

Learning Intention

Test an algorithm to program a robot to successfully sort moon rock samples on the moon!

Resources

- Main Moon Landing Coding Adventure Show
- 'Program Yourself' Video lesson

This is a no-prep activity during which the children will follow the video for the duration of the lesson. You may wish to pause during the main show and follow up activity, or deliver them over two lessons.

Keywords

- | | | |
|-------------|---------|--------------|
| • Algorithm | • Test | • Repetition |
| • Design | • Debug | • Selection |
| • Input | | |

Introduction

Watch the Moon Landing Coding Adventure Show with the class, discussing key points where possible and asking pupils questions to determine their understanding.

Show children the video of 'Professor' Trice explaining how to do the 'program yourself activity'. The children are to follow the instructions given on the video in real-time.

Support the children as required to ensure they are following correctly and understanding the instructions given. They are to complete the activities as a whole class, or group, performing the actions.

Plenary

As a class discuss the successes and challenges of the tasks. Ask children to share their understanding of an algorithm. If time and resources permit, children could record the algorithm they followed on paper or whiteboards, or design and write their own robot dances.

Learning Outcomes

- Say what an algorithm is
- Understand that a robot needs clear and precise instructions
- Follow and debug a simple algorithm

Key Learning Goals*

Pupils should be taught to:

- design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- *These learning goals align to the National Computing Curriculum in England - Key Stage 2 (ages 7-11)

Health and Safety

Ensure an open, safe space for children to move around in, clear of any obstacles. Supervise children carefully during activities.

Main Activity

Challenge 1: Pupils follow the algorithm on the screen to perform a dance as 'robots'. Encourage children to copy the moves carefully and support them when needed. They will follow a series of instructions such as stepping on the spot, turning a quarter to the left or right, spinning around, and cheering. The activity will include the use of **repetition** to repeat sections of the dance.

Challenge 2: The children continue to act as 'robots' testing the algorithm as it appears on the screen. They collect the moon rocks from the imaginary conveyor belt and put those that are a good size in a 'bag' to their right, and save the ones that are too big in a 'box' on their left. They must follow the instructions given in the algorithm and by 'Professor' Trice, including debugging when necessary. The children should perform the given actions to follow the algorithm.

Assessment Questions

- What is an algorithm?
- What would be an example of selection?
- What was a loop an example of?
- How did you debug the algorithm and why did you need to?