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: Spring Term

Unit name: Variables in Games

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

This unit builds on skills used in previous years. It uses sequences, repetition, variables, and selection to design a program that create a step counter using the BBC Microbit. This uses the familiar block programming that children have previous experience of.

Progression of skills :

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

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

Uses a variable and relational operators within a loop

Designs, writes and debugs modular programs using procedures (Scratch and Microbit)

Knows that a procedure can be used to hide the detail with sub-solution.

Prior learning:

Year 3 Sequence in Music. Children used motion, sound and event blocks to create a representation of a piano in the Scratch environment .
Year 4 Repetition in shapes Children have used repetition and loops with Purple Mash 2Logo.
Year 5 Selection in Physical computing Children use repetition and conditions to write algorithms. They use selection through the if…then..structure.

Vocabulary	
Variables	Sensors
Visual coding (Scratch blocks-block coding)	Program
Program writing	Code
Relational operators	Decomposition
Measure input (scoring)	Micro:bit,
Generate	Input
Process	Emulator
Condition	Selection,
if… then… else,	Condition
Accelerometer	Selection
Output	

National Curriculum links :

Computing

- 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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Implementation:

To create a program to run on a controllable device.

Learners become familiar with the Microbit. They create a program and flash it to the device.

To explain that selection can control the flow of a program.

Children will use if…then…else statements to direct the flow of a program. They create a program which features selection influenced by a random number to create a fortune teller.

To update a variable with a user input

Learners will use the buttons to change the value of a variable using selection then develop their programs to update the variable by moving their micro:bit using the accelerometer to sense motion.

To design a project that uses inputs and outputs on a controllable device

They pick out features of a step counter and relate these to the input sensors on a Microbit. Children design an algorithim for a step counter project. They run the program and evaluate against their design, testing and debugging as they work.