BEE BOTS

Bee Bots and Blue Bots are a fantastic way to engage children with the computing curriculum, particularly in key stage one. This guide aims to help you get the best out of the resources or simply give you some ideas to use with programmable floor robots.

In the Vital Bee Bot box should be;

- 15 x Bee Bots

- 3 x Blue Bots

- 15 x pen holder

- 3 x charging dock stations

In addition to the Bee-Bot box it would be useful to download the Blue-Bot and Bee-Bot apps and also have access to https://beebot.terrapinlogo.com/ .

> ### Other equipment
> Mini whiteboards
> Whiteboard pens
> Felt tips
> Clear tables
> Glue sticks
> Large pieces of paper

Using the Bee Bots makes it easy to teach all the ks1 computer science objectives within the national curriculum. The objectives are outlined below.

- Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- Create and debug simple programmes
- Use logical reasoning to predict the behaviour of simple programmes

Key vocabulary	Definition
Algorithm	A process or set of instructions to be followed
Debug	To remove errors from an algorithm
Logical reasoning	To explain why something happens using facts
Digital device	In the classroom these would be computers, Chromebooks or Beebots
Unambiguous	Clear

Possible activities

The activities below are tried and tested within the classroom. They are all easy to set up and only require resources that you would expect to have in a classroom.

Play and explore	An easy start point is to let the children explore the robots and work out for themselves what the buttons do. They can start to use logical reasoning to predict what will happen when they press certain buttons. Encourage them to collaborate and share their learning with other pairs. Allow children to share their findings wth the class. Can they get it to turn in a circle? Can they get it to go backwards? - Make sure children do not push or drag the Bee-Bots as this will break the motors - Express the importance of team work and collaboration. Each partner should get an equal turn.

A to B	This can be done in lots of ways. Bee-Bot mats can be used or you can make your own mats but it can also be done without any mats. Children create algorithms to move the Bee-bot from one spot to another. To start with this could be done by just putting in the algorithm. This should progress to using algorithm cards (Appendix 1) and then on to writing the algorithm on mini whiteboards. Any mistakes in the algorithm can then be debugged and then retested. Can they find the shortest/ longer route? Could obstacles be put in the way to make it more challenging?
Driving test	Children can build a garage out of various materials or simply use whiteboard pens to make a holding pen. Can they park the beebot in the garage? Can they reverse park in to the garage? Can they do a three-point turn on the street? Can they reverse around a corner? Use a video stimulus of bad parking/manoeuvre to make this fun. Children to use algorithm cards or symbols on a whiteboard to create the algorithm. - **Children could be given licenses at the end of the session to make it even more engaging (Appendix 2)**
Capture the flag	A take on the popular game. This can be used with glue sticks and made progressively harder. Children play in pairs and each place a glue stick on their table. From an agreed start point, the child has to input an algorithm to knock down/ hit their partner's glue stick. This can be made progressively harder with obstacles added or the distance increased.
Strictly come dancing	Seven! This will need the coding pairs to pair up! Can you code your Bee Bot dancers to perform a simple routine? Be sure to write down the algorithm so it can be repeated. This could be done as an end of unit performance to music. You could specify the length of the routine (45 seconds) The teaching team could even be the judges!
Art attack	Using the pen attachments can children programme the Beebot to draw shapes or a set pattern. A partner could use logical reasoning to predict what will be drawn. This could be linked to 2d shape in ks1 maths.
Bee Bot app	Bee Bot – Various challenges including historically themed. Levels get progressively harder
Blue Bot app	- Take on challenges -Different floor mats

	- 45 degree turns - Obstacle mode - Missing buttons feature - Bluetooth connectivity Also allows the physical blue:bot to be controlled to 45 degree turns. Perfect for drawing more complex shapes with the pen attachment.

Across the curriculum

Bee Bots can be used across a wide range of curriculum subjects. Here are some of the possibilities.

Maths	• Teaching the language of position and direction and allowing children to show an understanding of left, right, clockwise, anti-clockwise, ¼ and ½ turn. • Measurement – Distance travelled • Mats can be purchased to explore numbers and coins
Science	• Friction/traction (how do different surfaces affect performance)
Geography	• A range of mats can be purchased containing maps • Design your own map on paper or a square grid. This could be made up or reflect your local area.
English	• Both alphabets and phonics mats can be purchased • Create a character for the Beebot. • Write a story to describe the Bee Bots journey.
Art	• Use the pen holders to create Bee Bot art

Making your own mats

Bee Bots generally operate on a 15cm square grid. This makes it possible to create your own mats for use in the classroom.

Appendix 1

Arrow algorithm cards
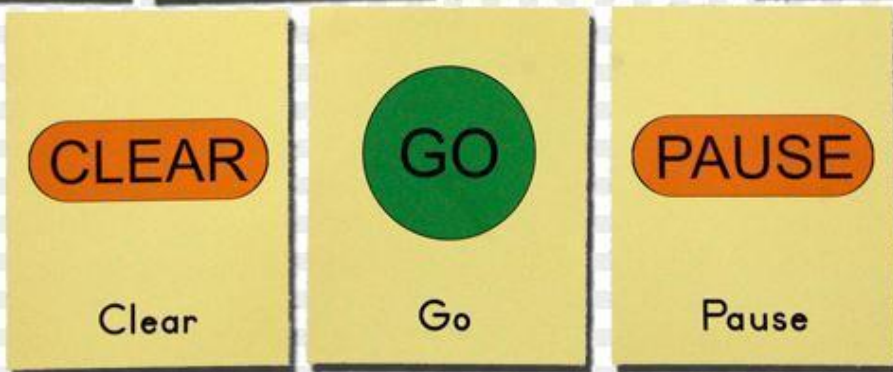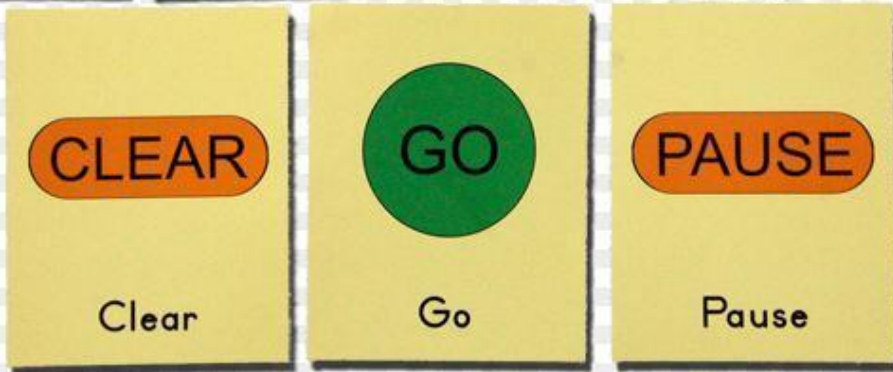
Appendix 2

Bee Bot Driving License

BEE BOT DRIVING LICENSE

Name _____
Date: _____
Examiner: _____

This is to certify that all the standards for programming a Bee Bot have been met.
Congratulations on the award of your license.

BEE BOT DRIVING LICENSE

Name _____
Date: _____
Examiner: _____

This is to certify that all the standards for programming a Bee Bot have been met.
Congratulations on the award of your license.