

For 4 to 5 year olds

Context

Robots can do wonderful things but only when programmed to do so. Robots help astronauts and scientists to safely gather information that can then help to prepare space missions. The European Space Agency's (ESA) new robotic rover Rosalind Franklin will explore Mars and send back data vital for human exploration in the future.

In this activity, the children are introduced to robots through story and video; they become human robots to complete a challenge involving simple programming and teamwork. They use a simple robotic arm extension to identify mystery object and use imagination to build model robots.

No-Bot, the Robot with No Bottom⁵

© Sue Hendra

National curriculum links

Expressive arts and design:

- Explore and describe materials
- Use modelling and painting to imagine and share ideas

Communication and language:

- Listen attentively to stories

Maths:

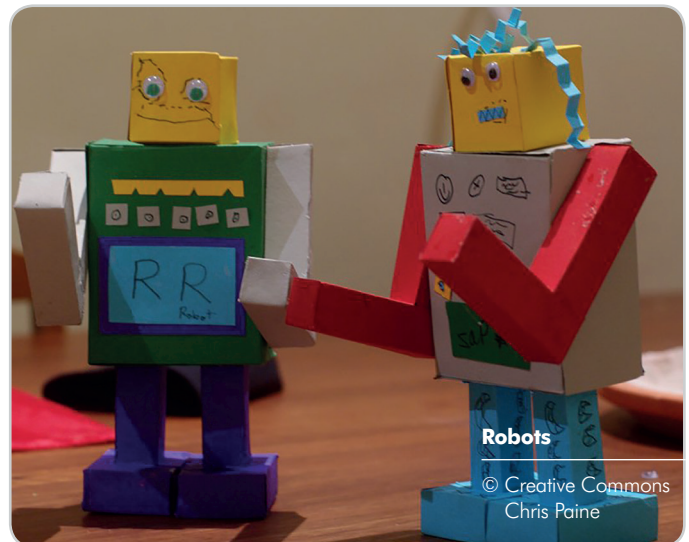
- Use the language of position, direction and movement

Understanding the world - technology:

- Know that robots use computer programs
- Know that programs need to have precise instructions

Resources

- Canes, rulers or lengths of dowel
- 10 bags or boxes
- Variety of objects made from different materials eg Lego, rubber, stones, pasta, fir cone, nuts and bolts, car, toy
- Craft materials, boxes, paints, glue (for the extension activity)



Robots

© Creative Commons
Chris Paine

Lesson starter

Begin the lesson by reading 'No-Bot, The Robot With No Bottom' by Sue Hendra. No-Bot is a robot. What was the robot made from? What are robots? What can they do? Explain that you are a robot and the children must give you clear instructions to do a task.

(For instance: putting waste paper into the recycling bin. Do not move unless instructed by the children! Eg stand, bend, move arm near to paper, open hand etc.)

Here is a robot called Curiosity. It went on a long journey through space to land on Mars. Show the link: mars.nasa.gov/msl/mission/rover/arm It has a computer to tell it where to go and what to do. It also has a special robotic arm that it uses to dig the rocks on Mars; www.jpl.nasa.gov/video/details.php?id=1137

Main activity

In this activity you are going to be a rover like Curiosity. You have a special robot arm to use to touch objects. I have some different objects here. Let the children look at and handle the objects. Each of these bags contains one of these objects and you have to identify them but you mustn't look inside the bags. You can use only the robotic arm to touch the objects through the opening of the bag; then try to describe the objects and guess what they are. Draw a picture on the chart on Activity sheet 1 of the object you think is in each bag.

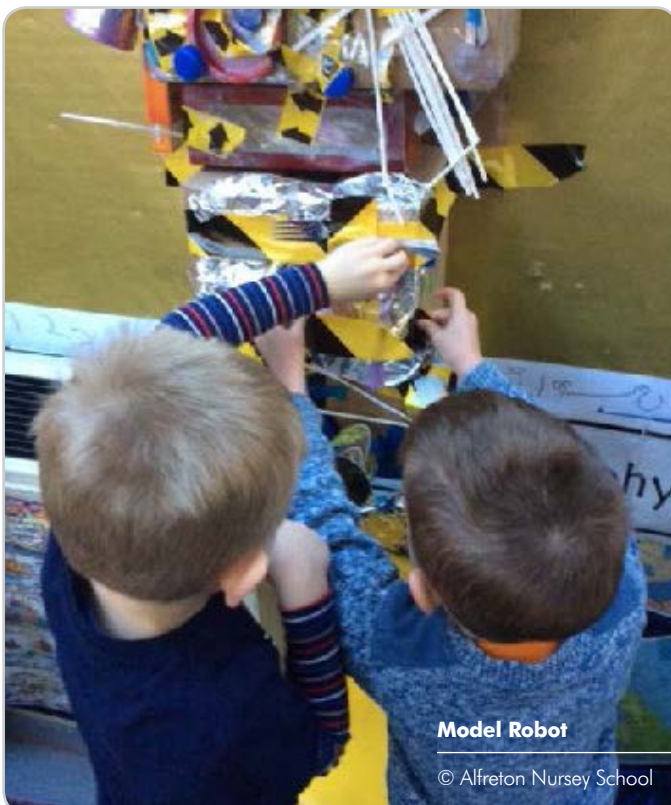
Plenary

Reveal what was in each bag. Did they guess correctly? Is it easier to describe objects using our hands and eyes or the robot arm? Remind the children that robots on Mars have to be told by computers where to go and what to do. Reinforce the idea that robots need to be given clear instructions, by ending the lesson with a robot-related action game such as Simon Says or moving as robots according to instructions, such as 'step forward', 'turn right' or 'turn left'.



Model Robot

© Alfreton Nursey School



Model Robot

© Alfreton Nursey School

Further activities

- Use imagination to use the materials to work collaboratively to build a 3D robot or a model of Curiosity rover and its robot arm.
- Explore the features of a robotic device such as Bee Bot. Decide a simple route for the robot to take. Devise together the instructions (algorithm) for the robot's journey.
- Draw a robot. Can you describe your robot to your friend so they can draw a robot identical to yours?

STEM Vocabulary

Robot	Forward	Left
Direction	Backward	Right
Program	Turn	



Robots Activity 1



What is in each bag?

1	2
3	4
5	6
7	8
9	10