LESSON 25

Pattern Snake

60 minutes | Dynamic Digital Projects

WHAT THIS LESSON DOES

In this lesson, students will learn how to create an interactive 'Pattern Snake' using Scratch. They will draw a sprite, code it to follow the mouse pointer, create a trailing effect with clones, and add colour changes. The lesson also includes adding costumes for different shapes and celebrating the final creation.

WHAT STUDENTS SHOULD BE ABLE TO DO

- Develop skills in creating and manipulating sprites in Scratch.
- Understand and apply the concept of clones in Scratch programming.
- Gain proficiency in using control structures to create movement and interaction in Scratch.
- Learn to use colour and costume changes to enhance visual effects in Scratch projects.
- Enhance creativity and problem-solving skills through the design and execution of a unique digital project.

BEFORE THE LESSON

- Open and test scratch.mit.edu on your own device to confirm the school filter is not blocking it and the editor loads.
- Check pupils can reach Scratch on their devices, one device each; decide in advance whether they sign in or work in a local project.
- Make your own Pattern Snake beforehand so you can model the mouse-follow and clone blocks and know where each block lives in the palette.

Pattern Snake

HOW THE LESSON RUNS

Introduction
Create a new Scratch project
Draw a sprite
Follow you mouse pointer
Create clones
Change the colour
Add costumes
Celebrating Your Creation

TEACHING MOVES

- 3. Draw a sprite. Tell pupils to keep the shape small and simple. A large or detailed sprite makes the trail messy. Offer the Ball sprite as a quick route for anyone stuck in the paint editor.
- 4. Follow you mouse pointer. Model that 'point towards mouse-pointer' sits inside the forever loop. Have pupils click the green flag and confirm the sprite chases the pointer before moving on.
- 5. Create clones. Stress there are two separate scripts: the forever loop that makes clones, and a 'when I start as a clone' hat that deletes them. Point out both start blocks in the palette.
- 6. Change the colour. Show that the colour change happens once per clone created, so the trail cycles through colours. Let pupils raise the value above 5 to see faster colour shifts.
- 7. Add costumes. Have pupils paint one extra costume of a different shape, then press space to swap. Point out the rotation script runs independently in its own forever loop.
- 8. Celebrating Your Creation. Give two minutes for pupils to walk round and view each other's patterns, then ask one or two to say which value they changed and what it did.

WHAT TO WATCH FOR

- Pupils drop the clone-deleting blocks under the green flag instead of under 'when I start as a clone', so clones never vanish and the screen fills up. Show them the two scripts side by side and read the second hat block aloud: this code runs for every clone, not once at the start.
- Pupils place 'point towards mouse-pointer' or 'create clone' outside the forever loop, so it runs only once and the effect fails. Have them check every action block sits inside the forever loop, then click the green flag to test before adding anything new.
- Pupils draw a large or off-centre sprite and the trail looks cluttered or drifts wrong. Ask them to resize the sprite smaller and drag it to the centre of the paint canvas, then rerun.

DIFFERENTIATION

- Emerging: Let them add the Ball sprite instead of drawing, so they can spend the time on the code. Give the movement and clone blocks one at a time, testing with the green flag after each addition.
- Developing: Pair them with a partner to compare scripts when a clone will not delete. Ask them to explain back to you what the forever loop is doing before they add the colour effect.
- Proficient: Have them experiment with the move steps, colour effect value or turn degrees and describe how each changes the pattern. Challenge them to add a second costume set or a key press that clears the screen.