



**Computing**

**Year 4**

**Term 6**

**Programming & Control: Repetition**

**Key Question: How is repetition used when programming games?**

**National Curriculum Objectives:**

- 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

**Vocabulary**

Scratch, programming, sprite, blocks, code, loop, repeat, repetition, value, forever, infinite loop, count-controlled loop, costume, animate, duplicate, modify, design, sprite, algorithm, debug, refine, evaluate

**Prior Learning:**

- The children were introduced to Scratch in Year 3 programming units. They began to use motion, event and sound blocks to create simple sequences. They have also changed the costumes of sprites and used pen tools to draw lines.
- In term 3 of Year 4 the children developed an understanding of repetition and used this to draw shapes in Logo. They learnt what a count controlled loop is and how to use these to create shapes and patterns.

**End Point:**

The children will design and create a game which uses repetition, applying stages of programming design throughout.

Use assessment rubric

**Safe and Responsible Use:**

use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

**Digital Literacy Skills:**

- Use right click shortcuts on a mouse or trackpad
- Use a variety of programming software

**Knowledge:**

**I know:**

- use count-controlled loops in a different programming environment
- what 'repeat' means in programming
- that in programming there are indefinite loops and count-controlled loops
- that an indefinite loop will run until the program is stopped
- that some programming languages enable more than one process to be run at once
- when to use a loop and when not to
- the importance of instruction order in a loop
- that not all tools enable more than one process to be run at once

**Skills:**

**I can:**

- predict the outcome of a snippet of code
- relate Logo text-based code to Scratch block code.
- identify a loop within a program
- modify loops to produce a given outcome
- use a count-controlled and an infinite loop
- plan a program that includes appropriate loops to produce a given outcome
- recognise tools that enable more than one process to be run at the same time (concurrency)
- create two or more sequences that run at the same time
- design a project that includes repetition
- create a project that includes repetition
- evaluate the effectiveness of repeated sequences used in my program

**Cross Curricular Links:**

**Oracy:**

In lesson 4 provide sentence stems to support children with explaining their changes.

**Key Questions:**

1. How can I show respect for people's work?
2. How can count-controlled loops be used in Scratch?
3. What different programming loops are there?
4. How can loops be used to create an animation?
5. How is repetition used within a game?
6. How do I design a project that includes repetition?
7. How do I create a project that includes repetition?