made a "scouting" visit to the site to plan the subsequent scanning and video capture session. On the return visit, we used a 3-D Matterport camera to scan the site and create a 360-degree image. We also collected various stock photos, b-roll videos, and other complementary media components using a digital single-lens reflex (DLSR) camera.

Upon the completion of this step, we created an outline for the various "tour stops" and identified the content type for each stop (e.g., videos, text descriptions). Then we wrote scripts for the explainer videos, recorded voiceovers, and created and edited the videos. Photos, links, and additional information were then gathered and prepared to be incorporated inside the IVT.

After all content was collected, a grant team member used Matterport's online dashboard, integrate the materials into the tour. This process included placing each item in the correct place within the tour, identifying the correct settings for each stop, and finally organizing the tour stops into the correct process flow.

To use the IVTs, instructors, students, and other users simply click on the chosen tour site from the grant project's website on a computer, tablet, or mobile device. No additional headsets or technology are required to navigate the IVTs.

Results to Date

A focus group of seven graduate students in agricultural education and agricultural communications provided initial feedback IVT and how it could be implemented in a classroom setting. Overall, their response was positive. One student said, “It’s a very great and convenient experience, especially for people who might not have the opportunity to tour these facilities.”

Students also discussed the variety of content types that were embedded in the tour. One student said, “It was good that there was a combination of videos, pictures, and text. So maybe for those people who don’t want to watch the videos, they can read everything and go through.” Another student said, “I liked that the videos were kind of short and simple and to the point. They didn’t just drag on; they hit the main points of each stop.”

The students did suggest adding a demonstration prior to the start of the tour so future IVT visitors would understand the different ways the tour can be navigated. Several of them said they got “turned around” or were a bit confused at the beginning of the tour. Additionally, a couple of students suggested adding an “end stop,” so users know they have reached the end of the tour.

Future Plans/Advice to Others

Based on the feedback, we are continuing to add supplemental content to the created IVT. To make each IVT even more robust, the grant team is creating curriculum guides for the tour sites. This will help instructors effectively integrate the tours into their classrooms. Outside of the classroom, users may refer to the curriculum guides to gain more context and information about the tour site. Additionally, as more IVTs are completed, we plan to collect formal evaluations from instructors, students, and other users.

For instructors who may want to integrate the IVTs into their classes, they should explore the tour on their own so they are comfortable navigating through it. There are two primary ways to explore the tour: 1) clicking, dragging, and moving at your own pace around the facility, or 2) using arrows to progress through each tour stop. This allows the user to move through the tour using the route the tour creator intended. Knowing the different ways to navigate the tour will allow instructors to provide their students with a brief demonstration, which may make tour navigation easier to understand. If others are interested in creating IVTs, they should gain experience using the 3-D camera and explore online hosting services such as Matterport.

Costs/Resources Needed

A U.S. Department of Agriculture Higher Education Challenge grant provided the funding necessary to create the IVTs. To create an IVT, creators will need a 3-D scanning camera and an online hosting service for the virtual tours. A DLSR camera is recommended to collect supplemental photos and videos, and access to video editing software such as Adobe Premiere Pro is necessary to create the video content. Finally, creators will need a computer with internet access to integrate the media into the virtual tour.

For those who want to simply view and interact with the IVTs, the resources needed are minimal. To access the tours, users will need internet access and a computer, tablet, or mobile device. In a group setting, using headphones while taking the tour is beneficial so each user can listen to the videos on their own.

References

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