



Course Link: [Build a Photobooth](#)

Time: 60 - 90 minutes

Prerequisite: None

### Goals

Students will be introduced to the fundamental skills involved in 3D multiplayer world design, including understanding asynchronous player behavior, 3D environment design, and coding with TypeScript.

### Review and Preparation

Account: Students should already have access to an account on dot big bang. They can be created at [dotbigbang.com/signup](https://dotbigbang.com/signup). Accounts can be shared by multiple students even while working together on the same project, so a single class account is also a viable option.

### Target Skills

- Cooperative World Editing
- 3D Modeling with Voxels
- Defining and Using Variables
- Defining and Using Functions
- Using triggers to run code based on player choices

### Vocabulary

- Entity
- Voxel Object
- Trigger
- Event
- Camera

- Using cameras to direct attention
- Building a 3D Environment

## Lesson Summary

Students will open an existing project that features a small island with palm trees surrounded by ocean. We will start by learning how to edit a shared project to make their own changeable copy of the project, then use the camera to learn how to navigate the 3D space and inspect the contents of the project. Then we will learn how to search for voxel objects, templates, and scripts and add each of them to the project.

## Activities

1. **Have students join the demo project as a multiplayer instance.** [Visit this link](#) and press the share button to generate a multiplayer instance. Share that multiplayer instance with students to all be in the same project.
  - a. **Check that students are logged in:** This is an opportunity to see which students are not logged in to either individual accounts or a shared classroom account; they will appear as boxy blue characters, rather than the avatar of the account.
  - b. **Discuss the learning targets:**
    - i. **Voxel Objects** - What are the 3D objects that they can identify in the project? What are they made of? Have they ever seen anything like this before? (Minecraft, other voxel spaces, other 3D games, real-world analogies like Legos)
    - ii. **Camera** - How is it that you can see in the game? How do you adjust it (with a mouse?)
    - iii. **Triggers** - How can you tell when a player has entered an area? Ask students to give some examples of triggers they have seen, like a Minecraft wooden plate/iron plate, or a supermarket automatic sliding door
    - iv. **Events** - Talk about some events that happen in video games. Or a party. Game examples include a new player joining. You can discuss listeners by asking them how they would use an event to trigger some other behavior. E.g. Everyone will yell "Surprise!" when someone gets to the party. How will we know when they walk in? How often will we check?
  - c.
2. **Create a new multiplayer editing session.** [Visit this link](#) to start a new Empty Game, and use the same technique to share and navigate to a multiplayer instance. Show students how to search for Voxel Objects, and add them to the

scene, and move, rotate and scale them. Ask students to share anything else they discover as they work on this open-ended experiment together. You can save this creation as a game to revisit later for reviewing, experimenting, and reliving inside jokes.

3. **Start the first half of the scripting assignment.** Students can follow these instructions in a self-paced way, and the project at this point begins with how to create and edit scripts, and setting up trigger events to be able to test them in game.
4. **Let students progress independently to the second half of the scripting assignment.** If pair-programming, students should swap before starting part 2 of the scripting exercise. In this section they will create a static camera for a scene, code the swap to it, and then adjust it in the world to create the photo angle.
5. **Let students build the 3D photo booth space.** With the mechanical component in place, what is left is to build out scenes to capture. Students can do this individually/in pairs, or take turns collaborating on each other's projects as a group. This part can be left open to student imagination, or made to serve a specific community or learning goal, like designing the perfect playground, or recreating a historical site.

## Wrap-Up and Extension Activities

The camera override coded in this assignment could easily be repurposed to create exhibits in a museum. Consider encouraging students to use the sign available in Featured Templates to annotate their work and add more information about their goals and intentions.