Year 5 Spring 1

Question: What is a Crumble controller?

Programming A- A selection of physical computing.

National Curriculum Link:

-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

International Baccalaureate Learner Profile Link:

Communicators.
How do we express and present ourselves to others?
How can we communicate with others?
We can be clear in both written and oral form?
Principled.
To take my time and think before acting.
To remain calm, thoughtful and deliberate in my actions.
Caring
What does it mean to be caring?
What people, actions and ideas do I care most about?
How do I show that I care through my actions and words?

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Prior Skills: Year 4	New Skills: Year 5	Future Skills: Year 6
To list an everyday task as a set of instructions including repetition. To use an indefinite loop to produce a given outcome. To use a count-controlled loop to produce a given outcome. To plan a program that includes appropriate loops to produce a given outcome. To recognise tools that enable more than one process to be run at the same time (concurrency). To create two or more sequences that run at the same time.	To explain that a condition can only be true or false . To relate that a count-controlled loop contains a condition. To compare a count-controlled loop with a condition-controlled loop. To explain that a condition-controlled loop will stop when a condition is met. To explain that when a condition is met, a loop will complete a cycle before it stops. To create a condition-controlled loop. To use a condition in an 'if...then…' statement to start an action. To explain that selection can be used to branch the flow of a program. To explain that a loop can be used to repeatedly check whether a condition has been met. To use selection to switch the program flow in one of two ways. To use a condition in an 'if...then...else…' statement to produce given outcomes. To explain the importance of instruction order in 'if...then...else...' statements.	To identify a variable in an existing program. To experiment with the value of an existing variable. To choose a name that identifies the role of a variable to make it more usable (to humans). To decide where in a program to set a variable. To update a variable with a user input. To use an event in a program to update a variable. To use a variable in a conditional statement to control the flow of a program. To use the same variable in more than one location in a program.

Knowledge, Skills and Understanding

Children know how to understand that software relies on codes to run and that a range of different coding languages exist. Children know how to name some.
To explore logical reasoning in greater depth and learn to give well thoughtthrough explanations of any errors they identify in program code (using the correct terminology.
To write a complex program, incorporating features such as selection, inputs, repetition, variables and procedures.
To attempt to debug their own programs and corrects/ debugs errors in code.
To recognise an error in an existing program and attempt to debug/ fix the program.

Resources:	Websites or Apps: Apps: Book creator.
Hardware: iPads, Computers. Microcontroller, Crumble, Sparkle.	https://www.youtube.com/watch?v=JwCTkm43CxQ https://www.bbc.co.uk/bitesize/guides/zh8ck2p/revision/4 https://kids.kiddle.co/Microcontroller http://code-it.co.uk/wp-content/uploads/2018/06/exabytes182.pdf

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	Extended Writing Opportunities: Develop crumble programs for other teams.
Vocabulary: Microcontroller, Crumble, program, repetition, operation, Sparkle, loops, sequences, algorithms, program writing, components, code, debug.	**Numeracy skills:** Algebra, geometry, statistics, probability and coding.
Suggested Quality Texts: See selection in library.	**WOW Experience:** Member of NCCE to come into school and show crumble and how it works.
Cross Curricular Links: Science: Electricity- electrical circuit. DT: design and make prototpyes.	