

The Pattern Robot

40 minutes

Unplugged Coding - Art

WHAT THIS LESSON DOES

Get ready to program your robot to create stunning patterns! You'll explore how patterns are repeating rules, using coloured objects to build sequences. Follow step-by-step instructions to learn coding basics and predict what comes next in fun, hands-on activities.

WHAT STUDENTS SHOULD BE ABLE TO DO

- Understand the concept of patterns as repeating rules in everyday contexts.
- Recognise and predict sequences using simple code blocks.
- Apply the idea of loops to repeat instructions efficiently.
- Develop logical thinking by creating and modifying patterns.
- Build foundational skills in sequencing and problem-solving through hands-on activities.

BEFORE THE LESSON

- Open the pattern generator interactive in step 4 on your own device and test it on the projector so pupils can all see it.
- Have small coloured objects ready as code blocks: two or three colours of pom-poms, tokens or bricks, plus a printed strip of empty boxes in a long row for each pupil.
- Prepare the board with two or three colours to draw and circle repeating pairs live in steps 5 and 6.

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HOW THE LESSON RUNS

Introduction

Patterns

The First Algorithm

Change the Code

Build and spot the repeat

Name the loop and predict

Apply on paper like artists

The Grand Reveal

TEACHING MOVES

- 2. Patterns. Point to real repeats in the room: shirt stripes, crayon colours, floor tiles. Ask what they see that comes again, and pin the word repeats to what they say.
- 3. The First Algorithm. Read the strip aloud in rhythm, pointing left to right, then pause at the blank and let one pupil tap their answer. Start with two colours and three boxes before growing it.
- 4. Change the Code. Drive the interactive yourself on the big screen. Make one new pattern, then ask the class to predict the next block before you reveal it.
- 5. Build and spot the repeat. Draw red then blue, write it as code, then repeat the pair twice more. Circle each pair and count aloud together: one, two, three.
- 6. Name the loop and predict. Introduce loop as doing the same code again and again. Write repeat times three beside the pair, then ask which colour lands last if you repeat four times.
- 7. Apply on paper like artists. Model the first short code aloud, then set pupils to copy the repeating code across their row. Remind them: one step at a time, in order, and fix the exact box where it broke.

WHAT TO WATCH FOR

- Pupils fill boxes with any colours they like rather than continuing the fixed repeating rule. Point back to the start of the strip, read the rule aloud in rhythm, and have them say the rule before adding the next box.
- Pupils think a loop means a longer, different pattern rather than the same short code repeated. Circle the repeating pair on the board and count the repeats, showing that only the number of times changes, not the code itself.

DIFFERENTIATION

- Emerging: Give a strip with just two colours and three boxes, and lay out physical objects they can place and read before writing anything.
- Developing: Have them say the rule aloud as they place each object, and check the join between one repeat and the next.
- Proficient: Let them build a three-colour pattern on the interactive and explain the loop back to you: what repeats and how many times.