Robot Algorithms — KNOWLEDEGE ORGANISER

What I should already know?:

I should have had some understanding of creating short programs using floor robots and predicting the outcome of a simple program.

What I will know by the end of the unit:

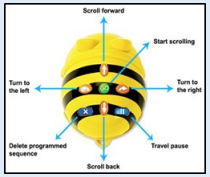
I will follow instructions given to me and give instructions to others. I will consider the language used to give instructions, and how that language needs to be clear and precise. I will combine several instructions into a sequence that can then be issued to someone to complete. I will consider a clear and precise set of instructions in relation to an algorithm, and will think about how computers can only follow clear and unambiguous instructions.

I will focus on sequences, and consider the importance of the order of instructions within a sequence. I will create sequences using the same instructions in different orders. I will then test these sequences to see how the different orders affect the outcome.

I will use logical reasoning to make predictions, and follow a program step by step and identify what the outcome will be.

I will design, create, and test a mat for a floor robot. This will introduce the idea that design in programming not only includes code and algorithms, but also artefacts related to the project, such as artwork.

I will design an algorithm to move their robot around the mat that I've designed. As part of the design process, I will identifying the starting and finishing points of a route. This will ensure that I clearly understand what I want my program to achieve.



I will take on a larger programming task and break the task into chunks to create algorithms for each chunk. This process is known as 'decomposition'. I will also find and fix errors in my algorithms and programs and understand this process to be 'debugging'.

Skills on show

Turning on a Bee-bot:

Before we use a Bee-bot, we need to make sure it is charged.

Buttons:

Bee-bots have buttons on the top. They each make the Bee-bot do something different. The arrows move the Bee-bot in different directions. The GO button makes the Bee-bot start its program. The X button makes the Bee-bot forget the last set of instructions.

VOCABULARY	
Algorithms	Algorithms are precise set of instructions, that a computer can turn into a code. A floor robot has a computer inside of it.
Programs	When we press the buttons of our floor robot, we are creating a program for it to follow. The program is how the algorithm is run as code on the robot.
Instructions	Instructions are an order of commands to perform a task. If our sequence of instructions is in the wrong order, has anything missing, or has anything additional, the floor robot will end up in a different place!
Debugging	Finding and fixing errors in our algorithms and programs.
Chunking	Break the task into chunks to create algorithms for each chunk.
Sequence errors	An instruction in the sequence is in the wrong place.
Keying errors	Typing in the wrong code.
Logical errors	Mistakes in plan/thinking.
Decomposition	To break down a task into smaller, more achievable steps.