iCAC

Integrating Computing Across the Curriculum

Scratch Lesson 1: Welcome to Scratch!
Lesson Framework

Scratch makes it easy to program your own interactive stories, games, and animations and share your creations on the web. As you create and share projects with Scratch, you learn to think creatively, reason systematically, and work collaboratively. Scratch is a project of the Lifelong Kindergarten group at the MIT Media Lab. It is available for free download from http://scratch.mit.edu.

The Scratch functions covered in this lesson:
- **Control**: When green flag clicked, when Sprite clicked
- **Looks**: Say something in a voice bubble
- **Sound**: Record and play sound recording
- **Help**: Right-clicking on any block in Scratch gives a description and sample of the programming element

The specific programming concepts covered in this lesson are[1]:
- **Sequence**: To create a program in Scratch, you need to think systematically about the order of steps
- **Event handling**: *When key pressed* and *when Sprite clicked* are examples of event handling - responding events triggered by the user or another part of the program
- **User interface design**: You can design interactive user interfaces in Scratch - for example, using clickable sprites to create buttons

The Alabama Course of Study Technology Education Standards Third-Fifth Grade:
- **TC 1**: Use input and output devices of technology systems
- **TC 2**: Use various technology applications, including word processing and multimedia software
- **TC 9**: Use technology tools to organize, interpret, and display data
- **TC 10**: Use digital environments to collaborate and communicate
- **TC 11**: Use digital tools to analyze authentic problems (critical thinking, problem solving, and decision making)
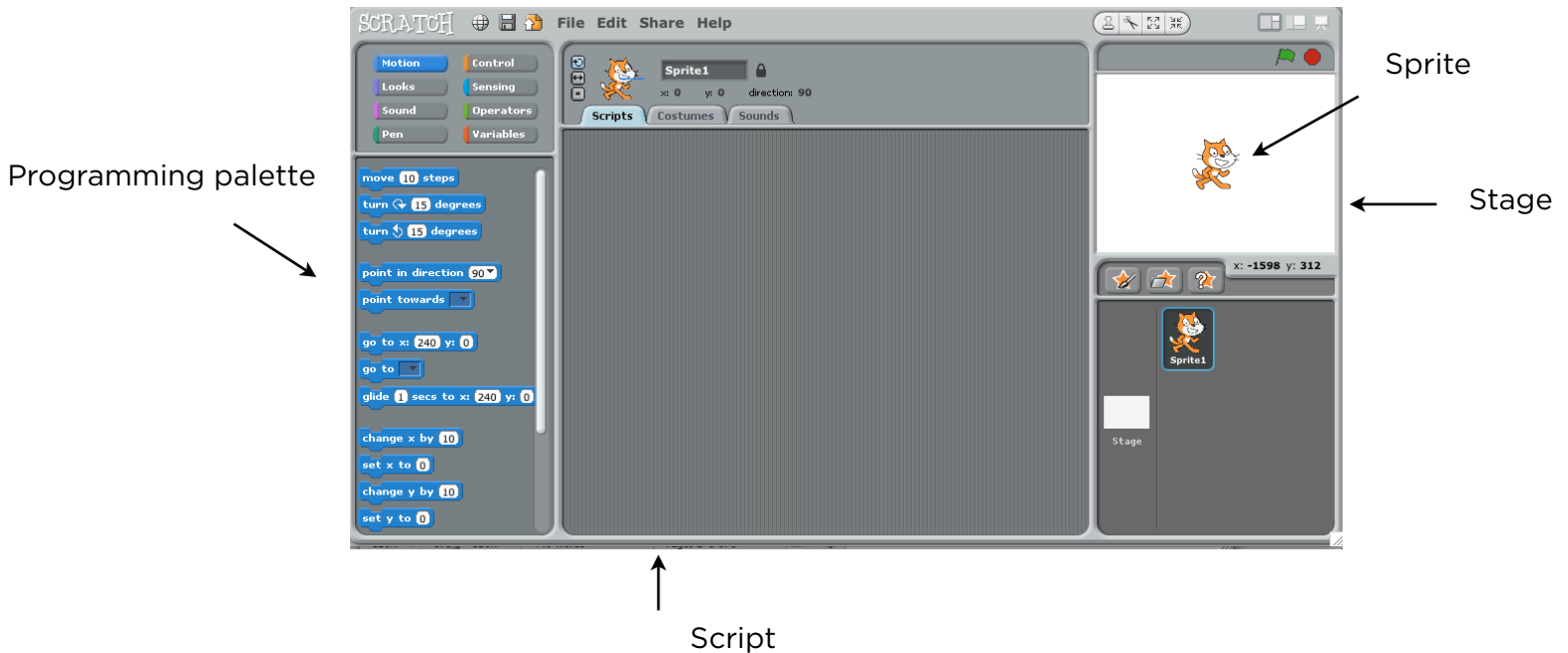- **TC 12**: Create a product using digital tools

Lesson Framework:

Step 1) Introduction to Scratch

A great way to introduce Scratch is to think of it as a play. Each element in Scratch corresponds to an element of a play. There are four main elements of Scratch: the stage, the Sprites, the script, and the programming palette using the analogy of actors in a play.

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[1] Programming concepts and skills supported in Scratch, http://info.scratch.mit.edu/sites/infoscratch.media.mit.edu/files/file/ScratchProgrammingConcepts-v14.pdf

Programming palette

Sprite

Stage

Script

The stage in Scratch is similar to the stage of a play. It is where the Scratch projects come to life. Everything that is programmed will be displayed on the stage.

The Sprites are the actors of the play; the programmable objects. Sprites can be programed to create the interactive story, game, animation, music, or art for each project.

The script tells the actors what to do on stage. The scripts in Scratch are the code that programs the programmable objects.

The programming palette is like the literary elements used by the playwright to craft the play. In Scratch, the programming palette provides all of the code in LEGO-like blocks to create the scripts.
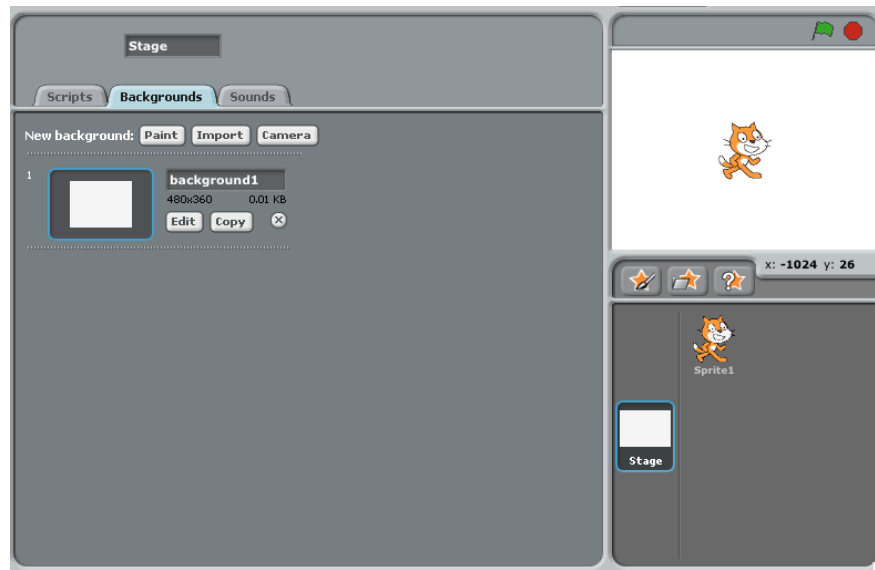
Step 2) Project Research

Have the student research facts for their projects. The students will have to create and program a interactive Sprite for each element of their project. Determine the number of Sprites needed as well and the number of facts to be given by each Sprite.
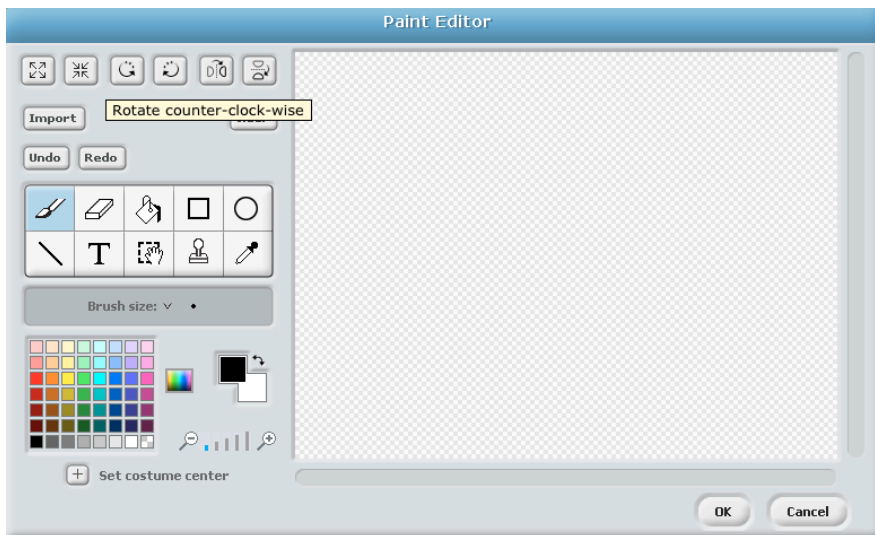
Step 3) Project Building

Have the students first create a background for their projects.

❷ Click on the "Backgrounds tab, then the Paint button.

Stage

Scripts | **Backgrounds** | Sounds

New background: Paint | Import | Camera

1   background1
     480x360   0.01 KB
     Edit | Copy | ⊗

x: -1024 y: 26

Sprite1

Stage

❶ Click on the stage thumbnail.

Paint Editor

Import   Rotate counter-clock-wise

Undo | Redo

Brush size: ∨   •

Set costume center

OK   Cancel

❸ Draw the background in the Paint Editor window. When finished, click "OK."

❹ Click on the star with a paintbrush icon to paint a new Sprite for the first project element. This will open another Paint Editor window, similar to painting a background.
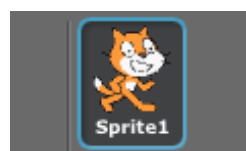
❺ Click on the newly created Sprite thumbnail underneath the stage to access the scripts of this Sprite.
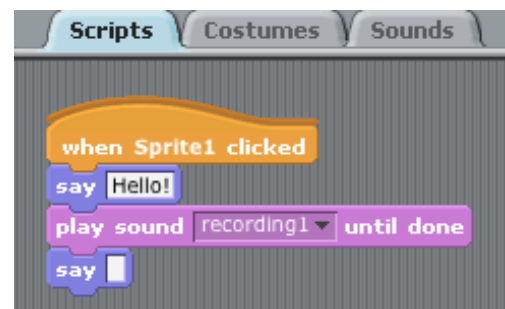
Sprite1

❻ Click on the "Sounds" tab, and press "Record" to record a fact for the Sprite. Press the red button in the Sound Recorder window to record your message and press "OK" when done.
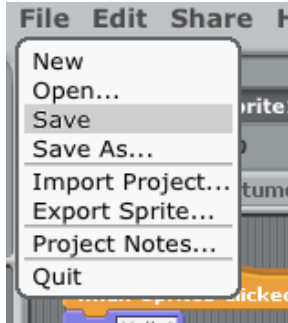
❼ The recording will appear under the "Sounds" tab. Note, this recording is only available for the Sprite it was recorded under.

❽ Click on the "Scripts" tab to program the Sprite to play the sound recording when the Sprite is clicked. Drag the corresponding orange "when Sprite clicked" block from the programming palette to the script. Connect the pink "play sound recording until done." Now the Sprite will play the sound recording when it is clicked on that stage.

❾ A purple "say" block can be inserted about the "play sound" block to have the Sprite say the words from the recording in a voice bubble on the stage. Simply type the corresponding words in the white space in the "say" block. Connect another "say" block with nothing in the white space to remove the voice bubble from the stage after the Sprite is done speaking.

File   Edit   Share   H

New
Open...
Save
Save As...
Import Project...
Export Sprite...
Project Notes...
Quit

❿ Repeat steps 6-9 for each Sprite required in the project. Save the project when finished by clicking on "File" at the top of the screen and selecting "Save" from the drop down menu.

Click on the easel at the top right of the screen to enter the "Presentation Mode" to share your project!