

Digital Technologies

Using digital devices

Bee-Bots (F-2)

Jayne Boon

VCAA Digital Coding Specialist Teacher

Foundation to Level 2

Foundation to Level 2 Description

In Foundation to Level 2, students are introduced to common digital systems and patterns that exist within data they collect. Students organise, manipulate and present this data, including numerical, categorical, text, image, audio and video data, in creative ways to create meaning.

Students use the concept of abstraction when defining problems, to identify the most important information. They begin to develop their design thinking skills by conceptualising algorithms as a sequence of steps for carrying out instructions, such as identifying steps in a process or controlling robotic devices. Students describe how information systems meet information, communication and recreation needs.

Through discussion with teachers, students learn to apply safe practices to protect themselves and others as they interact online for learning and communicating.

Across the band, students will have had the opportunity to create a range of digital solutions through guided play and integrated learning, such as using robotic toys to navigate a map or recording science data with software applications.

Foundation to Level 2

Foundation to Level 2 Content Descriptions

Digital Systems

Identify and explore digital systems (hardware and software components) for a purpose (VCDTDS013)

Data and Information

Recognise and explore patterns in data and represent data as pictures, symbols and diagrams (VCDTDI014)

Collect, explore and sort data, and use digital systems to present the data creatively (VCDTDI015)

Independently and with others create and organise ideas and information using information systems, and share these with known people in safe online environments (VCDTDI016)

Creating Digital Solutions

Follow, describe and represent a sequence of steps and decisions (algorithms) needed to solve simple problems (VCDTCD017)

Explore how people safely use common information systems to meet information, communication and recreation needs (VCDTCD018)

Digital Technologies / Foundation to Level 2 / Creating Digital Solutions

Content description

Follow, describe and represent a sequence of steps and decisions (algorithms) needed to solve simple problems

Elaborations

- experimenting with very simple, step-by-step procedures to explore programmable devices, for example providing instructions to physical or virtual objects or robotic devices to move in an intended manner
- jointly writing and entering a simple set of instructions to sequence events and actions, for example scanning personal photographs and collating and ordering significant personal events or milestones and describing the steps involved in the process
- presenting a sequence of instructions or events in a series of slides or screens with text and pictures
- recognising sequences of instructions or events that are commonly experienced such as the sequence of traffic lights, or how their lunch order is taken and delivered
- following a series of instructions to use a piece of hardware or software, for example taking a photograph, editing and storing it to include in a slow motion

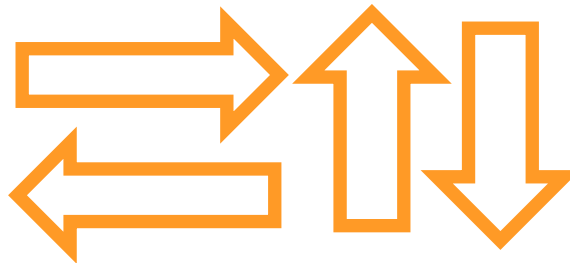
Bee-Bots and Blue-Bots

Store up to 40 simple commands

15cm movements forward and backward

90 degree turns left and right

Rechargeable



What is an algorithm?

Digital Technologies Glossary

“A description of the steps and decisions required to solve a problem”

Achievement Standard F-2

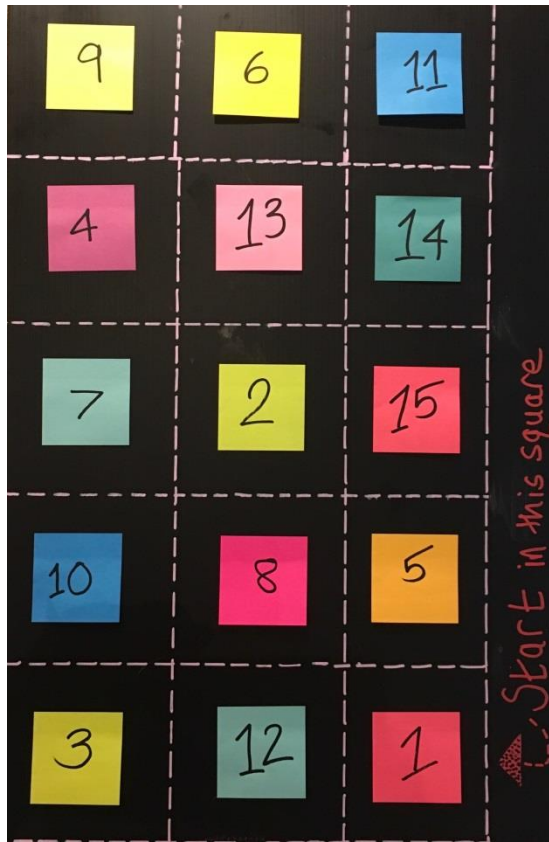
Foundation to Level 2

Foundation to Level 2 Achievement Standard

By the end of Level 2, students identify how common digital systems are used to meet specific purposes.

Students use digital systems to represent simple patterns in data in different ways and collect familiar data and display them to convey meaning.

Students design solutions to simple problems using a sequence of steps and decisions. They create and organise ideas and information using information systems and share these in safe online environments.



Creating Digital Solution strand

- Follow, describe and represent a **sequence** of steps and decisions (**algorithms**) needed to solve simple problems
- Experimenting with simple, **step-by-step** procedures to explore **programmable devices**, for example providing instructions to physical or virtual objects or **robotic devices** to **move in the intended manner**
- **Jointly writing and entering a simple set of instructions** to sequence events and actions....

Algorithm - Sequence1-5



Forward



Turn Right



Forward



Forward



Turn Left



Forward



Turn Left



Forward



Forward



Backward



Backward



Backward



Turn Left



Forward



Forward



Turn Right

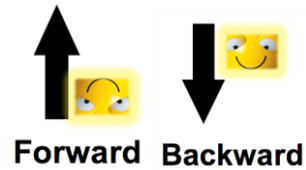
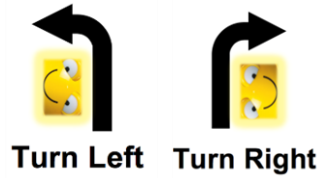
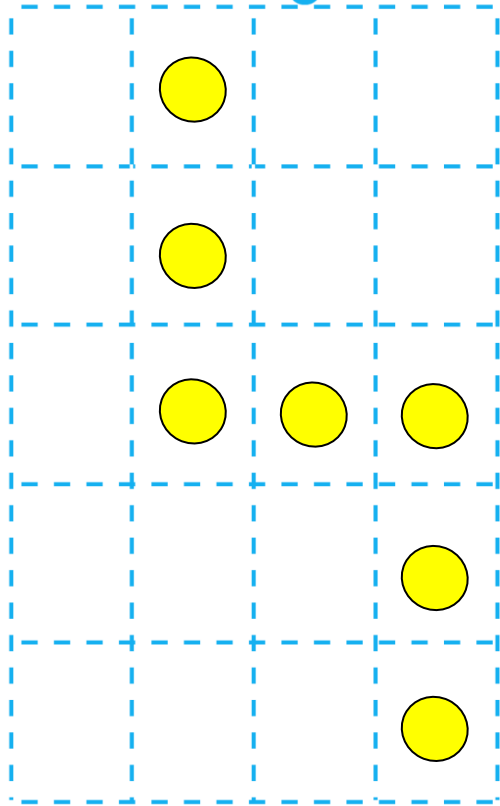


Forward

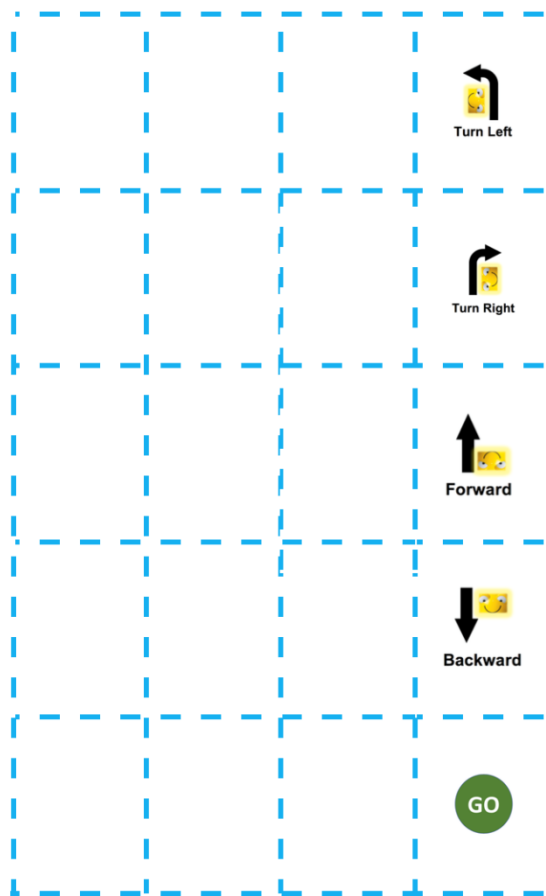


Forward

Bee-Bot Algorithms



Bee-Bot Algorithms

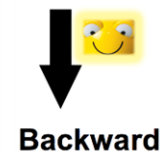
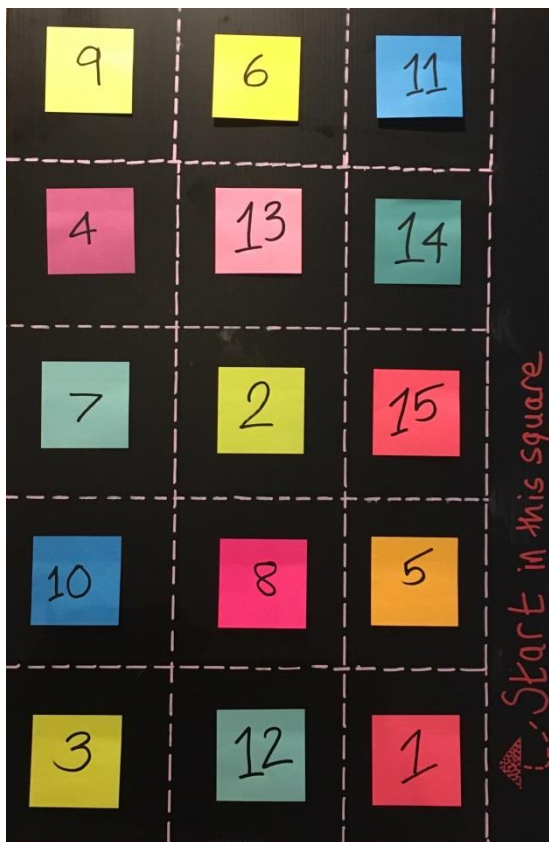


HOW high can your Bee-Bot count?

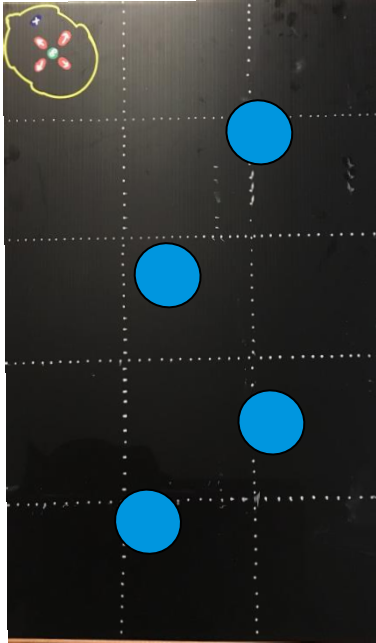
	Take 1	Take 2	Take 3
1			
2			
3			
4			

9	6	11
4	13	14
7	2	15
10	8	5
3	12	1

Start in this square



Experimenting



- Students could experiment further by using a 15cm ruler to create the algorithm and program the sequence into the Bee-Bot to navigate the Slalom and complete the course

Creating Digital Solutions

- Students will have experimented with simple. Step by step-by-step procedures and created an algorithm for their process
- Jointly written and entered a simple set of instructions to sequence events and actions

