

Shark Swim

60 minutes

Digital Creation Lab

WHAT THIS LESSON DOES

Get ready to create an exciting game in Scratch! In this lesson, you'll build a thrilling underwater adventure where you play as a diver navigating a course, avoiding edges and a chasing shark to reach the finish line.

WHAT STUDENTS SHOULD BE ABLE TO DO

- Develop skills in creating and managing a Scratch project.
- Understand and apply the concept of sprite control and animation using costumes.
- Gain proficiency in using coding blocks for game mechanics such as collision detection and game loop creation.
- Learn to use the mouse pointer for sprite movement and control.
- Develop an understanding of game development concepts and apply them in a practical project.

BEFORE THE LESSON

- Open Scratch on pupil devices and confirm the school network allows it. One device per pupil or pair.
- Check that each device has a working mouse or trackpad: the diver is steered with the mouse pointer.
- If demonstrating, have Scratch on a shared screen and try a quick green-flag run so sound and pointer control are ready.

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HOW THE LESSON RUNS

Introduction
Create a new Scratch project
Create the backdrop
Add the Diver1 sprite
Make the diver swim
Add the Shark 2 sprite
Make the shark appear
Create a 'Crash' costume
Detect a crash or shark bite
Program the finish line
Wrap up

TEACHING MOVES

- 1. Introduction. Frame the goal: build a game where a diver swims a course without hitting the walls or a shark. Keep it brief, then move straight into Scratch.
- 2. Create a new Scratch project. Have everyone create a new project and delete the cat sprite so the stage is empty before painting the course.
- 3. Create the backdrop. Paint a solid blue stage, red lanes with brush thickness 20, and a green finish line. Stress that wall and finish colours must stay exact for later touching-colour checks.
- 4. Add the Diver1 sprite. Add Diver1, place it at the course start, and add the green-flag size and go-to blocks. Click the flag to prove the diver resets to those coordinates.
- 5. Make the diver swim. Under the go-to block, add a forever loop: point towards mouse-pointer, move 2 steps. Let pupils test steering with the pointer before adding danger.
- 6. Add the Shark 2 sprite. Add Shark 2, set size to 40 percent, and hide on green flag. Confirm the shark is invisible at start before coding the bite loop.
- 7. Make the shark appear. Show the three shark costumes as a flipbook. Add the loop that shows the shark at a random place, switches costumes to bite, then hides and repeats.
- 8. Create a 'Crash' costume. Duplicate the diver1 costume, rename it crash, and draw red marks on it. Add switch costume to diver1 at the top of the green-flag script.
- 9. Detect a crash or shark bite. Inside the forever loop, add if touching Shark 2 or the wall colour: switch to crash, say Nooooo for 2 seconds, restore diver1, go back to start.
- 10. Program the finish line. Under that if, add if touching the green finish colour then say I did it. Run full playtests and fix colour mismatches if wins or crashes fail.
- 11. Wrap up. Name what they built: mouse steering, show or hide, costume animation, collision checks and a game loop. Invite one pair to show a working run.

WHAT TO WATCH FOR

- Touching colour does not trigger because the painted wall or finish colour is not the same as the colour in the block. Use the colour picker on the actual backdrop pixels and update the touching-colour block so both match exactly.
- Pupils stack a second when-green-flag script and lose track of which forever loop runs, so the diver or shark misbehaves. Have them read each green-flag stack aloud from top to bottom and keep setup blocks above the forever loop.
- The shark never seems to bite because costumes are not switched in order, or it stays hidden. Open the shark costumes tab, click through them in order, then step through show, costume changes and hide with the pupil watching the stage.

DIFFERENTIATION

- Emerging: Sit with the pupil for the diver setup only: size, go to start, then point towards mouse and move. Add the shark once steering works. Pair them with a partner who places blocks while they decide what each block should do.
- Developing: Prompt them to test after each new if: crash on wall, crash on shark, win on green. Ask which colour or sprite each check uses. If the diver drifts off course, have them recheck start coordinates against their own backdrop.
- Proficient: Challenge them to tune feel only with values already in the project: move steps, sprite size, or a tighter hand-drawn course. Ask them to explain the full forever loop to a peer: steering, crash reset and finish check in order.