Integrating Computing Across the Curriculum

Session 2: Let's Broadcast

Time	Activities
5 min	Sign In
5 min	Reflect: What did we learn last time? • *Ask the students: what is one thing you remember learning from the last Scratch Club meeting?* • *Ask the students to show you how to program the Scratch Cat to meow and then move 50 steps across the stage when the green flag is clicked.* Build the program based on their answers on your computer and displaying it on the board.
15 min	Build: New Sprites and Glide • Tell the students that today we are going to learn how to add new sprites to our projects and learn some new actions that we can program our sprite to do. • Have the students open Scratch on their own computers. • Delete the Scratch Cat. This can be done by either using the **Delete** tool or by right-clicking on the cat and selecting "delete." • Paint a new sprite to add to your project. To do this, click on the first button underneath the stage that contains a picture of star with a paintbrush. The **Paint Editor** window will open where students can draw their sprites. Give the students 2 minutes to draw a sprite, using the editor tools. Make sure that the students do not fill the entire editor window with a color; this will take up the entire stage in Scratch and block any other sprites that they add to their projects. When the 2 minutes are up, have the students click the **OK** button to add their sprite to the stage. This is **Sprite1**. • Now let's add another sprite so that we can build a project in which our two sprites will interact. This time we will add a sprite from a file in Scratch. Click on the middle button underneath the stage that has a picture of a star and folder. In the **New Sprite** window, there are 6 sprite categories to choose from. Double click on a folder to open that category and find a sprite that you would like to use. Give the students 1 minute to find one other sprite to use in their project. After 1 minute, have the students click the **OK** button to add this sprite to the stage. There should be 2 sprites on the stage. • Show the students how to edit their chosen sprite. Click on the sprite you chose from file in the thumbnail section, and then click the **Costumes** tab in the script section. Choose a color and use the **Fill** tool (the paint bucket icon) to edit your sprite. Give the students 1 minute to edit their sprite; press **OK** when time is up. This is **Sprite2**. • Tell the students that we are now going to learn a different way to program our sprites to move across the stage; today, we are going to program Sprite1 to glide across the stage. Make sure that you are looking at the scripts for Sprite1 by clicking on the **Sprite1 thumbnail** underneath the stage; it will be outlined in blue when it is selected. ○ *Ask the students: Since we want Sprite1 to glide across the stage when we click the green flag, which block do we need to start our project?* Give students time to answer before adding the **when green flag clicked** block to the scripts of Sprite1 on the board.

	○ *Ask the students to find the block that we will need to program Sprite1 to glide across the stage.* Give the students 1 minute to find the **glide 1 sec to x,y** block under the **Motion** category. Add this block underneath the **control** block in the scripts of Sprite1. • Tell the students that there is a coordinate grid underneath the stage, and a coordinate grid is made up of x- and y-coordinates. Explain to the students that use these x- and y-coordinates to tell our sprites where to go on the stage. We will use these coordinates in the **glide** block to determine where Sprite1 will glide. ○ Determine where you want Sprite1 to glide to and move the Sprite1 there on the stage. You can find the x- and y-coordinates that determine the location of Sprite1 in the script sections above the **Costumes** tab. Enter these values into the corresponding spaces in the **glide** block; take note some of these values may be negative. ○ Drag Sprite1 to a different place on the stage and click the green flag to watch the sprite glide to the specified location. ○ Tell the students that we do not want to keep dragging Sprite1 somewhere else just to watch it glide across the stage. We will need to program Sprite1 to start at a specific location when we click to green flag. *Ask the students: How can we set a starting location for Sprite1?* Remind the students about what we used to program Sprite1 glide across the stage. Show the students the **go to x,y** block; this is what we will use to set a staring location for Sprite1. ○ Move Sprite1 to where you want it start before it glides. *Ask the students: If we want Sprite1 to start here before it glides, where should we put the **go to** block in our scripts?* Encourage the students to see that this block should go before the **glide** block. Show the students how to insert the **go to** block between the **when green flag clicked** and the **glide** blocks. Have the students change the values within the **go to** block so that they match the x- and y-coordinates of the starting location of Sprite1 (found above the **Costumes** tab). ○ Press the green flag to watch Sprite1 go to the starting location and glide across the stage. Point out to the students that they do not need to move the sprite to a different location to watch it glide; we have programmed it to do that with the **go to** block.
10 min	Build: Broadcast • Next the students will learn how to use to use broadcast to activate different actions for sprites. • *Ask the students: What does the word, "broadcast" mean?* • *Ask the students: What do you think adding a **broadcast** block would do to our project?* • Explain to the students that **broadcast** is used to send a message to tell a something what to do. **Broadcast** can be used can be used to tell a sprite when to do something or to tell a background when to change. The first way that we are going to use **broadcast** today is to tell Sprite2 what to do. • First, we need to program Sprite2 to hide when at the beginning of the animation. *Ask the students: We are currently looking at the scripts for Sprite1; how do we get to the scripts of Sprite2?* Click on the **Sprite2 thumbnail** underneath the

	stage to access the scripts for Sprite2.
	• *Ask the students: Since our animation begins when we click the green flag, which block do I need to start the program for Sprite2?* Add the **when green flag is clicked** to the scripts of Sprite2.
	• Tell the students that we want Sprite2 to hide at the beginning; open the **Looks** category and ask the students to find a block to program Sprite 2 to hide when the green flag is clicked. Add this **hide** block underneath the control block in the scripts. Click the green flag to see what happens: Sprite2 will disappear and Sprite1 will glide across the stage.
	• Tell the student that we want to program Sprite2 to reappear after Sprite1 glides across the stage. So we need to program Sprite1 to broadcast a message to Sprite2 to appear after Sprite1 glides across the stage, and we will use the **broadcast** block to do this.
	  ○ Under the scripts for Sprite1, add the **broadcast** block found in the **Control** categories beneath the **glide** block.
	  ○ Tell the students that we need to determine the simple message that Sprite1 will broadcast to Sprite2 to prompt it reappear on stage. *Ask the students: What do you think is a good, simple message that Sprite1 can broadcast to let Sprite2 know that it is time to reappear on the stage?* Encourage the students to think of a simple, appropriate message like, "reappear" or "show." You will use the message in your program.
	  ○ To set this message to broadcast, click on the **black arrow** in the **broadcast** block, and select "new." Type in the message you decided on as a group into the "Message name" window, and click **OK**.
	• Now we need to program Sprite2 to appear on the stage when it receives the broadcasted message.
	  ○ Let's go back to the scripts for Sprite2 and take a look at the **Control** blocks. We need to program Sprite2 to receive the broadcast message.
	  ○ *Ask the students: Can you find the block that we will need to program Sprite2 to receive the broadcast message?* Give the students a minute to find the block and raise their hands when they have located it. Create another stack of blocks in the script of Sprite2 with the **when I receive** block. Tell the students that they can create more than one stack of blocks for a sprite. Each stack is a different set of instructions or code that program that sprite. But each stack must have a **Control** block that starts or activates those blocks. For this stack, we are going to use the **when I receive** block. With this stack we want Sprite2 to show on the stage.
	  ○ Tell the students to now program Sprite2 to show on the stage when it receives the broadcast message. Give the students a couple of minutes to figure this out before building the answer on the board by connecting the **show** block from the **Looks** category underneath the **when I receive** block.
	• Click the green flag to watch Sprite2 hide then show after Sprite1 glides across the stage.

5 min	Build: Background • Show the students how to import a background to their projects

	• Click on the **stage thumbnail** underneath the stage.
	  ○ In the scripts area, click on the **Backgrounds** tab. To import a background, click on the **Import** button option next to "New background." Click on one of the folders to view backgrounds in that category. Scroll through the backgrounds until you find the one that you would like to use. If you want to view backgrounds in another category, click on the **white arrow** pointing up next to the name of the background category to return to the list of all background categories.
	  ○ When you have found your desired background, click **OK,** and the background will be added to the stage.

10 min	Create: Make It Your Own • Tell the students that now we want to use another **broadcast** block with Sprite2 to tell Sprite1 to say something. • Give the students 10 minutes to add another **broadcast** and **when I receive** block pair and use the **say** block to program Sprite1 to say something after Sprite2 shows on the stage. Use this time to provide individual help to students as they program.

10 min	Save & Upload
	• Tell the students that we will now upload their projects to the Scratch website to share with others. From the Scratch website they can download their projects and continue working on them at home if they like. If no Internet connection is available, save their projects on the Scratch Club jump drive. Let the students know that we will upload their projects later so that they can view them online at home.
	• To save projects to a jump drive
	  ○ Click **File** and select "Save As…"
	  ○ Click on the **Computer** button on the top left of the **Save Project** window
	  ○ Double click on the E: drive
	  ○ Enter a New Filename at the bottom: Session 2 STUDENTNAME (i.e. "Session 2 Lucy Hunter")
	  ○ Enter the date in the "About this project" box.
	  ○ Click **OK** when done
	• To share their projects online, click on the **Share** at the top of the screen and select "Share This Project Online…"
	  ○ Enter the club's Scratch login name: _____
	  ○ Enter the password: _____
	  ○ Have the students name their projects: Session 2 STUDENTNAME (i.e., "Session 2 Lucy Hunter")
	  ○ Have the students enter the date under project notes
	  ○ Click **OK** when done