Enriching lives every day; enabling our school community to learn, achieve and flourish through living 'life in all its fullness'

Innovation

Subject: Computing

Year group: 6

Term: Summer Term

Unit name: Programming: Sensing using Microbits

Vocabulary	
Micro: bit,	CSS
Input,	Plug in
Process	Sensing
Output	Accelerometer
USB	HTML
Emulator	Random
Selection	Selection Condition
Condition,	Variable
if… then… else Variable	MakeCode

Big idea: To apply knowledge of the programming constructs and use their design to create their own BBC Micro:bit based step counter.

Progression of skills:

Understands the difference between, and appropriately uses if and if, then and else statements.

Designs, writes and debugs modular programs using procedures.

Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.

Prior learning:

Sequence from **Year 3 : Sequencing in Music** Children were introduced to a selection of motion, sound, and event blocks which they will use to create their own programs, featuring sequences.

Repetition from **Year 4 : Repetition in Shapes** Children plan, modify, test commands to create shapes and patterns using repetition and loops

Selection from **Year 5: Selection in Quizzes** Children use Scratch to develop their understanding and use of If… Then… Else structure , understanding that it can be used to select different outcomes depending on whether a condition is true or false

Variables from **Year 6: Variables in Games** Children use variables to create a simulation of a scoreboard in Scratch .

National Curriculum links :

- Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- Use sequence, selection, and repetition in programs; work with variables and 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

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Key learning assessment statement -What will the children know by the end of the unit?

To explore Microbits programming environment by building and testing a program using if…then…else statements which features selection influenced by a random number (build a fortune teller project)

To use conditions to change the value of a variable using selection.

To develop their programs to update the variable to sense motion and respond to an input.

To use conditional statements to modify programs so that the Microbit becomes a navigational device.

To design and program a step counter by deciding on variables, designing the algorithm, testing and modifying their program.

To fix bugs as they program and work collaboratively to evaluate as they work.

Spiritual Development

Computing allows children to reflect on the awe and wonder of the achievements and possibilities of ICT in a modern world. They think about the limitless opportunities that could be achieved thus promoting their sense of self and motivation. **Exodus 15:11:** And amazement seized them all, and they glorified God and were filled with awe, saying, "We have seen extraordinary things today."

The micro:bit will need the following peripherals:

- A micro USB to USB lead
- A battery pack
- 2 x AAA batteries per micro:bit

This unit uses a desktop computer and the makecode.microbit.org website to program the micro:bit.