



Whale escape

Scratch lesson plan – Code Playground



Lesson overview

In this lesson, students will create a Scratch project called Whale escape designed to raise awareness about marine conservation. Using concepts of selection and conditions, students will help a whale avoid hazards and catch fish, all while learning key programming techniques such as sprite movement, conditional logic, and variables. This lesson integrates the Whale escape workbook and instructional video to guide students through the activity.

Time	Key learning outcomes	Resources
45 mins	<ul style="list-style-type: none">Program sprite movement and interactions using mouse controlsUse selection and conditions to implement game logicCreate and manage variables to track progress (e.g. score, lives)Explore real-world conservation themes through interactive coding.	<ul style="list-style-type: none">Pencil and paper/printout of workbookLaptops or desktop computersAccess to Scratch website - https://scratch.mit.edu

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Lesson introduction

Today, we'll create a project called Whale escape to help a whale navigate the ocean while avoiding hazards and catching fish. This project is part of a conservation effort in partnership with ORCA, focusing on protecting marine life.

Discuss the importance of marine conservation:

Whales and dolphins face many threats in the wild. Through this project, you'll learn coding while understanding how we can protect these amazing creatures.

Class question:

"What are some hazards that whales face in the ocean, and how can we represent them in this game?"

You could tie this to other parts of the curriculum. Perhaps making art or technology projects from recycled materials, exploring themes about other countries in geography etc.

Scratch practical

Ask the children to log into Scratch and set up their workspace as described in the workbook.

- Children should have some understanding of marine conservation
- By the end of the activity they should be able to demonstrate a completed version of the Whale escape program.

Activity – Whale escape

Students should start by loading the starter whale escape project. By following along to the video and using the instructions in the workbook, they will add in the controls to the whale sprite for motion. They will also code instructions for other marine objects to move as well as what happens when the whale touches them.

- How do they make the score go up or the lives go down?
- How do they set the win and lose conditions?

Scratch practical

Students program the whale to follow the mouse pointer using Scratch's motion blocks. This establishes player control.

Students add hazard sprites (e.g. balloons, fishing trawlers) and program collisions that reduce the whale's lives when touched.

Activity wrap up

Prepare to share your game with the class.

Extension ideas

Add animations or sound effects when the whale touches hazards or catches fish.

Create a more complex scoring system with bonuses for catching multiple fish in a row.

Add a custom backdrop that reflects ocean conservation themes.



Code snippets

Whale

```

when clicked
  go to x: -200 y: -130
  forever
    point towards mouse-pointer
    move 10 steps
    wait 0.1 seconds
    next costume
    if touching color black? then
      change Lives by -1
      go to x: -200 y: -130
      wait 0.5 seconds
  
```

Fish

```

when clicked
  set rotation style left-right
  go to random position
  show
  forever
    move 10 steps
    turn pick random -20 to 20 degrees
    next costume
    if on edge, bounce
    turn pick random -20 to 20 degrees
    wait 0.25 seconds
    if touching color black? then
      turn pick random -30 to 30 degrees
    if touching Whale? then
      hide
      wait 2 seconds
      go to random position
      show
  
```

Balloon

```

when clicked
  set rotation style left-right
  go to random position
  show
  forever
    move 10 steps
    turn pick random -20 to 20 degrees
    next costume
    if on edge, bounce
    turn pick random -20 to 20 degrees
    wait 0.25 seconds
    if touching color black? then
      turn pick random -30 to 30 degrees
    if touching Whale? then
      hide
      wait 2 seconds
      go to random position
      show
  
```

Summary

The following information is an example of what a child at an expected level would be able to demonstrate when completing these activities with additional examples to demonstrate how this would vary for a child with emerging or exceeding achievements.

Assessment guidance

Differentiation – Lower ability/ASN

- Focus on programming basic movement for the whale before adding hazards or fish
- Pair students to collaborate and share ideas
- Provide a simplified version of the workbook with pre-filled steps.

Differentiation – Higher ability/extension

- Challenge students to design additional levels with unique hazards or rewards. Encourage them to use variables to control the speed or difficulty of hazards
- Explore ways to optimise the code for efficiency.

Plenary

- “What coding blocks did you use to control the whale and detect collisions?”
- “How did you implement scoring and lives variables in your game?”
- “What did you learn about the challenges whales face in the ocean?”

Assessment questions

- How did you program the whale to follow the mouse pointer?
- What blocks were used to detect when the whale touched hazards or fish?
- How does the game over condition work, and why is it important?
- What new features would you add to make the game more exciting?