

Scheme of Learning: Year 7 Computing

Topic Sequence:

1	2	3	4	5	6
Messaging in digital media	Networks from semaphores to the Internet	Programming essentials in Scratch – part I	Modelling data using spreadsheets	Programming essentials in Scratch – part II	Using media – Gaining support for a cause

Topic Overview:

This unit is the first programming unit of KS3. The aim of this unit and the following unit ('programming 2') is to build learners' confidence and knowledge of the key programming constructs. Importantly, this unit does not assume any previous programming experience, but it does offer learners the opportunity to expand on their knowledge throughout the unit.

The main programming concepts covered in this unit are sequencing, variables, selection, and count-controlled iteration. All of the examples and activities for this unit use Scratch 3.

Links

Year 7 – Programming essentials part 2, Year 8 – Mobile App, Year 9 - Python Programming, GCSE – Edexcel Topic 6 Programming

Lesson Sequence:

Lesson 1: Introduction to programming and sequencing: Learners will be introduced to the unit and will take part in an activity to help them understand the precise nature of instructions that computers need to execute. Learners will be taught the song *Frère Jacques* before working in pairs to place blocks of code into the appropriate subroutines so that their program will play the song correctly.

Lesson 2: Sequence and variables: In this lesson the learners will be introduced to variables as well as the opportunity to get more confident with sequences. Learners will be given a Scratch program where they will work in pairs to predict, run, investigate, and modify.

Lesson 3: Selection: The focus of this lesson is to introduce learners to the concept of selection statements and how they can be used to control the flow of a program. The lesson starts with activities that allow the learners to understand expressions that evaluate to 'true' or 'false'. This will be followed by a PRIMM activity using another version of the 'Chat with Big Ed' program from the last lesson, this time using selection (if statements).

Lesson 4: Operators: This lesson will build on the previous lesson by introducing the use of logical and comparison operators to use in selection statements. The learners will start by following Scratch code and working out what the program will output given different inputs. They will be introduced to logical and comparison operators before taking part in an activity where they are given a playing card and have to decode if it evaluates to 'true' or 'false' using various different expressions.

Lesson 5: Count-controlled iteration: In this lesson learners will be introduced to the concept of iteration, the examples will be specifically focused on count-controlled iteration. The learners will be given an inefficient program and be asked to spot patterns and repetition. They will be taken through a live coding demonstration of taking their inefficient program and adding iteration to make it more efficient.

Lesson 6: Problem-solving: This is the final lesson of the first unit of programming in Year 7. The main activity for the lesson will be learners' main summative assessment task where they are required to independently work through tasks to complete a dance move game.

National curriculum links

- Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures (e.g. lists, tables, or arrays); design and develop modular programs that use procedures or functions
- Understand several key algorithms that reflect computational thinking; use logical reasoning to compare the utility of alternative algorithms for the same problem
- Understand simple Boolean logic (e.g. and, or, and not)
- Create, reuse, revise, and repurpose digital artefacts for a given audience, with attention to trustworthiness, design, and usability

Sequence of Lessons:		Topic Resources:	
		Knowledge Map:	7.3: Programming 1
		Any other Resources:	Scratch
		Assessment:	
1	Introduction to Sequencing	Knowledge:	2 homework activities (in Lesson 2 (4) and Lesson 5 (6)) that ask a set of multiple-choice questions.
2	Sequence and Variables	Application of Knowledge:	Learners to complete a set of tasks using a Scratch program
3	Selection	Supportive Reading:	
4	Operators	BBC Bite Size	Programming - KS3 Computer Science - BBC Bitesize
5	Count Controlled Iteration	KS3 Computing Complete Revision & Practice - 2022	Chapter 6
6	Problem Solving		Available from: KS3 Computing Complete Revision & Practice - 2022