Technologies
Age 6-11

Coding with sticks

- Coding

Previous learning required

- Knowledge of the terms algorithm, sequence, and debugging
- Knowledge of basic instructions such as forward and turn, right and left
- Knowledge of right angles

Learning outcomes

- To know how to write an algorithm by putting the steps in the correct sequence
- To be able to test the algorithm and debug it if necessary
- To consolidate knowledge of vocabulary used for giving directions in maths

Equipment

- Collection of sticks, all the same length
- Whiteboards and pens
- Camera or iPad to take photos

Activity

1. Put the pupils into pairs and give each pair a set of sticks, a whiteboard, a whiteboard pen, and some means of taking a photograph.
2. Ask each pair of pupils to find a space and create a 2D shape on the ground with their sticks.
3. Ask pupils to write instructions from a start point for creating their shape (their algorithm).
4. Ask pupils to check their algorithm and debug it if necessary.
5. When pupils are happy that their algorithm is correct, ask them to take a photo of their stick shape and then pick up all the sticks.
6. Ask the pairs of pupils to swap the whiteboard with the algorithm recorded on it and the iPad or camera with another pair.
7. Each pair of pupils should now follow the algorithm they have been given to lay out their sticks to create a shape.
8. Ask pupils to check the photo to see if they have made the same shape as the first pair of pupils.
9. If the photo doesn't match the shape created, ask the pairs of pupils to work together debug the algorithm and work out which pair has made the mistake.

Check for understanding

1. Did the algorithm need to be debugged?
2. If it had to be debugged, was it a mistake in the algorithm or did you make a mistake in following it?
3. Where did it go wrong?
4. Did it take you more than one go to get it correct?

Further activities

1. Use different maths vocabulary instead of right angles or right and left. You could use this to consolidate quarter turns and half turns, clockwise and anti-clockwise, or even use different compass angles to create more complex 2D shapes e.g. giving directions such as 'turn 60 degrees clockwise.'
2. If you don't have access to a easy means of taking photos during the activity, you could use cards with pictures of 2D shapes on them. Give one to each pair of pupils to show them what shape to make and write an algorithm for.

Learning through Landscapes

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