



Computing

Year 3 & 4

Cycle B 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:

- Why do people alter digital photos and videos?
- How can count-controlled loops be used in Scratch?
- What different programming loops are there?
- How can loops be used to create an animation?
- How is repetition used within a game?
- How do I design a project that includes repetition?
- How do I create a project that includes repetition?