

Colouring Robot

40 minutes

Unplugged Coding - Art

WHAT THIS LESSON DOES

In this lesson, you'll become a robot artist, learning how to follow specific instructions to create art. Using worksheets and coloured pencils, you'll practice sequencing by following step-by-step code cards to colour grids and debug mistakes.

WHAT STUDENTS SHOULD BE ABLE TO DO

- Understand the concept of sequencing in coding by following instructions in a specific order.
- Recognise the importance of precision in giving and following instructions.
- Identify and debug errors in a sequence to correct mistakes.
- Apply coding concepts through hands-on, unplugged activities.
- Develop problem-solving skills by working collaboratively to find and fix bugs.

BEFORE THE LESSON

- This is largely unplugged. Print enough copies of the downloadable 'Colour coding 5 grid' worksheet for the class, and have small sets of red, blue and white colouring pencils ready per pupil or pair.
- Test the Colour Coding Challenge interactive on your board and the intricate colours-and-symbols generator used in the final step, so a target pattern is ready to display.
- Clear a little floor space at the front for the robot student to step, turn and jump safely.

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HOW THE LESSON RUNS

Introduction

Robots around us

Robot Students

Robot Artists Interactive Colour Coding Challenge

Robot Artists Concrete Colour Coding Challenge

Robot Artist Final Challenge

TEACHING MOVES

- 2. Robots around us. Land the core idea in your own words: a robot follows clear commands and cannot guess. Draw examples out of pupils, robot vacuum, lawn mower, and press for the exact instructions each one needs.
- 3. Robot Students. Give the robot student one deliberately unclear command like 'sit' and let the class see the robot stall. Use that moment to show why instructions must be precise, then hand out clearer commands.
- 4. Robot Artists Interactive Colour Coding Challenge. Generate a five-square target and read it aloud left to right with the class before anyone touches a button. Insist they replicate the exact order, not the rough idea.
- 5. Robot Artists Concrete Colour Coding Challenge. Model filling one grid square by square on the board, then name it: a precise ordered set of steps is an algorithm. Let pupils try their own before checking.
- 6. Robot Artist Final Challenge. Read the longer colours-and-symbols sequence together, then have pupils replicate it on a fresh grid. When bugs appear, ask the pupil to find which square broke the sequence.

WHAT TO WATCH FOR

- Pupils reproduce the right colours but in the wrong order, thinking the set of colours is what matters rather than the sequence. Point to the target and their grid side by side and read both left to right together, one square at a time, until they spot where the two diverge.
- Pupils treat a vague command as if it clearly points to one action, expecting the robot to 'know what they meant'. Revisit the unclear 'sit' moment from the robot student activity and ask them to say the exact, complete instruction the robot would need.

DIFFERENTIATION

- Emerging: Shorten to a three-square target and colour one square at a time as you call each colour in order.
- Developing: Have the pupil read their grid back to you left to right and compare it to the target before starting the next challenge.
- Proficient: Ask the pupil to build a five-square sequence of their own for a partner to replicate, then check it together for bugs.