

Intro to SketchUp for Schools

5 minutes

Before we get started, let's go through some of the basics together.

Getting Access

- 1 Go to <https://edu.sketchup.com/app>
- 2 Sign in with the Google or Microsoft email address provided by your school.

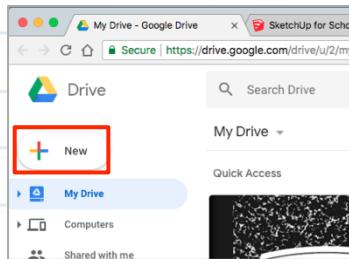
Note: If you have trouble logging in, check with your administrator that your school or district has installed SketchUp for Schools (Instructions for [Google](#) & [Microsoft](#) Admins)

PRO TIP #1

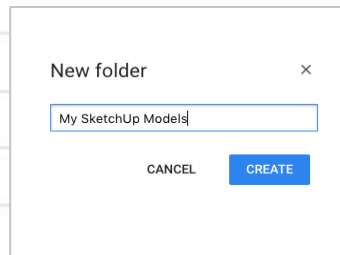
Save often!

If you get into the habit of saving your work, you'll be less likely to lose any progress if class ends and you close your laptop.

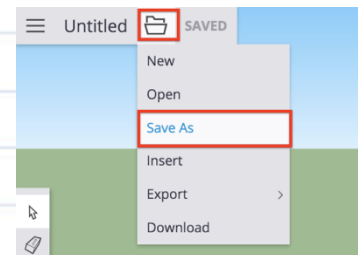
Saving Files



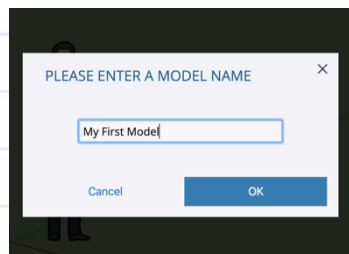
- A** Before you build your first model, go to your [Google Drive](#) or [Microsoft OneDrive](#) and create a new folder.



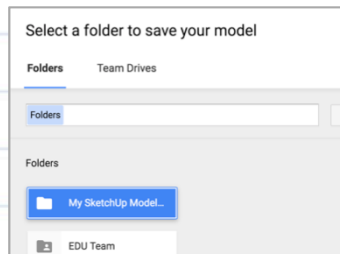
- B** Give your folder a name.



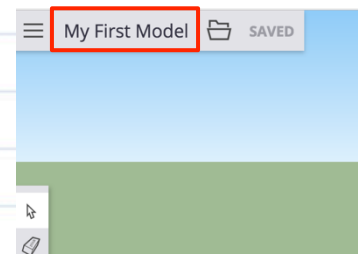
- C** Whenever you start a new model, it's a good idea to save your file first. Click on the folder icon on the top left, then click 'Save As.'



- D** Give your model a name, then press 'OK.'



- E** Next, you'll be asked to save your model to a folder in your Google Drive or Microsoft OneDrive. Click on the folder you just created, then click 'Select.'

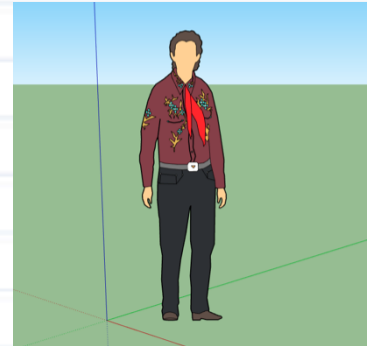


- F** If you've done everything correctly, you'll see your file name in the top left corner along with a 'Saved' message.

The Scale Figure

Every time you open a new model in SketchUp for Schools, you will see [Temple Grandin's](#) scale figure. Temple's job is to give us a sense of the size of the objects we draw in our model.

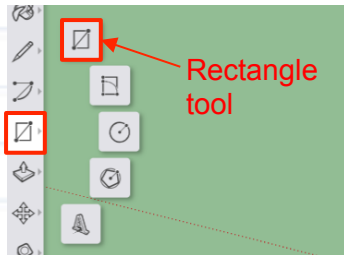
For example, Temple is 5'9". If we draw a 3 foot cube next to her, the cube will be about half her height.



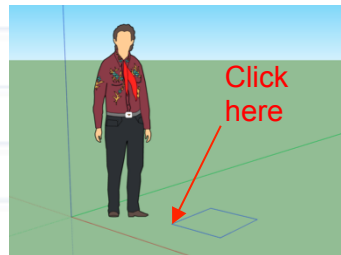
PRO TIP # 2
Unless otherwise specified, a click in SketchUp is executed as "click and release."

Drawing a Cube

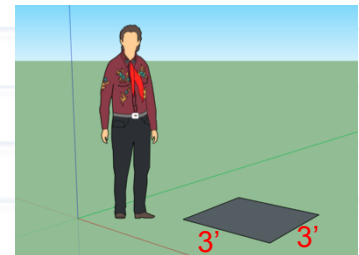
Let's test it: let's draw a 3 foot cube next to Temple.



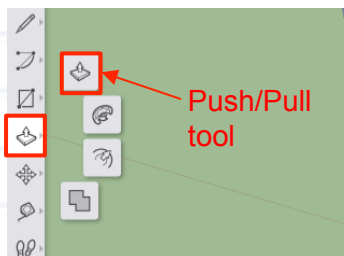
A Select the rectangle tool from the menu on the left.



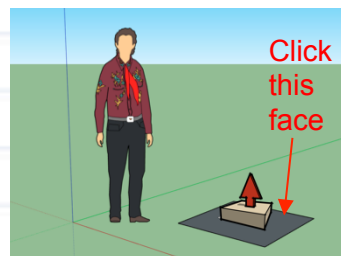
B Click once on the ground near Temple's feet to set one corner of your cube.



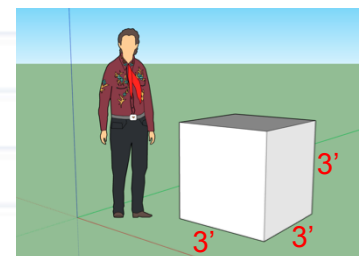
C Without clicking again, move your mouse anywhere on the screen, then type "3', 3'", then hit 'enter'.



D Select the push/pull tool from the menu on the left.

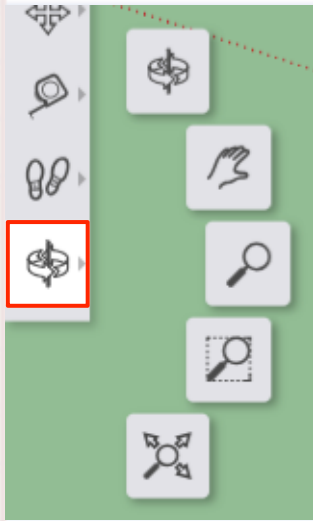


E Click once on the face you just drew. Without clicking again, move your mouse to make your cube 3D.



F Type "3'", then hit 'enter' to complete your cube.

PRO TIP #3
We recommend using a mouse with a scroll wheel when modeling in SketchUp. Using a trackpad is totally possible, but not as fun.



Navigation Tools

One of the most important things to learn in 3D modeling is how to move around in your model window. Click the orbit tool from the menu on the left to expand all the navigation tools.



orbit

The Orbit tool allows you to rotate around your model.

Click on the Orbit tool, then left click-hold-drag your mouse from side to side in the model window.

Mouse shortcut: hold down the scroll wheel to activate the Orbit tool, then move your mouse in any direction to orbit.



pan

The Pan tool allows you to move your model across your screen.

Click on the Pan tool, then left click-hold-drag your mouse from side to side in the model window.

Mouse shortcut: hold down the scroll wheel, then hold down the shift key at the same time. Move your mouse in any direction to pan.



zoom

The Zoom tool allows you to look closer at the details in your model.

Click on the Zoom tool, then left click-hold-drag your mouse up and down in the model window.

Mouse shortcut: use the scroll wheel to zoom in and out.



zoom window

The Zoom Window tool allows you to select an area of your model to view closer. Click on the Zoom Window tool, then left click-hold-drag your mouse to highlight an area of your model.



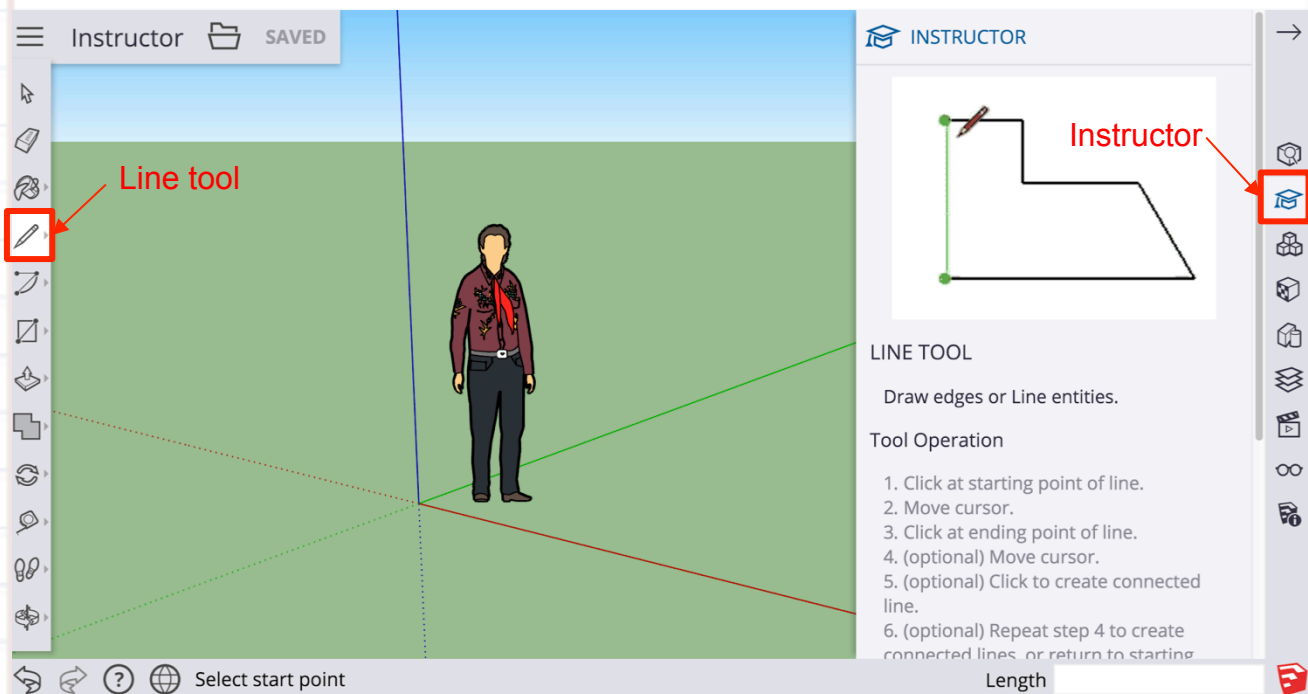
zoom extents

The Zoom Extents tool allows you to see all the geometry in your model. Click on the Zoom Extents tool and everything in your model will come into view.

The Instructor Panel

Open the 'Instructor' from the SketchUp panels for help with understanding how to use any of SketchUp's tools.




The way it works: click on a tool with the instructor panel open and you will see a description of the tool and a step-by-step guide on how to use it.



★ That's it for the intro.
You're ready to get started on modeling!

step-by-step tutorial: Set Design for Theater Class

pre-flight checklist

-  You're logged in at edu.sketchup.com/app
-  You've gone through the [SketchUp for Schools intro](#) and feel comfortable navigating around in the model window.
-  You've [setup at least one folder in Google Drive or Microsoft OneDrive](#) for your SketchUp models



Here's a breakdown of the steps required to complete this lesson plan:

1. [Build the stage](#)
2. [Add seating from the 3D Warehouse](#)
3. [Add curtains from the 3D Warehouse](#)
4. [Model the backdrop](#)
5. [Set the stage with characters from the 3D Warehouse](#)
6. [Toggle between various scenes in your model](#)
7. [Simulate the view from the audience](#)

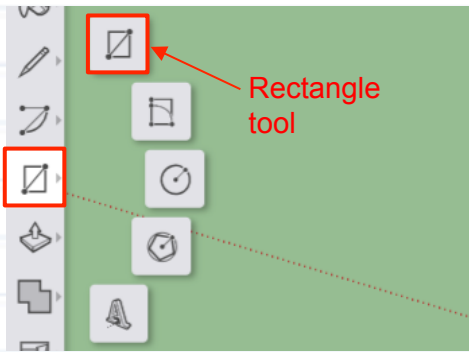
1 Build the Stage



Before you start...

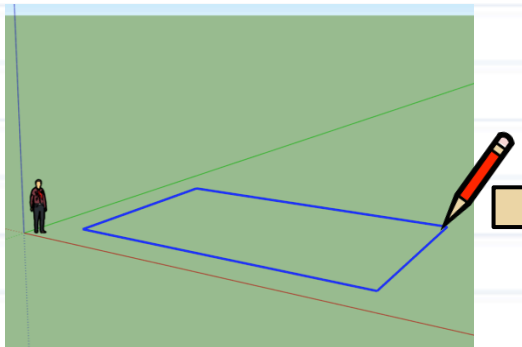
This is an intermediate lesson plan, so we assume you already know how to [navigate](#) comfortably in your model.

We'll be much lighter with directions, so try the beginner lesson plans if you are brand new to SketchUp for Schools..

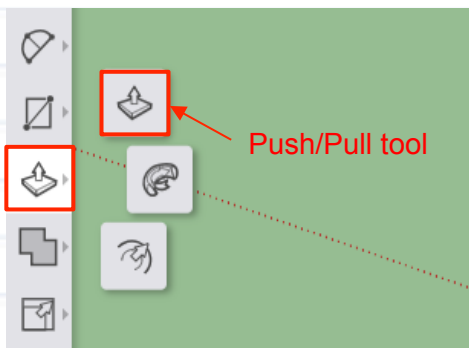


A First things first: [save your file!](#)

Now we can start drawing the stage. Click the rectangle tool from the menu on the left.



B Click (remember: [click=click-and-release](#)) on the ground near Temple's feet to set one corner of your stage. Move your mouse across your screen, and before clicking again, type "40', 25' " then hit 'enter'. You've just created the base of your stage.

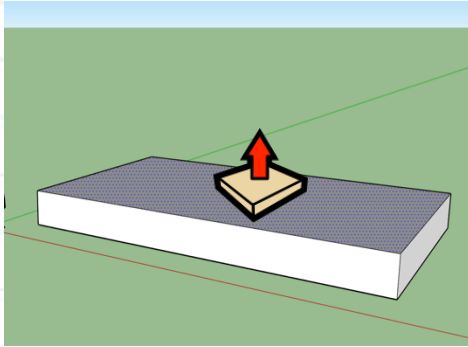


C Select the push/pull tool from the menu on the left.

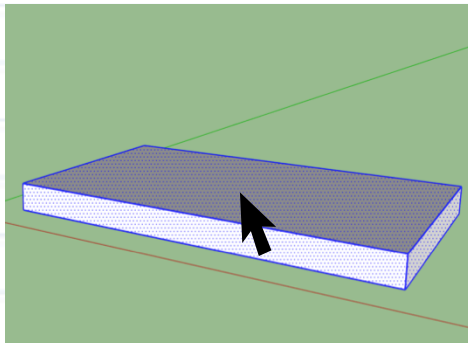
PRO TIP # 4

Undo! Did you mess up?
No worries! Just click the
undo button on the bottom
left of your screen to go
back. Command/control
+z works, too.

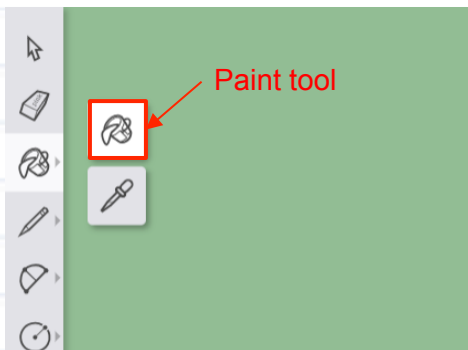




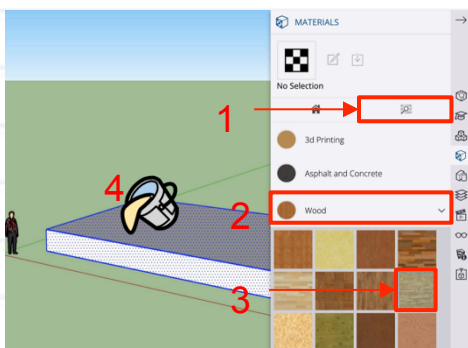
D Click anywhere on the rectangle to extrude it in 3D. Move your mouse up on the screen, and before clicking again, type “ 3’ ”, then hit enter.



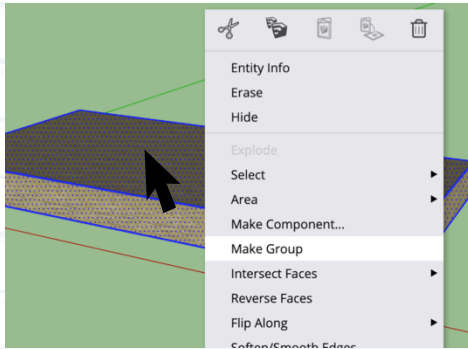
E Next, click the select tool from the menu on the left, then triple click on the stage you just created to select all of its surfaces and edges (you know a shape is selected when its surfaces and edges are blue).



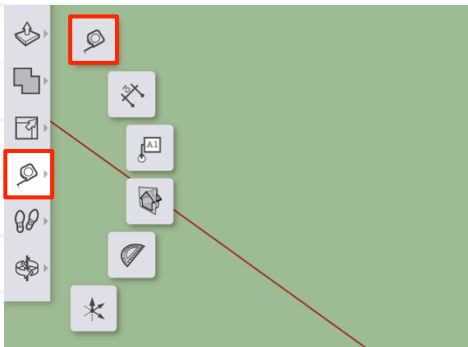
F With the stage still selected, find the paint tool from the menu on the left.



G The materials panel will automatically open on the right side and a few default colors will appear. Click the magnifying glass to browse the material library (1), and look for the category ‘Wood’ (2). Select a material for your stage (3) then click on the stage to apply the material (4).

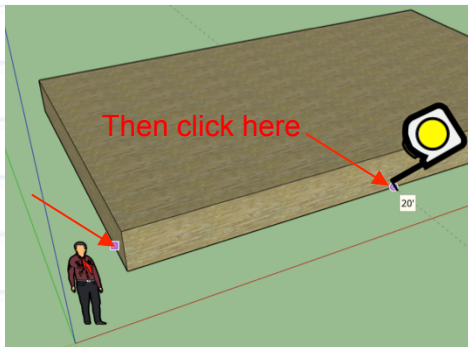


H With the stage still selected, right-click, then click 'Make Group'.

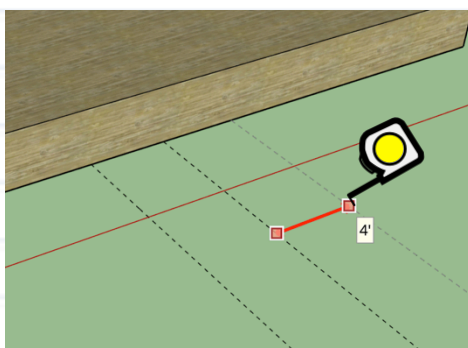


I Next, let's define the space for the center aisle using the tape measure tool from the menu on the left.

First click here



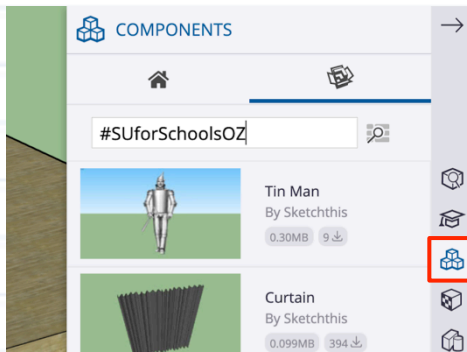
J Click once on the bottom edge on the side of your stage. Then, drag your mouse along the bottom edge of the front of the stage until you find the midpoint at 20' and click again. You just created your first guideline.



K Click on the newly created guideline and move your mouse to the left along the red axis. Type in " 4' ", then hit enter.

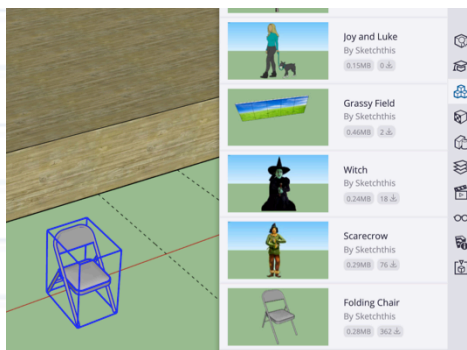
Click on the original guideline again, and this time move your mouse to the right and type in " 4' ". Now you have space for an 8' wide aisle.

2 Add seating from the 3D Warehouse

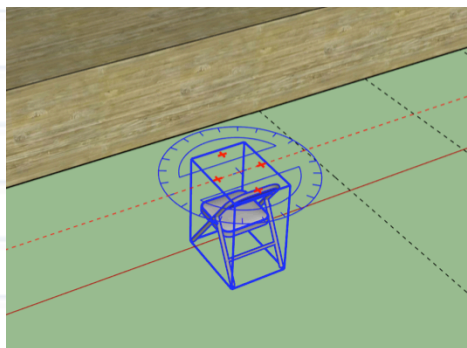


A Next, we're going to add seating for the audience. Instead of spending time to model the chairs, we'll use a model that's already been created from the 3D Warehouse!

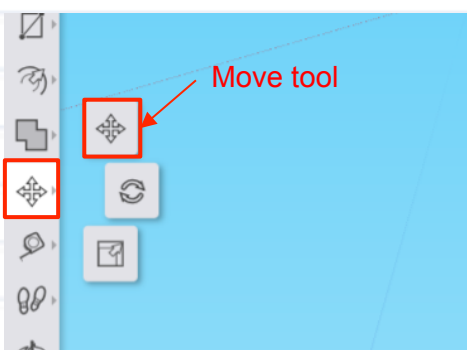
Click the components panel from the menu on the right, then type in "#SUforSchoolsOZ"



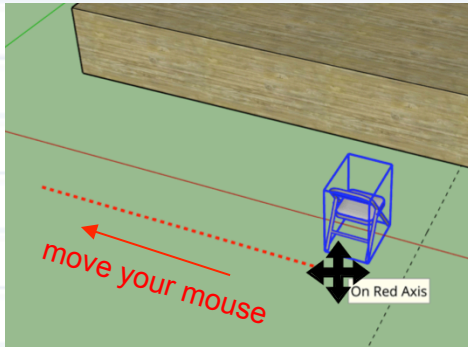
B Find "Folding Chair" and click on it to download the chair. Click again in your model window to place the chair.



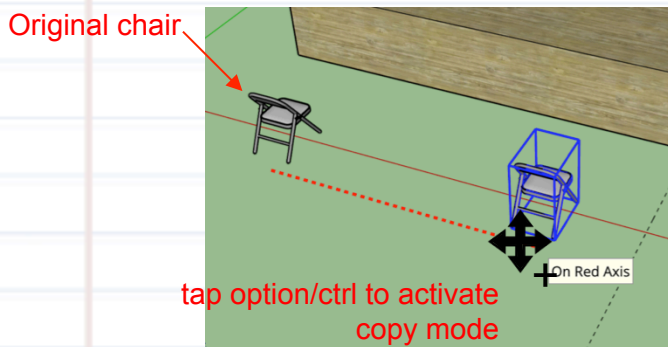
C Hover your mouse over the top of the chair until you see the red plus marks and a blue protractor. Click once on any one of the red plus marks and rotate the chair 180 degrees until it is facing the opposite direction. Click again to complete the rotation.



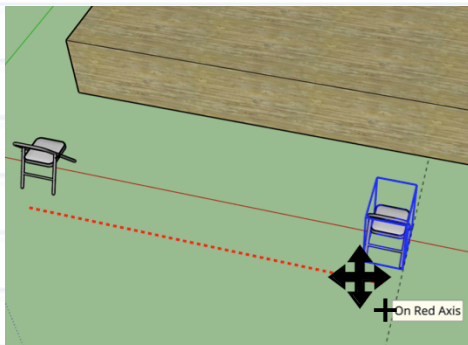
D With the chair still selected, find the move tool in the menu on the left.



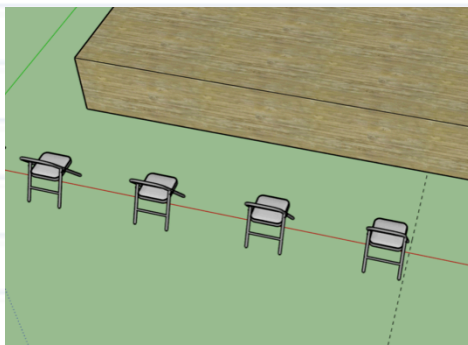
- E** Click and release on the ground near the chair and move your mouse around. Your chair should move across the screen along with your mouse. Click again to set your chair near one side of the stage.



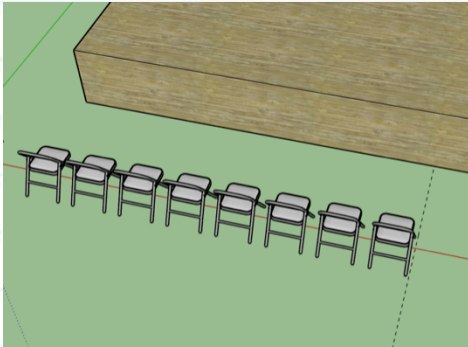
- F** With the move tool still selected, click near your chair again. If you tap the option (Mac/Chromebook) or ctrl (PC) key, you will create a copy of your chair. The original chair will remain in the starting position.



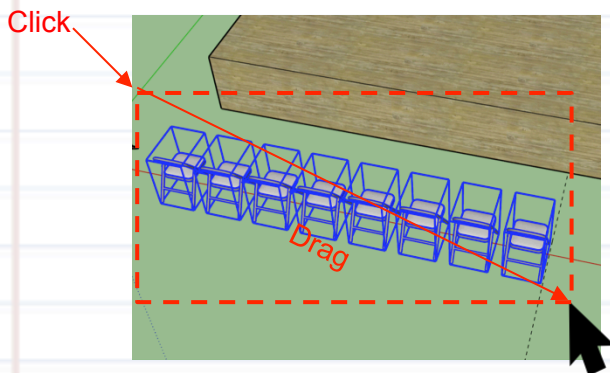
- G** Tap the right (→) arrow key to lock the copy along the red axis. Move your copied chair as close as you can to the center aisle guideline, then click again to set the chair down.



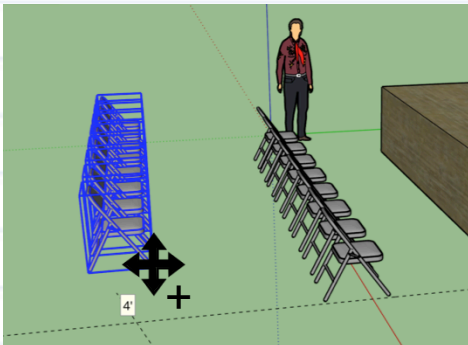
- H** Before clicking on anything else, type “/3”, then hit enter. This will make a few copies of the chair in between the original chair and the chair that you just set down.



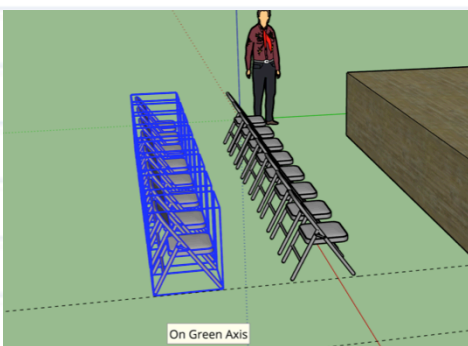
- I** If the chairs are too spaced out, try other values to divide by. You can continue to type “/4”, then enter, “/5”, then enter, etc. You can continue doing this so long as you haven’t clicked anywhere else or started another command.
In the image on the left, “/7” produced the perfect spacing for the seating.



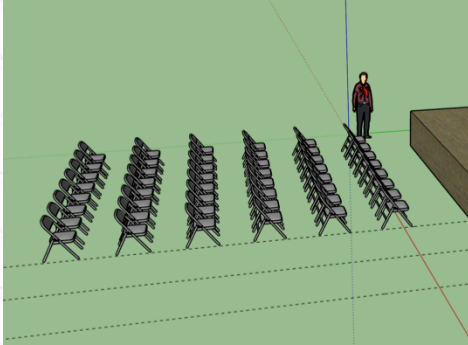
- J** Click on the select tool, and click and drag a window around your chairs to select them all at once.



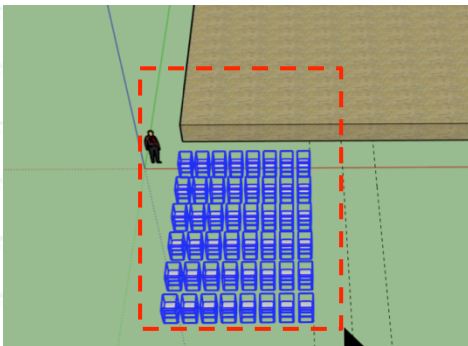
- K** Select the move tool again, and click on the ground near your row of chairs. Tap option (Mac/Chromebook) or ctrl (PC) to activate copy mode once more.



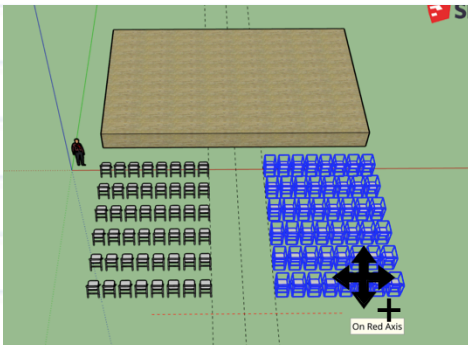
- L** Tap the left (←) arrow key this time to lock to the green axis, then move the copied row of chairs so that they are behind the original row. Type “4’ ” and hit enter to place the second row of chairs.



M Before clicking on anything else, type “*5” to create five more rows of seating. Just like the divide command, you can continue to type additional values to add rows of seating so long as you haven’t clicked anywhere else or started another command.



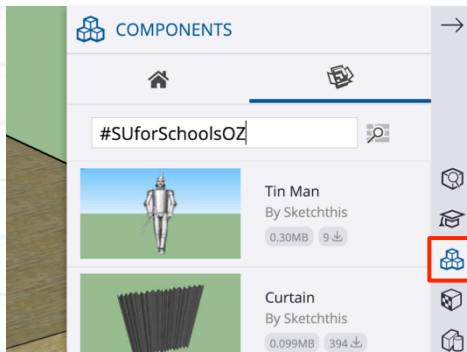
N Using the selection tool again, drag a window around all the chairs.



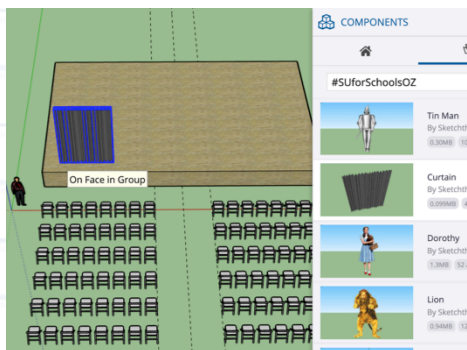
O Follow the same technique as the previous steps: select the move tool, click on the floor, tap option (Mac/Chromebook) or ctrl (PC), and place the copied chairs on the other side of the central aisle.

You now have all the seats laid out for your audience!

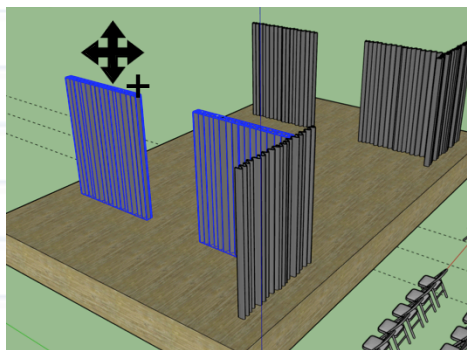
3 Add curtains from the 3D Warehouse



A Once again, click the components panel from the menu on the right, then type in “#SUforSchoolsOZ”

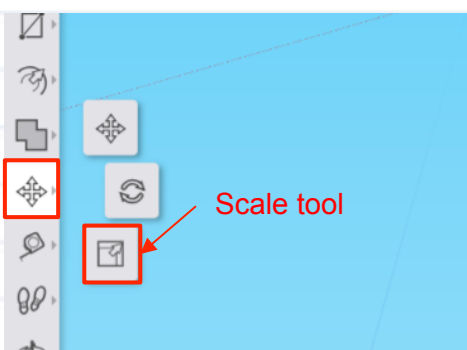


B Find the ‘Curtain’ component and click on it to download the curtain. Click again near a corner of the stage to place the curtain.

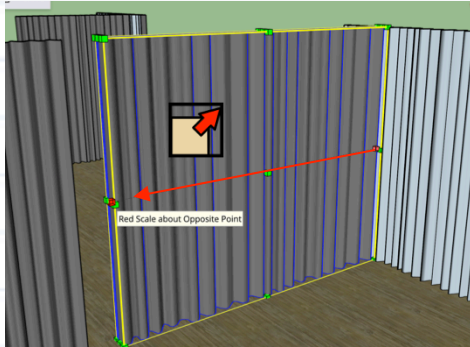


C Using the move tool, adjust the location of the curtain to your liking. Once the curtain is in a good spot, tap option (Mac/Chromebook) or ctrl (PC) and make a couple copies of your curtain around the stage.

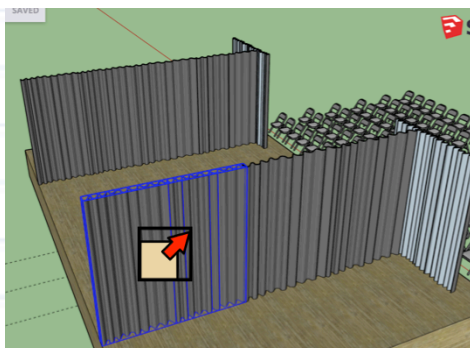
Tip: like in [step 2c](#), use the red plus marks and blue protractor to rotate curtains so that they are on the sides of your stage.



D Next, let’s make the curtains fit the stage by using the scale tool from the menu on the left.



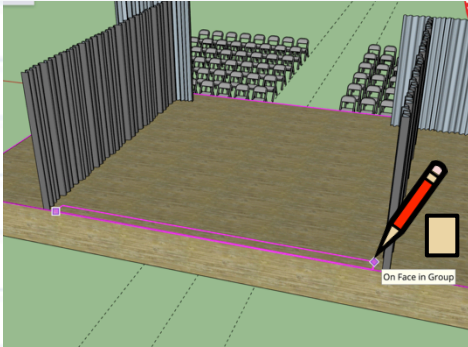
- E** Click on the green grips to resize the curtain. You'll notice that clicking on a corner grip will scale the whole model uniformly in all three directions and clicking on an edge grip will scale in two directions. Since you want to scale only the width of the curtain, find and click on the center grip on one of the short sides of the curtain.



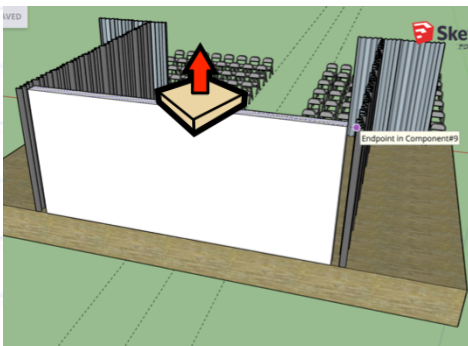
- F** Repeat step E for all the curtains in your model so that your stage is enclosed on all sides except for the back.

★ Keep going! This lesson continues →

4 Model the backdrop



- A** Select the rectangle tool and make a thin rectangle that spans the back of the stage between the side curtains.

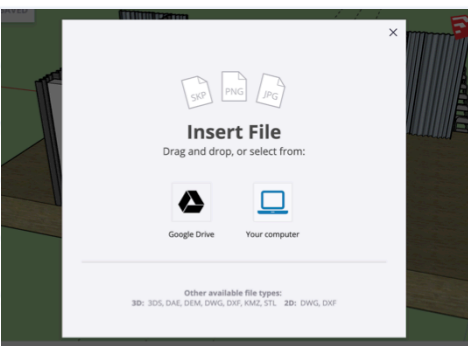


- B** Use the push/pull and “pull” the rectangle up as high as the curtains.

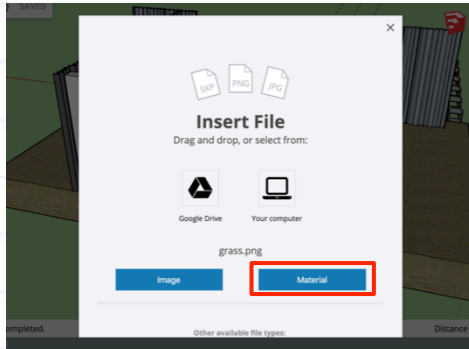


- C** You are going to use a custom image to create the backdrop for your scene. Use any image you’d like, but In this lesson plan, we will use the image on the left.

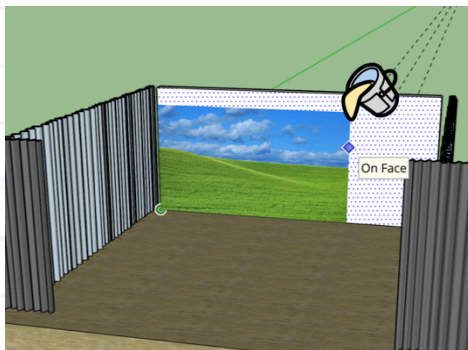
Tip: it’s best to use an image that is taken straight on rather than from an angle.



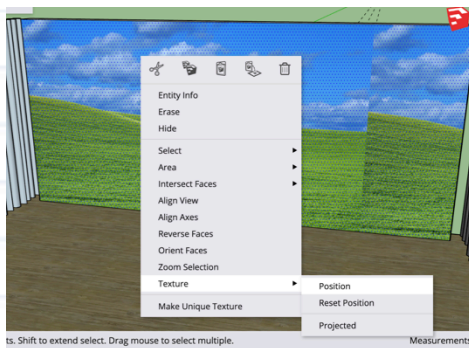
- D** At the top left in your modeling window, find and click the folder icon, then click ‘Insert’. You will be asked to select the file that you’d like to insert. SketchUp supports a number of file formats, but in this case, we are looking for a .png or .jpg image file.



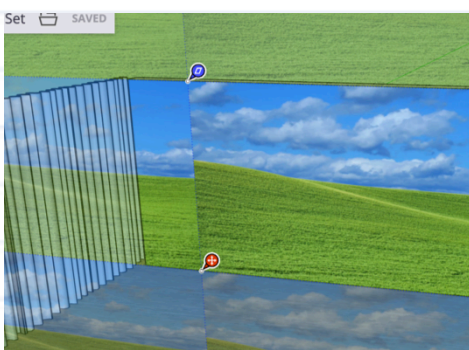
E Once you've selected your image, click the 'Material' button. This will automatically activate your paint bucket tool and allow you to apply your image as a material to an object.



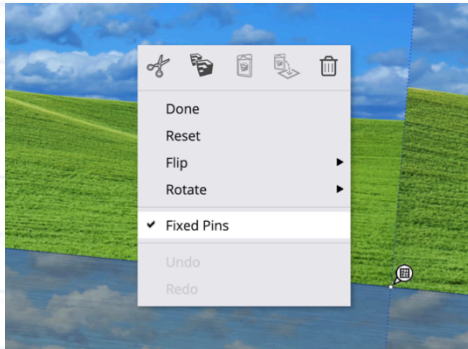
F Click once on the backdrop to apply your image material. Click again to set the image. It doesn't matter if the image is not the same size as your backdrop -- we will address that in the next few steps.



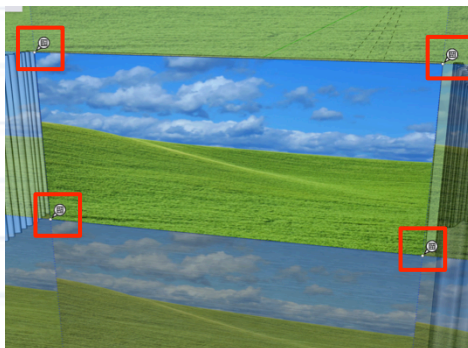
G Right-click on the newly placed image, then select 'Texture', then 'Position'.



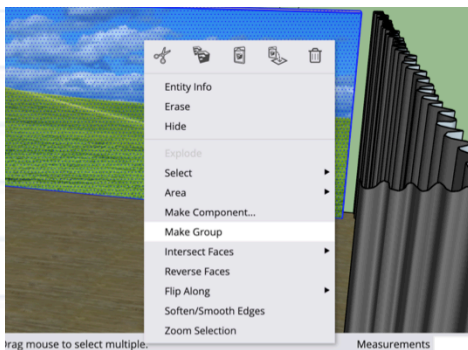
H You will see pins at each corner of the image. We won't be using these pins just yet, but click and drag each pin to try out what they are capable of. The move pin (bottom left) will move the image around. The pin on the bottom right will scale or rotate your image.



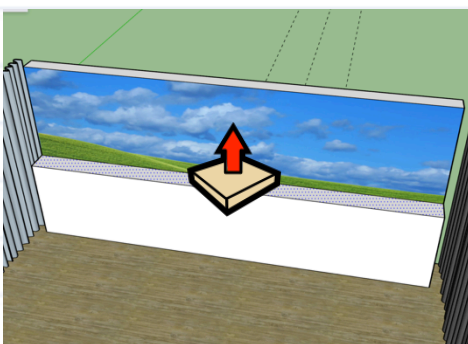
- I** With the pins still visible, right-click again on the image, and this time click 'Fixed Pins'.



- J** Click and drag on each of the four pins and match them to the four corners of your backdrop. Once your image is stretched to match your backdrop, right-click and select 'Done'.



- K** For a little housekeeping, triple click on your backdrop to select it, then right click and select 'Make Group'.

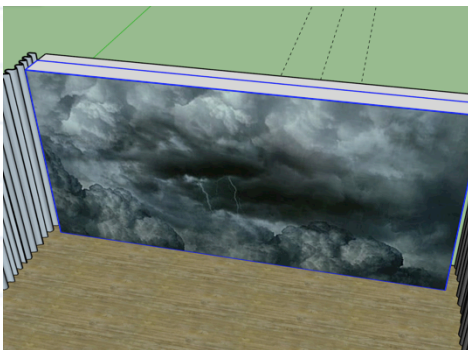


- L** Next, we are going to repeat the same process outlined in steps 4A-4K to create a different backdrop for another scene.

First, using the rectangle and push/pull tool, create another backdrop directly in front of the grassy field backdrop.



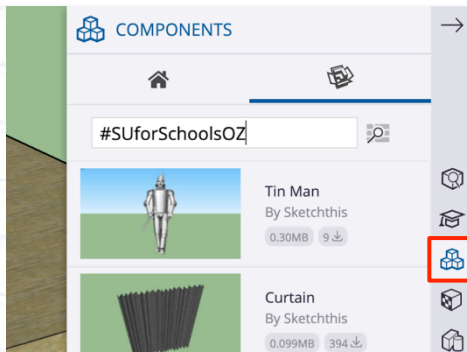
M Find another image to use as the backdrop for the second scene. In this lesson plan, we'll use the image on the left for the "stormy sky" scene.



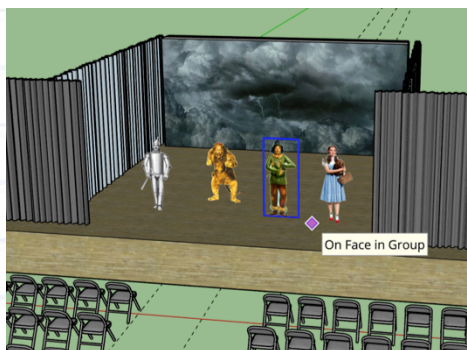
N Insert the image and match its corners to the backdrop once again. For the final step in this section, triple click and make your second backdrop a group.

★ Keep going! This lesson continues →

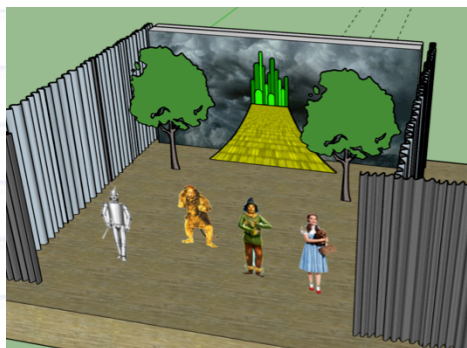
5 Set the stage with characters from the 3D Warehouse



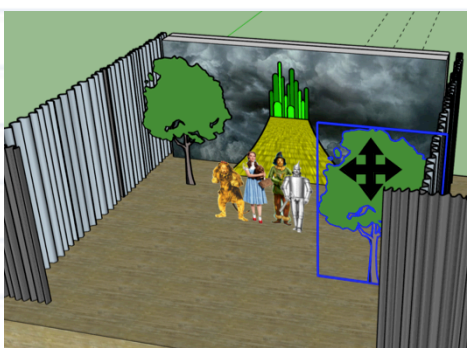
A Go back to the components panel again, then once more, type in “#SUforSchoolsOZ”



B Start placing all the main characters on the set: the Tin Man, the Scarecrow, the Lion, and of course, Dorothy.

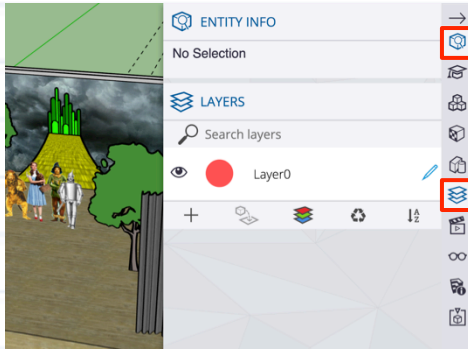


C Next, grab the Yellow Brick Road model and place it near the backdrop along with a couple trees.

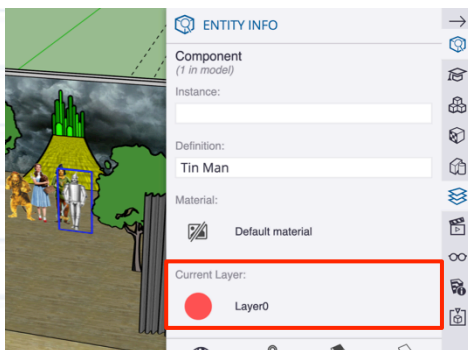


D Using the move tool, move all your components around on the set until they are placed where you like.

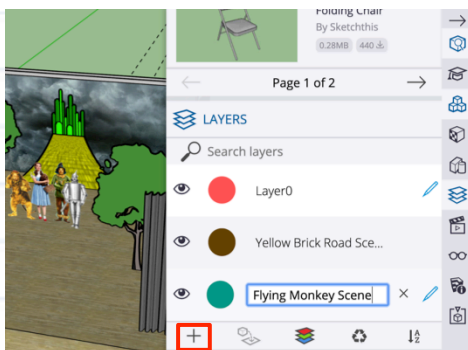
6 Toggle between various scenes in your model



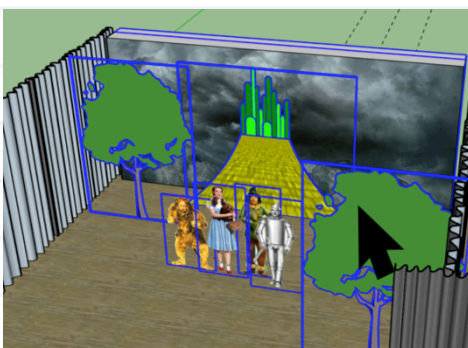
A Now you are going to learn how to use layers to set up various scenes within the same model. Click on both the 'Entity Info' and 'Layers' panels on the right. When nothing is selected, the Entity Info panel will be blank.



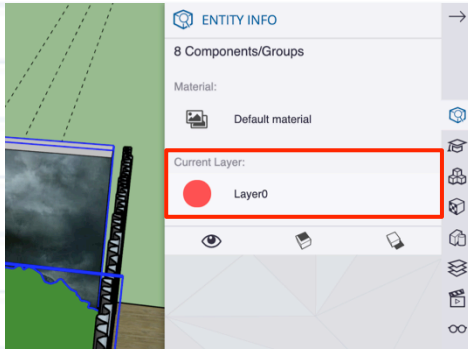
B Once you select something in your model, the Entity Info panel displays information about what you selected, including what layer it is on.



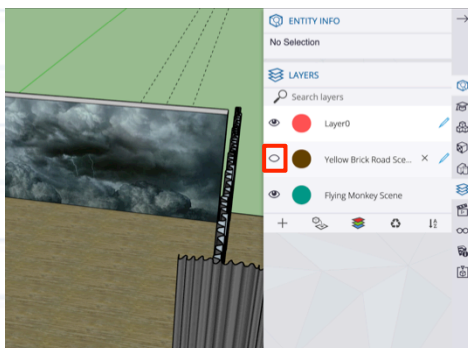
C In the Layers panel, click the "+" button to add a layer. Change the name of the layer by clicking directly on its name. Rename this layer to "Yellow Brick Road Scene". Add a third layer and rename it "Flying Monkey Scene".



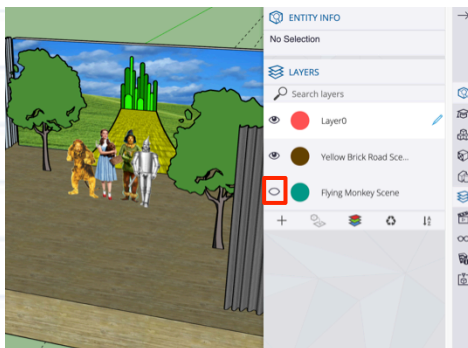
D Next let's move the components in your model onto the correct layers. Select multiple components by holding down the 'shift' key as you click. Select all four main characters, the yellow brick road, the trees, and the grassy field backdrop.



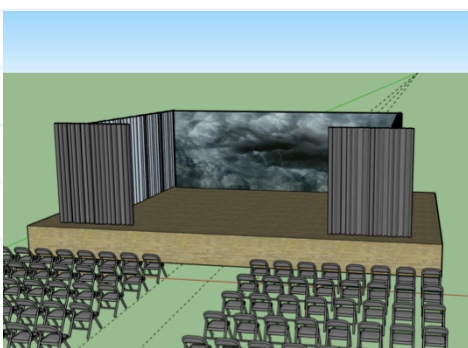
E With all components still selected, click on Current Layer: 'Layer0' in the Entity info panel to move all the components to the "Yellow Brick Road Scene" layer.



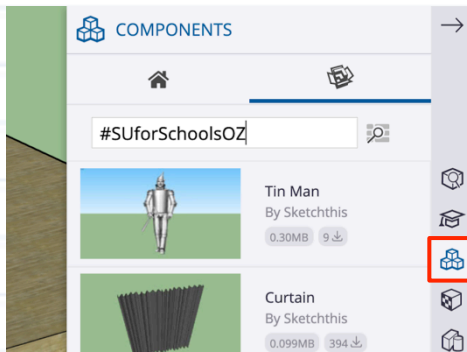
F Next, in the layers panel, click the eyeball next to "Yellow Brick Road Scene". If you did Step E correctly, this will hide all the components you just placed on that layer.



G Using the same technique in Step E, select the stormy sky backdrop and move it to the flying monkey layer. Once again, test that you've done this correctly by hiding the layer.



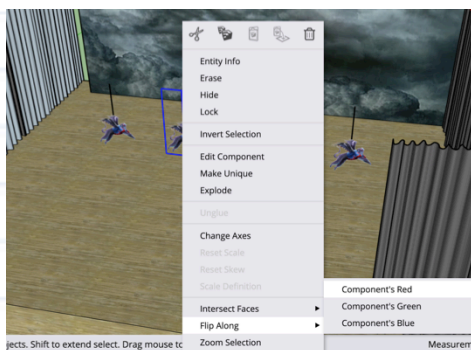
H Now let's work on the components in the flying monkey layer. Hide the yellow brick road layer so that all you see in your model is the stage, curtains, seating, and the stormy sky backdrop.



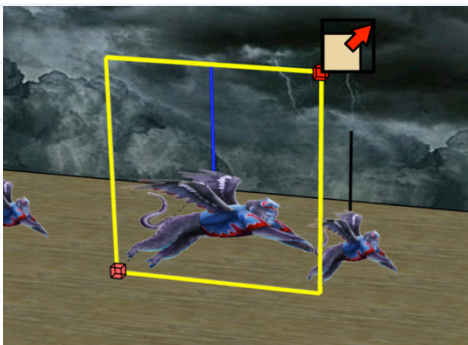
I Go back to the components panel and type in the same search as before, #SUforSchoolsOZ.



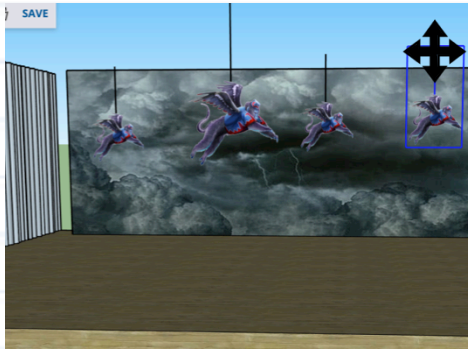
J Find the Flying Monkey component and place a few copies in your model using the option (Mac/Chromebook) or ctrl (PC) key.



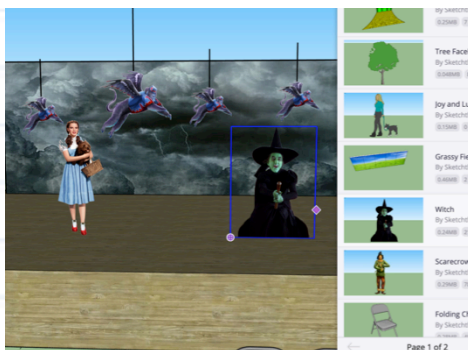
K Right-click on one of the monkeys and click on 'Flip Along' → 'Component's Red' to change the direction the monkey is facing.



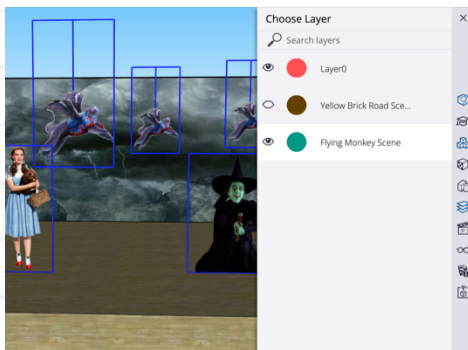
L Use the scale tool to make some of the monkeys bigger.



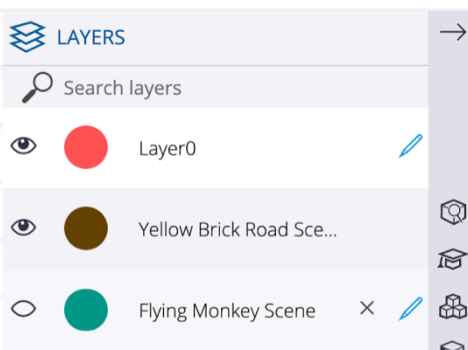
M Use the move tool to raise the monkeys up on the set so that they appear to be flying.



N Go back to your components browser and download a new copy of Dorothy into your model from the 3D Warehouse. Grab the Wicked Witch component as well.

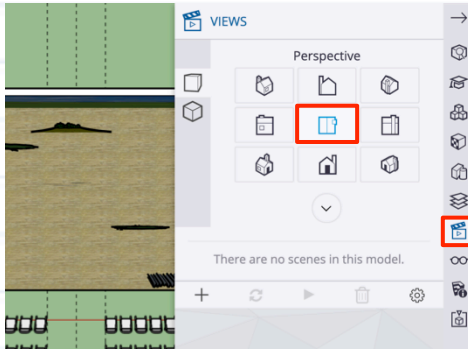


O Like in [Step E](#), select the monkeys, the 2nd Dorothy component, and the witch, and move them all to the “Flying Monkeys Scene” layer.

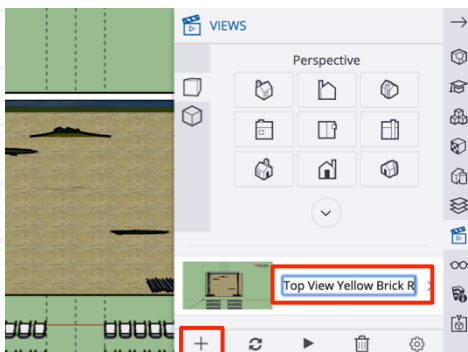


P As a final check, toggle the layers to make sure all the components are on the correct layers.

7 Simulate the view from the audience



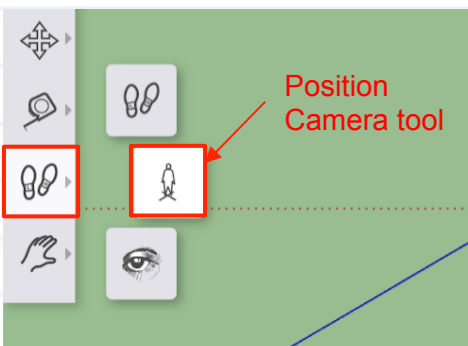
A Find the Views panel from the menu on the right. Click on any of the preset views on the 3x3 grid to see how this feature works.



B To save a view as a SketchUp scene, click the "+" button at the bottom left of the Views panel. Change the name of the scene by clicking directly on its name.



C Orbit away from the scene you just created. Now click on the scene again and your model will go back to the previous position.



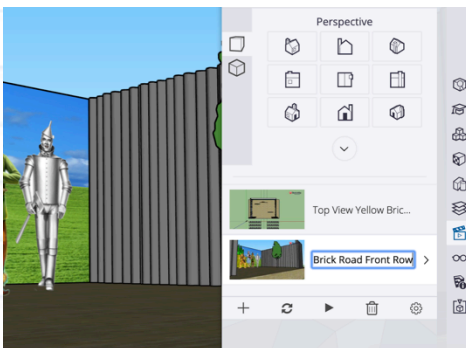
D For your next scene, let's simulate the view of an audience member sitting in the front row. Find the position camera tool from the menu on the left.



- E** Click on one of the seats in the front row. This will give you the view from that seat.

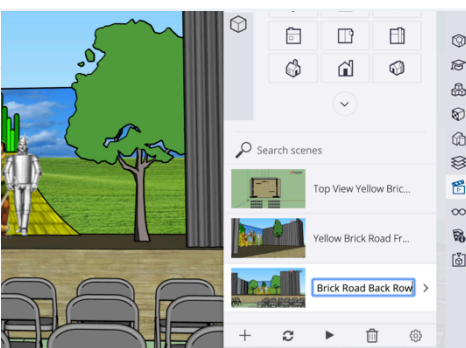


- F** In the bottom right corner, you will see a value called “Eye Height”. The default value is around 7 feet, but the eye height for a person sitting down is closer to 4 feet. To adjust the eye height, type in “4’”, then hit enter.



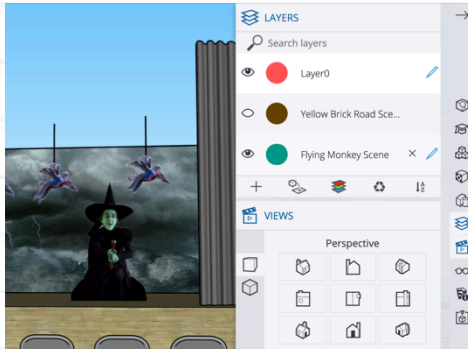
- G** Notice your cursor is an eyeball -- this is the Look Around tool. Click and drag your mouse to simulate a person looking around the room.

Once you’re happy with the view, click the “+” button in the Views panel to add a SketchUp scene “Yellow Brick Road Front Row”.



- H** Repeat steps D-G to simulate the view from the back row and add another SketchUp scene called “Yellow Brick Road Back Row”.

Now you can easily toggle between your SketchUp scenes to make sure all audience members have a good view of the set.



Next, let's make sure the audience members also have a good view of the flying monkey scene from the front and back rows. With the "Yellow Brick Road Back Row" scene selected, open your layers panel. By clicking on the eyeball icon next to each layer, hide the yellow brick road and show the flying monkeys.



Click the "+" button in your Views panel once again to save the view as another SketchUp scene "Flying Monkeys Back Row".

You now have the SketchUp skills to show multiple theater sets from multiple audience perspectives using SketchUp scenes and layers... congrats!

