

Virtual Field Environments for Student-based Inquiry

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Introduction

The purpose of this document is to introduce the concept of a **Virtual Field Environment (VFE)** and explain the Holobuilder software. This guide is not intended to provide a lesson plan to a prospective teacher, but rather to provide a set of tools that can help the teacher engage their students in an accessible, convenient, and unique way. A VFE has a variety of audio, video, and pictures that depict different features or creatures in the local environment. Every embedded media object was recorded in the actual location, so students visiting the site are able (if they're quiet and observant!) to see these things for themselves. By focusing on specific plants, animals, and other features in a local habitat rather than a canned virtual tour, we give teachers the freedom to incorporate this habitat into a variety of lesson plans.

The Virtual Field Environment

A VFE is an educational tool that can be used in a multitude of ways to aid in student engagement and learning. It is a set of 360° panoramic images where the user can move around the panoramic image to explore the environment. Embedded media files (image, audio, video, and text) are provided for additional information and learning opportunities. Each VFE was built by a PSU Capstone class using a web-based software tool called Holobuilder. Instructions for using Holobuilder are given below.

The primary advantages of a VFE are the ease of use, accessibility, and customizability. A VFE works on computers and mobile devices and can be accessed by anyone with an internet connection. It can be used for a teacher-led lesson, for small student groups to plan a field trip, or for individual students to freely explore the virtual site. The wide variety of media subjects embedded in the VFE will allow students to engage in meaningful inquiry and exploration.

An important feature of our VFEs is that they are designed to stimulate student questions rather than to supply information. The environment intentionally leaves out some information so that students are encouraged to find their own answers. Most of the embedded media files have ambiguous titles, so that students need to figure out the media subject for themselves (is it a beaver? A muskrat? A nutria? What do YOU think?) Though it could be used as a classroom-only tool to motivate library or internet research projects, we highly recommend that you use this VFE to prepare your students for a real visit to the actual natural area.

What is “Holobuilder”?

Holobuilder is a web-based software package created by Holobuilder LLC to provide comprehensive views of large construction projects. Holobuilder environments provide 360° views of various scenes so that a remote subcontractor, architect, inspector, or other user can survey an area as if they were there. Holobuilder has generously donated a user license to Portland State University to create VFEs for educational use.

Exploring the Virtual Field Environment

Holobuilder has a very intuitive user interface which makes it useful for virtually all ages. To explore a scene, simply click and drag your mouse to change your viewpoint (or, on mobile, touch and drag on the screen). Within the scene there will be several icons representing audio, image, and video files, as shown in Figure 1. To open the media file, simply click or tap on the icon and the media file will load and begin playing. The name of the file usually indicates its content; for example, a video of deer tracks might be named “Tracks.**mp4**”. The file types associated with typical icons are listed in Table 1.

In the upper left corner of the screen is an overview map or satellite image of the entire park, with the location of the different scenes displayed as yellow dots. You can “travel” to any scene by clicking on one of these yellow dots. Alternatively, within a scene you can travel to the adjacent scene by clicking embedded navigation arrows - like the blue arrow on the right side of

figure 1.

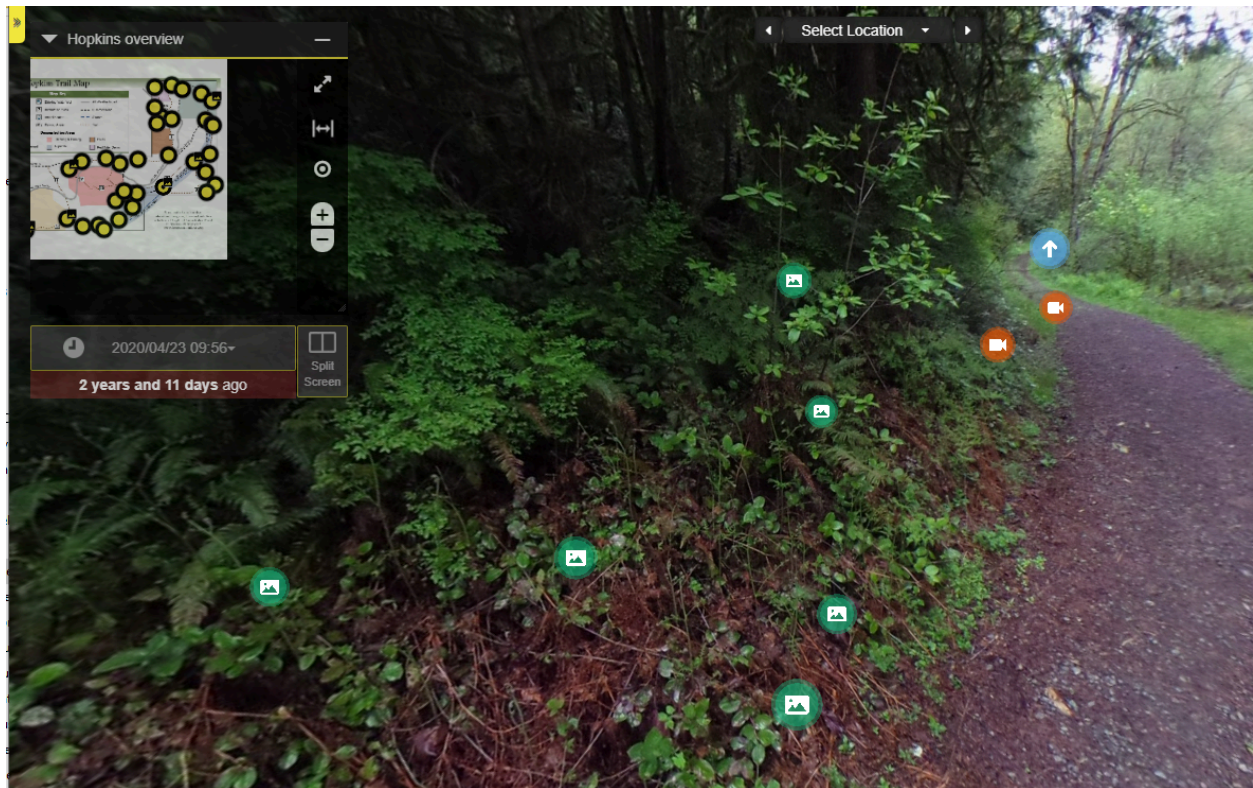


Figure 1: A typical VFE scene with embedded photos, videos, and navigation tools.

Holobuilder “Cheat Sheet”






Symbol	Description
	This is a color coded arrow that moves the user from one scene to another. Note that is can be any color, not just yellow.
	This is the “show information” icon. Pressing on this icon will display text
	This is the “play sound” icon. Pressing on this icon will play an audio file. If the scene is playing the file by default, then pressing this will turn the sound off.
	This is the “show image” icon. Pressing this will display an image file.
	This is the “play video” icon. Pressing this icon will play a video file.

Table 1: A list of all of the symbols in a typical VFE with a corresponding description.

Troubleshooting Holobuilder

There are a handful of issues we have encountered in our use of the Holobuilder software, and a few suggestions follow that may resolve these issues:

- Reload the page if content does not appear in the scene, or if the image is not loading when you click on it. It usually works on the 2nd try.
- If you are using the mobile app and encounter persistent bugs, close and reopen the application
- If you do not want to listen to the ambient audio that is included in many scenes, simply click the purple icon to turn the sound off. You may need to circle around the scene to find the icon - in many scenes, the ambient audio track is floating directly “overhead.”
- Sometimes certain files will play smoothly, while others take a long time to load. We advise that you engage with the content that is loading properly, and then reopen Holobuilder and wait a few extra seconds when attempting to open the other content.