Bomere and the XI Towns Federation Knowledge Organiser - Computing

Topic: Programming A – Variables in games

Class/Year Groups: Owls

Term: Spring

What you already know?

This unit assumes that learners have some prior experience of programming in Scratch. Specifically, they should be familiar with the programming constructs of sequence, repetition, and selection. These constructs are covered in the Year 3, 4, and 5 National Centre for Computing Education programming units respectively. Each year group includes at least one unit that focuses on Scratch.

What you will learn:

This unit explores the concept of variables in programming through games in Scratch. First, learners find out what variables are and relate them to real-world examples of values that can be set and changed. Then they use variables to create a simulation of a scoreboard. In Lessons 2, 3, and 5, which follow the Use-Modify-Create model, learners experiment with variables in an existing project, then modify them, before they create their own project. In Lesson 4, learners focus on design. Finally, in Lesson 6, learners apply their knowledge of variables and design to improve their games in Scratch.

1 Introducing variables

2 Variables in programming

3 Improving a game

4 Designing a game

5 Design to code

6 Improving and sharing

Vocabulary:

Variable - a named piece of data (often a number or text) stored in a computer's memory, which can be accessed and changed by a computer program

Value - is the representation of some entity that can be manipulated by a program

Algorithm - a precise set of ordered steps that can be followed by a human or a computer to achieve a task

Code - the commands that a computer can run

Debug - the process of finding and correcting errors in a program

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

- 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