

Virtual Pet

40 minutes

Coding and Creative Projects

WHAT THIS LESSON DOES

In this lesson, students will create a virtual pet using Scratch. They will learn how to add a sprite, change its size and colour, and make it move and make sounds.

WHAT STUDENTS SHOULD BE ABLE TO DO

- Understand the basics of using Scratch, including creating a new project and adding sprites and backdrops.
- Learn how to use the 'change size by' block to alter the size of a sprite, and understand how different keys can trigger different actions.
- Develop skills in using the 'change color effect by' block to alter the color of a sprite, and understand how to reset effects when the program starts.
- Learn how to use the 'play sound' block to add sounds to a project, and understand how to trigger sounds with user interaction.
- Understand how to use the 'turn degrees' and 'move steps' blocks to create movement in a sprite, and understand how to use the 'repeat' block to create repeated actions.
- Develop creativity and problem-solving skills by exploring how to add additional features to the virtual pet project.

BEFORE THE LESSON

- Open scratch.mit.edu on class devices and confirm the school filter allows it.
- One device per pupil or pair, charged and ready.
- Sound on or headphones ready so the bark sound can be heard.

Virtual Pet

HOW THE LESSON RUNS

Introduction
Create a new project
Add the sprite Dot
Add the backdrop Boardwalk
Make your pet bigger
Make your pet smaller
Change Pet's Color
Make it run and bark
Wrap Up

TEACHING MOVES

- 1. Introduction. Frame the goal: one pet that grows, shrinks, changes colour, moves and barks. Keep it brief so pupils reach Scratch quickly.
- 2. Create a new project. Send everyone to scratch.mit.edu, start a new project, and check the default cat sprite is deleted before they continue.
- 3. Add the sprite Dot. Show Choose a sprite once on the board, then wait until every project has Dot on the stage.
- 4. Add the backdrop Boardwalk. Show Choose a backdrop and Boardwalk. Confirm the stage background before moving on to code.
- 5. Make your pet bigger. Model the up-arrow hat block with change size by 10. Have pupils press the green flag, then the up arrow, and watch the pet grow.
- 6. Make your pet smaller. Stress the minus: change size by -10 on the down arrow. Test side by side with the up-arrow script so both directions work.
- 7. Change Pet's Color. Add space-key change color effect by 15, then the green-flag set color effect to 0. Show why the reset stops colours stacking forever.
- 8. Make it run and bark. Build when this sprite clicked: play bark, then repeat 36 with turn 10 and move 10. Say aloud that 36×10 degrees makes a full circle.
- 9. Wrap Up. Celebrate the working pet. Invite one extra feature only if time allows: a new key, sound or action they invent themselves.

WHAT TO WATCH FOR

- Pupils enter change size by 10 for the down arrow instead of -10, so both keys only grow the pet. Point at the minus sign in the block. Have them press down arrow and watch for shrink before they move on.
- Colour keeps shifting across runs because they omit set color effect to 0 when the green flag is clicked. Run the project twice without the reset, then add the green-flag block and show the pet returning to its normal colour.
- The pet turns once or walks in a straight line because turn and move sit outside repeat, or repeat is too small. Count $36 \times 10 \text{ degrees} = 360$ with them. Check turn and move are inside the repeat, not stacked below it.

DIFFERENTIATION

- Emerging: Sit with them for the first key-press script (up arrow and change size by 10) until that block pair snaps and runs. Pair them with a partner who can point to Choose a sprite and Choose a backdrop while they click.
- Developing: Ask them to read each hat block aloud (which key, which click) before testing so scripts are not attached to the wrong event. If size or colour fails, have them compare their blocks to the step code rather than starting again.
- Proficient: Challenge them to add one new feature from the wrap-up idea: another key, sound or action for the same pet. Ask them to explain why repeat 36 with turn 10 makes a full circle, then tweak the numbers and predict the path.