

LESSON 16

Fish Tank Clicker

45 minutes

Coding and Creative Projects

WHAT THIS LESSON DOES

In this lesson, students will learn how to create an interactive fish tank using Scratch. They will learn how to make a fish sprite follow the mouse pointer, create clones of the fish, and make the clones swim at different speeds and sizes.

WHAT STUDENTS SHOULD BE ABLE TO DO

- Students will understand the basics of creating an interactive game using Scratch, including adding sprites and backdrops.
- Students will learn how to use loops and event blocks to control the behavior of sprites.
- Students will develop the ability to make a sprite follow the mouse pointer on the screen.
- Students will gain skills in creating clones of a sprite and controlling their behavior independently.
- Students will learn how to use random numbers to vary the size and speed of sprite clones.
- Students will develop an understanding of how to experiment with code to create unique and fun interactive experiences.

BEFORE THE LESSON

- Open and test scratch.mit.edu on class devices so logins and the school filter are clear before the lesson.
- One device per pupil if possible, or stable pairs sharing a keyboard and mouse.
- Sound is not required. A projector helps if you model the first blocks together.

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HOW THE LESSON RUNS

Introduction

Create a new project

Add the Underwater Backdrop

Add the Fish Sprite

Make the Fish Follow the Mouse

Create Clones of the Fish

Make the Clones Swim

Randomize the Size of the Fish

Make the Fish Swim at Different Speeds

Wrap Up

TEACHING MOVES

- 1. Introduction. Frame the goal in one sentence: a fish that follows the mouse and spawns swimming clones when clicked. Keep the intro short so pupils get into Scratch quickly.
- 2. Create a new project. Have everyone open Scratch, start a new project and delete the cat sprite before adding anything else. Check the stage is empty.
- 3. Add the Underwater Backdrop. Guide pupils to the backdrop library and choose Underwater 1 so the tank scene is set the same way for the class.
- 4. Add the Fish Sprite. Add the Fish from the sprite library. Confirm the fish, not another sprite, is selected before any code is added.
- 5. Make the Fish Follow the Mouse. Build the green-flag script together: size 50%, then forever go to mouse-pointer. Run it and have pupils move the mouse to prove the loop is working.
- 6. Create Clones of the Fish. Add when this sprite clicked, next costume, create clone of myself. Ask pupils to click the fish once and watch for a new copy appearing.
- 7. Make the Clones Swim. Stress that When I start as a clone only runs on clones. Add left-right rotation, forever move 5 steps and if on edge bounce, then click to test swimming.
- 8. Randomize the Size of the Fish. On the click script, set size to pick random 5 to 60 before create clone. Click several times so pupils see varied sizes appear.
- 9. Make the Fish Swim at Different Speeds. In the clone script, replace move 5 with pick random 2 to 6. Click to spawn several fish and compare how fast each one swims.
- 10. Wrap Up. Invite a few pupils to show their tank and name one idea they used: follow mouse, clones, or random size and speed. Praise experimenting with the values.

WHAT TO WATCH FOR

- Pupils put the follow-mouse or clone scripts on the stage, or on a different sprite, so nothing happens when they click the fish. Before running, ask them to tap the fish thumbnail and check the scripts sit on that sprite only.
- Pupils expect the original fish to swim like the clones, or think create clone needs no When I start as a clone script. Remind them: the click script makes clones; only the start-as-clone script controls how each copy moves.
- Random size is set after create clone, so clones stay the same size as the original. Show the order on the click hat: next costume, set size to pick random, then create clone, so the new size is copied.

DIFFERENTIATION

- Emerging: Sit with the pupil and build only the green-flag forever go to mouse-pointer first until the fish follows reliably. Pair them with a partner who clicks blocks while they describe what should happen next.
- Developing: Have them read each hat block aloud (green flag, sprite clicked, start as clone) before adding the blocks underneath. If clones appear but do not move, send them back to check the When I start as a clone script only.
- Proficient: Challenge them to tweak the random ranges for size and move steps and explain what looks more natural. Ask them to add another costume change or a second click behaviour using only blocks already in the project.