Growing Green in Your Community

In this activity, you'll learn the fundamentals of coding in Scratch by creating a digital "poster board" that will help your peers understand what they can do to reduce their impact on the environment. Your project will be similar to a typical poster board, but with Scratch code you will take your visually appealing and informative graphics to the next level by making your poster board interactive!

As you get started, think about which green tips you want to include in your poster. There are many things you and peers can do, such as recycling paper in your classroom or turning off the lights at night. For this project, three or four tips will fit well (see Figure 1).

Figure 1 *Example of an interactive poster board made with Scratch*

Coding with Scratch

1. Open the Scratch editor window at http://scratch.mit.edu/projects/editor

The Scratch window is divided into three main sections:

A. **Stage and Sprites**: The Stage is where the action happens! Below the Stage, you will see all the sprites used in your Scratch project. Sprites can be anything from game elements to story characters to user instructions.

B. **Sprite Code**: The center section is where you create programs for each sprite.

C. **Block Palettes and Code**: The interlocking blocks on the left, organized into palettes such as Motion, Looks, and Variable, are the code you use to control Sprites and the Stage. You drag blocks from this section into the Sprite Code section to create your program.

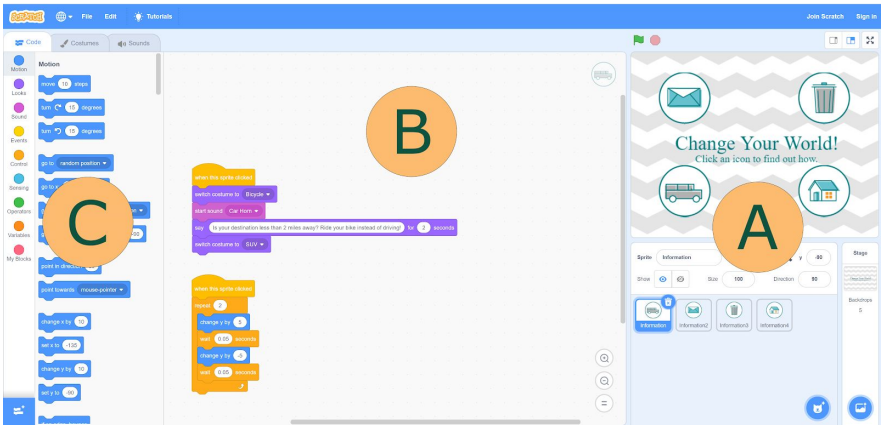


Figure 2 *The Scratch editor window*

2. From the File menu, choose “Load from your computer.” Choose the “Interactive Poster - Starter.sb3” file and open it. Notice that a sprite has been added to the Stage and the Stage now has a zig zag pattern on the backdrop.

Sprite
The Information sprite will display tips to the user when clicked. But, the sprite is not complete yet! In the next steps, you will create code for this sprite so it displays the information that you want to show your audience. You will also choose a new “costume” or icon, which will replace the bus icon.

Backdrop
The zig zag backdrop is one of five from which you can choose. After creating your sprites, you’ll get a chance to change the backdrop to something unique for your poster board.

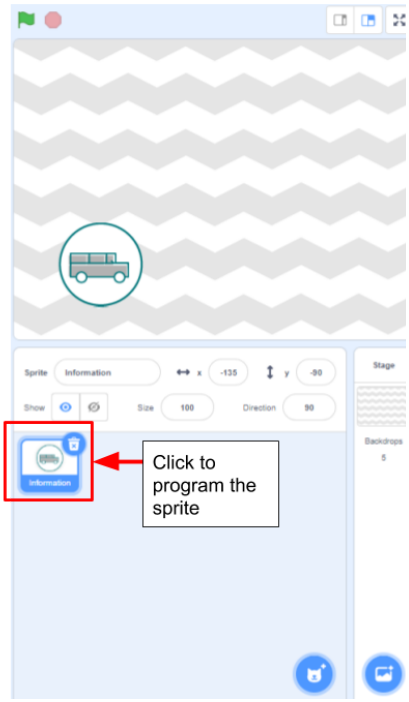
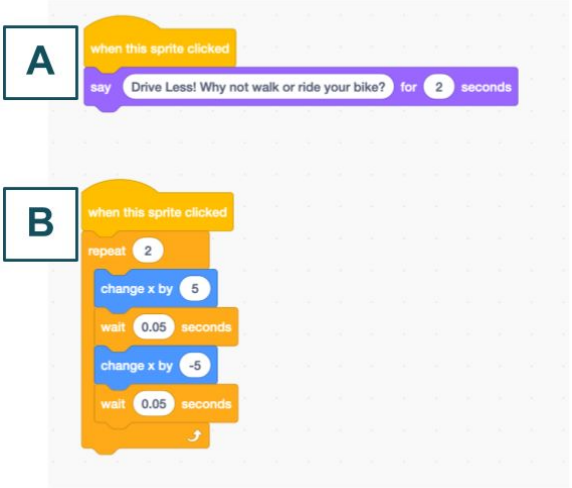


Figure 3 *Stage and incomplete Information sprite in the file “Interactive Poster - Starter.sb3”*

Program the Information Sprite

3. To program a sprite, you first need to select the sprite so Scratch can create a connection between the sprite and your code. To select the sprite, simply click the sprite in the Sprites area (see Figure 3).

4. After you’ve selected the sprite, create the two programs in Figure 4 by dragging blocks from the palettes to the Programming Area. You will notice that as you drag the blocks close to each other in the Programming Area, they will “snap” together.



Program A
Program A displays the text tip in a speech bubble when the sprite is clicked. In your program, enter the text that you want displayed in your first green tip.

Program B
In many apps and software programs, icons or menu items change color or move when you click or tap on them. This little flourish gives users an extra piece of feedback that their selection has been made. Program B serves the same purpose: when the sprite is clicked, it briefly shakes from side to side.

Figure 4 *Two programs for the Information sprite*

5. Now that you've created the code, try it out! Click the Information sprite on the Stage. Is the green tip displayed for two seconds? Does the sprite shake side to side briefly?

6. Now that your sprite is working the way you want, change the sprite's costume. To do this, click the Costumes tab above the palettes (see Figure 5). Then, select the costume you want to use for this sprite. You'll be able to choose a different costume for each of your sprites.

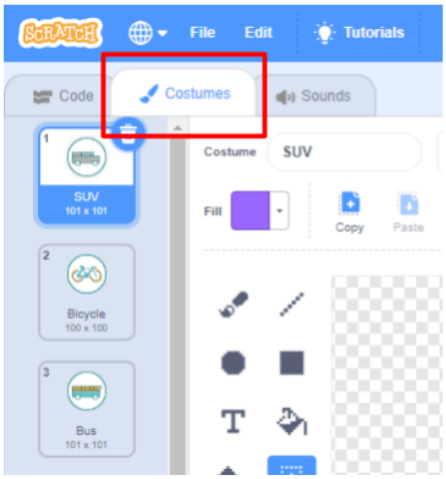


Figure 5 *Click the Costumes tab to change the costume (icon) for the sprite.*

Add Additional Information Sprites

Now that you have your first working sprite, create additional sprites for your poster:

7. Right-click the Information sprite in the Sprite section and choose "duplicate." A new sprite will be added, both to the Stage and the Sprite section, named Information2.

8. Click the Information2 sprite to select it, so you can write code for the new sprite. Change the text in Program A, so the Information2 sprite will display a different green tip to the audience. Not sure what tip to use? Do some research on ways you and your classmates can be more green!

9. Change the new sprite's costume to an image that best fits the green tip for this sprite. You can use the Scratch graphics editor to modify costumes or create new ones.

10. On the Stage, click and drag the new sprite to move it to a new location on your poster board.

11. Repeat Steps 7–10 to add additional Information sprites to the stage until you have a total of three or four sprites.

You may consider modifying the sprites' code to do the following:

- Use the "switch costume to" block from the Looks palette to make the sprite's costume change when the sprite is clicked. For example, if a green tip encourages users to drive less and bike more, have the sprite change from the car costume to the bike costume when it is clicked.
- Change the selection feedback code so that the sprite shakes up and down, rotates back and forth, or grows and shrinks when the sprite is clicked. Look at the movement blocks in the Motion palette; the "change y by" and "turn degrees" blocks can be used to change the kind of motion the sprite makes. In the Looks palette, the "change size by" block can be used to enlarge or shrink a sprite.
- Change the selection feedback code to add sound. Use the "start sound" block from the Sound palette in the selection feedback code. You can select one of several sounds from the drop-down menu in the block.

Choose a Backdrop

12. To finish designing your poster board, you have the option to change the backdrop. First, click the word “Stage” just to the right of the sprites (see Figure 6). Then, click the Backdrops tab under the File menu (see Figure 7). From the five backdrops shown, choose the one you like best.

13. As a final step, add a title to your poster board using theText tool (see Figure 7).

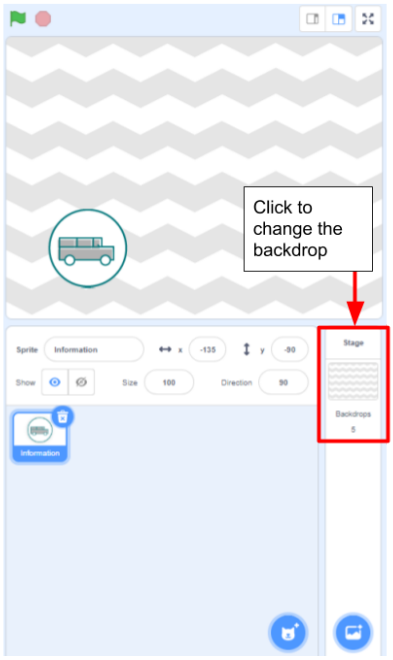


Figure 6 *Change the backdrop of the Stage*

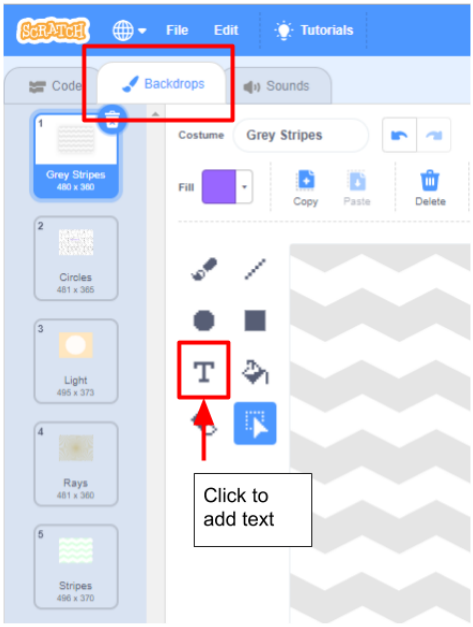


Figure 7 *Backdrops available with graphics editor*

Challenge Extensions

Extension 1

Try controlling an Information sprite with a Go Direct® Force and Acceleration Sensor.

a. Turn on your Force and Acceleration sensor.
b. Launch the Scratch Link software on your computer.
c. In Scratch, click the Extensions icon in the lower-left corner (below the palettes). Note that you have to be connected to the internet to add an extension.
d. Select the Go Direct® Force and Acceleration extension.
e. A window will pop up allowing you to choose your sensor from a list.
f. Once you’ve added the extension and connected to your sensor, you’ll see a new palette with a whole new set of blocks.
g. Swap out the “when this sprite clicked” hat block for an Information sprite for the “when shaken” hat block. Now, when you shake the sensor, it is as if the sprite has been clicked! You might even construct a physical version of the sprite and put the Force and Acceleration sensor in it, to make the connection between the sensor and the sprite more obvious.

Extension 2

Rather than have the green tips appear in a speech bubble, have them read aloud! Spoken text can be great for younger students at your school who may not read yet or for people who are blind or have reduced vision.

a. Click the Extensions icon in the lower-left corner (below the palettes).
b. Select the Text to Speech extension (note that you have to be connected to the internet to add an extension).
c. Once you’ve added the extension, you’ll see a new palette with additional blocks.
d. Add the “speak” block to your program. Any text you enter in the “speak” block will be said aloud. Be sure you have your speakers on!