Beech Hill Primary School Knowledge Organiser

Topic: Computing	Year group	Term
Computer Science : micro:bits	Year 5	Spring 2 6 sessions

Background knowledge

A BBC micro:bit is a pocket-sized codable computer. It has 25 red LEDs, 2 programmable buttons, compass and accelerometer. It has Radio and Bluetooth connectivity. Version 2, which features in this Knowledge Organiser also has a microphone and speaker.

What should I already know?

Children will have used BBC micro:bits in Year 3, using blockly coding. They will have experience of connecting the micro:bit to a PC, battery pack and a motor. They have experience of writing simple algorithms and debugging errors. They will know how to download the code from the PC onto the micro:bit. Children will extend their knowledge in Year by exploring the features of the latest BBC micro:bit, version 2.

National Curriculum Objectives / Key Skills	The Journey
To design, write and debug programs that accomplish specific goals. Use sequences, selection and repetition in programs. Work with 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. I can create programs that use sequences, selection and repetition to achieve given goals. I can explain how my algorithm works and detect and correct errors.	1. Children recall learning from work in Year 3 and introduced to features of latest micro:bit version. Children open software and write programs utilising the touch logo; including using selection. Pair micro:bit, download, test and debug code. 2. Explore Music code blocks, incorporating melody, tones and sounds into their programs, (using gallery items and creating their own compositions). Create an animation with sounds. 3. Lights! Having used the built-in LEDs in Year 3 children use the Pins to attach and code external LEDs (single LEDs and as well as programmable LEDs) –using Advanced Pins code and Neopixel Extension code blocks.

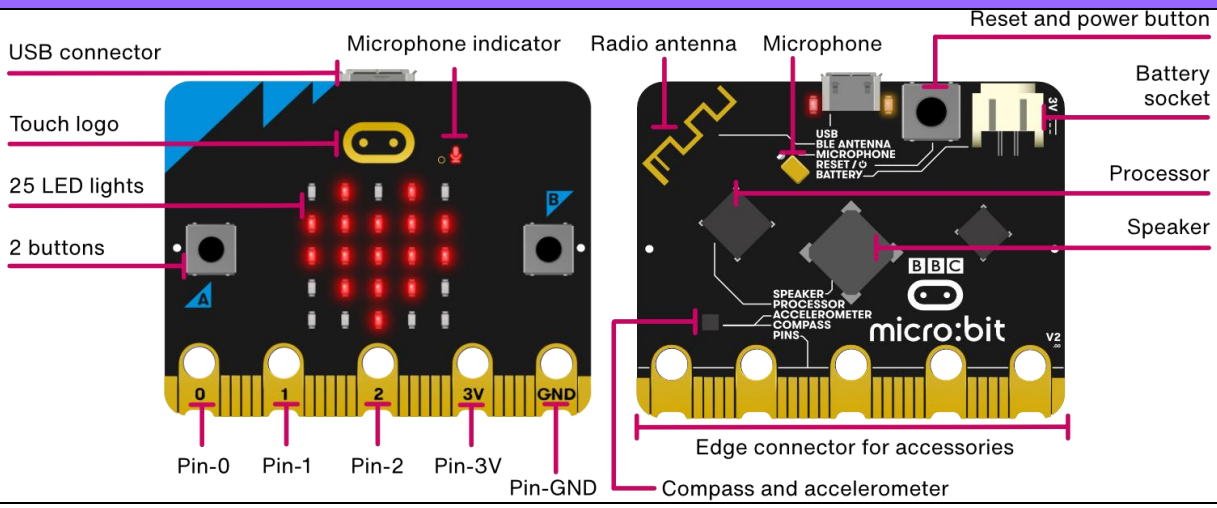
	4. Switches. Progressing from coding the micro:bit buttons in Year 3, children create a switch using wires attached to the Pins to control actions when the circuit is complete or broken. 5. micro:bit Alarm, Part 1. Use knowledge from previous lessons to create an alarm system which is activated when the circuit is broken – triggering a flashing sequence using the micro:bit LEDs. 6. micro:bit Alarm, Part 2. Build on alarm system to include an alarm sound sequence and flashing sequence using external LEDs. Test and debug.

Outcomes
An overview of what children will know / can do Working towards: With support from an adult or my work partner, I can create programs to make sounds play, the Logo sensor respond and external LED work. Expected: Children can work with a partner to design, write and debug code. They will use sequence, selection and repetition in their programs to control a range of unfamiliar inputs and outputs. conditionals and variables in block coding form. They will be able to explain with their partner's support, using logical reasoning, the function of their code. Exceeding: Children take the lead in designing, writing and debugging code for the BBC micro:bit version 2. They program different inputs and outputs with greater independence and are able to predict outcomes with more accuracy. They show resilience and debug errors with increasing confidence.

Key Vocabulary

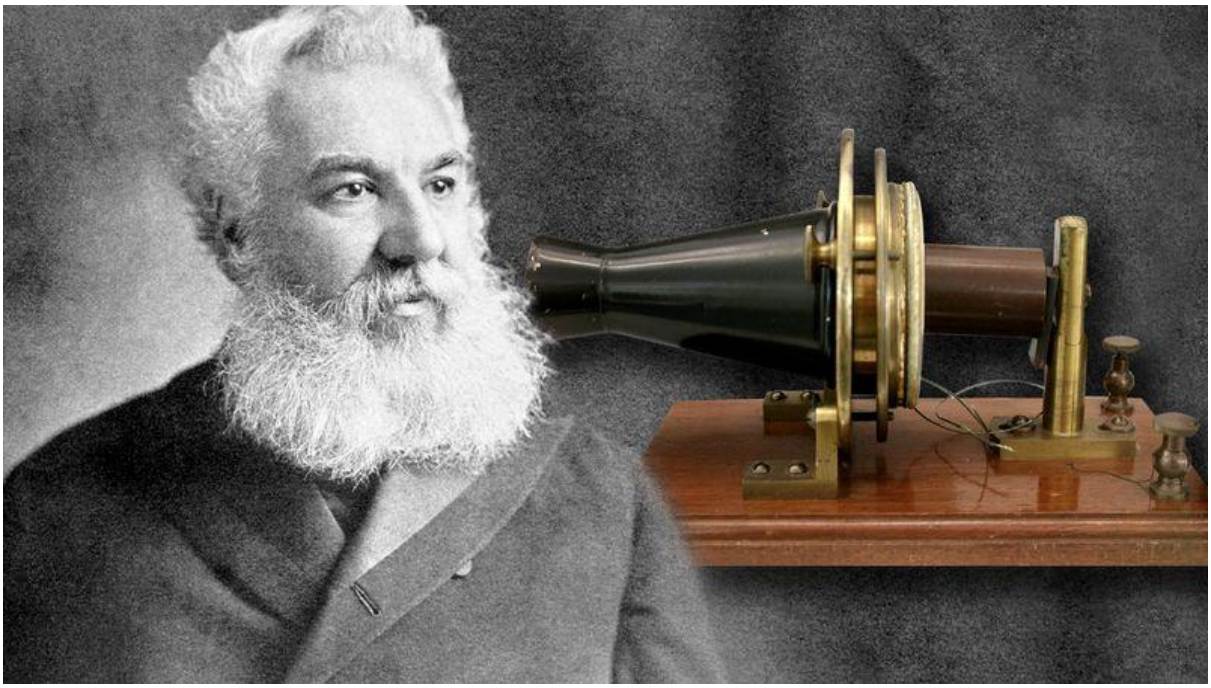
BBC micro:bit – pocket-sized codable computer
Input – data put in to a computer (eg micro:bit buttons, sensor, microphone)
Output – information produced by a computer for user (eg micro:bit LEDs, sparkle, sound)
Algorithm – a sequence of instructions, or set of rules, to complete a task
Program – an algorithm written in a computer language (eg blockly code, Python)
Debug – finding an error in an algorithm and correcting it
Sequence – placing the steps in an algorithm in the order we want them to execute
Selection – part or the whole of the algorithm is only activated when a certain condition occurs (if/else)
Repetition – part or the whole of the algorithm is repeated a fixed number of times/forever
Variable – stored information which can change as the program runs

Timeline / Diagrams



Key people / places

In 1876 Alexander Graham Bell patented his first electric loudspeaker, which produced intelligible speech



Assessment questions / outcomes

1. Children can identify micro:bit inputs/outputs including touch sensor, microphone, speaker.
2. Which folder contains the code to program the buttons, sensor and microphone?
3. How can we find/add additional blocks of code for the micro:bit?
4. Children can program the micro:bit's touch sensor, microphone, Pins and music to play
5. Children create a working alarm system using micro:bit Pins