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 begins right where 'Programming I' left off. Learners will build on their understanding of the control structures' sequence, selection, and iteration (the big three), and develop their problem-solving skills. Learners will learn how to create their own subroutines, develop their understanding of decomposition, learn how to create and use lists, and build upon their problem-solving skills by working through a larger project at the end of the unit.

Links
Year 7 – Programming essentials part 1, Year 8 – Mobile App, Year 9 - Python Programming, GCSE – Edexcel Topic 6 Programming

Lesson Sequence:

Lesson 7: You've got the moves! - This lesson is designed to formalise the use of subroutines, a technique that has been introduced gently over the previous unit. Learners will create a dance battle game by decomposing dance moves and creating subroutines for each move.

Lesson 8: Fly cat fly! - Learners are introduced to the concept of condition-controlled loops by using the PRIMM approach with a Scratch game called 'Fly cat, fly!'. They will predict, run, investigate, and modify code in order to build confidence with using condition-controlled loops.

Lesson 9: Loop the loop! - Learners should have a grasp of each type of iteration available to them in Scratch. This lesson focuses on when each type of iteration should be used. It will give learners the evaluative skills to implement iteration in their own programs as they start to develop them.

Lesson 10: Treasure those lists! - Learners are introduced to lists during this lesson. There is initially an educator-led demonstration on a simple shopping list application created in Scratch. Learners then dig deeper into lists by navigating through a treasure hunt game. The object of the game is to collect and swap the right items in order to reach the next level. Learners should use their investigation skills to discover the essential tools that Scratch can offer surrounding lists.

Lessons 11 & 12: Translate this! - Learners are given a scenario to create a translation quiz for a Modern Foreign Languages teacher. The learners will decompose the problem and start to build a Scratch program to meet the requirements. This is a pair programming project that takes place over two lessons; pairs will develop their programs to differing levels. A rubric is to be used for peer- or self-assessment to check progress. Extension activities allow learners to explore more challenging aspects of the solution. In Lesson 12, learners will be given a multiple choice quiz as a formal final assessment.

National curriculum links
- To use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; to make appropriate use of data structures (for example, lists, tables, or arrays); to design and develop modular programs that use procedures or functions
- To understand several key algorithms that reflect computational thinking; use logical reasoning to compare the utility of alternative algorithms for the same problem
- To understand simple Boolean logic (for example, AND, OR, and NOT)
- To create, reuse, revise, and repurpose digital artefacts for a given audience, with attention to trustworthiness, design, and usability

Sequence of Lessons:

1	You've got the moves!
2	Fly cat fly!
3	Loop the loop!
4	Treasure those lists!
5	Translate this! (Part 1)
6	Translate this! (Part 2)

Topic Resources:

Knowledge Map:	7.5 – Programming 2	Any other Resources:	Scratch

Assessment:

Knowledge:	20 mark multiple choice questions
Application of Knowledge:	Paired Programming Scenario

Supportive Reading:

BBC Bite Size	Programming - KS3 Computer Science - BBC Bitesize
KS3 Computing Complete Revision & Practice - OCR	Chapter 6 Available from: KS3 Computing Complete Revision & Practice	CGP Books