Medium Term Plan: Supporting Implementation of LTP/Progression Grid

Subject: Computing – Programming: Selection in Physical Computing Year: UKS2 – Year B – Summer

NC/PoS:

- 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
- Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information

Prior Learning (what pupils already know and can do)

Understanding giving and following instructions, using floor robots to create and debug programs, creating a sequence of commands to follow a routed, using Scratch Jnr to create a program using blocks, how to add music and link to motion, how to use the pen tool within programmes, how to use repeat and create count-controlled loops, how to create a programme in a text-based language, how to use infinite loops to create an animation, the purpose of variables and how they are used,

End Points (what pupils MUST know and remember)

- To control a simple circuit connected to a computer
- To write a program that includes count-controlled loops
- To explain that a loop can stop when a condition is met and can be used to repeatedly check whether a condition has been met
- To design and create a physical project that includes selection

Key Vocabulary

Crumble Controller, microcontroller, components, connection, infinite loop, output component, motor, repetition, count-controlled loop, Crumble controller, switch, LED, Sparkle, crocodile clips, connect, battery box, program, condition, input, output, selection, action, cdebug

Session 1: Crumbles

What is a Crumble Controller? How do we connect it to a computer? How do we control the Crumble? What is a Sparkle? How does the Crumble control the Sparkle? How can we use the Crumble programming environment to make the Sparkle flash? How can we use different types of loops to change the light pattern? Can we control the colour change of the lights?

Vocabulary: Crumble Controller, Microcontroller, components, connection, infinite loop

Session 2: Conditions

What conditions can impact the Crumble? How might a switch be a condition? How can we use the conditions 'true' or 'false' in terms of the switch? How can we create a program including the switch as an input condition?

Vocabulary: Microcontroller, Crumble controller, components, switch, LED, Sparkle, crocodile clips, connect, battery box, program, condition

Session 3: Selection

What is meant by selection? How can the statement 'if…then' be used within our program? What impact will this have on the output? Why will we need to include an infinite loop to check our condition?

Vocabulary: Input, output, selection, condition, action

Session 4: Design a Project (this will link to DT – More Complex Electrical Systems)

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How can the Crumble be used to support a real-world situation? Can we design a suitable project based on the specification provided? Can we design a suitable program for the Crumble? What conditions will need to be considered? How will the Crumble and Sparkle be connected to the product? How can we identify problems with our program? Does our program suit the design specification? Vocabulary: Selection, condition, action, repetition, debug
Future learning this content supports: The content of this unit will support other units on programming micro-controllers for a specific purpose.