

Introduction

Children will apply their understanding of computing to program a floor robot. They will explore a range of adventure maps and use these to create original designs. As a group, they will research how floor robots move along different types of materials and use this knowledge to create obstacle squares. Children will use appropriate joining methods to make a scale adventure map. They will test and evaluate the effectiveness of another group's obstacle squares.

(While this unit focuses on creating a treasure map, this can be adapted to fit with literacy, numeracy, history or geography units as appropriate).



Health & Safety

Ensure that children are aware that they should report any problems with the robots to the class teacher and that only an adult should check or change the batteries for any floor robots used.

Children will need to ensure that they follow school safety policy and procedures when using equipment such as scissors to cut or staplers to join squares when making their adventure maps.



Home Learning

Input and Output Devices: Children record the devices in their home, state whether they are input only, output only or both input and output devices.

Floor Robot Adventure Story: Children write an adventure story for their Bee-Bot based on the map they have planned and created in class.



Wider Learning

[This webpage](#) contains general information about robots and how they are controlled and programmed.

[Scratch](#) website has several Bee-Bot scratch games which will help children to play and create their own games. Children's learning can be extended to create their own robots and adventures.

To look at all the resources in the Programming Adventures unit [click here](#).

To find out more about PlanIt download our [free guide here](#).

Assessment Statements

By the end of this unit...

...all children should be able to:

- understand how a floor robot moves;
- program it accurately to move along a given route;
- explore and select from a range of different materials to create obstacle squares.

...most children will be able to:

- generate ideas for an adventure map and appropriate obstacles matching their overall theme;
- evaluate adventure maps against design criteria independently;
- explain the best joining methods based on their knowledge of the properties of materials.

...some children will be able to:

- explain why floor robots move differently on different materials using their knowledge of the properties of materials;
- evaluate the effectiveness of different materials and suggest improvements based on observations.

Lesson Breakdown

Resources

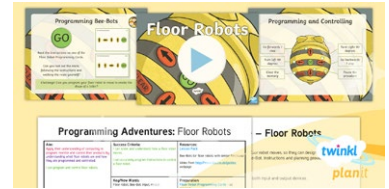
1. Floor Robots

Apply their understanding of computing to program, monitor and control their products by understanding what floor robots are, how they are programmed and controlled.

- I can program and control floor robots.

Lesson Pack

- Bee-Bots (or floor robots with similar functions)
- Video from [What are input and output devices?](#)

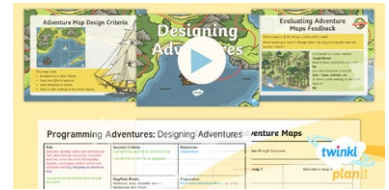


2. Designing Adventures

Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams prototypes, pattern pieces and computer-aided by designing an adventure map.

- I can generate and develop ideas through discussion.

Lesson Pack



3. Exploring Materials

Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups by exploring how different materials affect the movement and control of floor robots.

- I can research a range of materials.

Lesson Pack

Floor robots with similar functions
A range of different materials (each piece of materials should be at least 50cm x 50cm)



4. Planning an Adventure Map

Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups by planning an adventure map.

- I can plan an adventure map.

Lesson Pack



5. Making an Adventure Map

Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities by creating an adventure map using materials selected for their properties.

- I can use appropriate materials based on research.

Lesson Pack

- 15cm x 15cm laminated A4 coloured squares (the number and colour will depend on what was requested by the groups in Lesson 4 on their [Adventure Map Square Sheet](#))
- 15cm x 15cm A4 card squares (to create obstacle squares)
- 15cm x 15cm A4 card squares (to create start and finish squares)
- Range of materials
- Staplers
- Staples
- Glue Stick
- PVA glue
- Glue Holders
- Glue Spreaders
- Sticky Tape
- Scissors



6. Robot Adventure

Apply their understanding of computing to program, monitor and control their products by programming and monitoring floor robots on finalised adventure map.

- I can monitor a floor robot.
- I can evaluate a finished product.

Lesson Pack

Bee-Bots (or floor robots with similar functions)
Completed Adventure Maps from Lesson 5
Digital Camera



To look at all the resources in the Programming Adventures unit [click here](#).