Newquay Junior Academy – Summer 2 Sequence – Computing

	YEAR 3	YEAR 4	YEAR 5	YEAR 6
	Prior knowledge... Year 2 – Progamming quizzes recaps on learning from the Year 1 ScratchJr unit 'Programming B – Programming animations'. Learners begin to understand that sequences of commands have an outcome, and make predictions based on their learning. They use and modify designs to create their own quiz questions in ScratchJr, and realise these designs in ScratchJr using blocks of code. Finally, learners evaluate their work and make improvements to their programming projects. This unit progresses learners' knowledge and understanding of instructions in sequences and the use of logical reasoning to predict outcomes.	**Prior knowledge...** Year 3 Creating Media – Animation -This unit progresses students' knowledge and understanding of using digital devices to create media including adding audio to a digital image file/animation.	**Prior knowledge...** This unit assumes that learners will have some prior experience of programming; the KS1 NCCE units cover floor robots and ScratchJr, and Scratch is introduced in the Year 3 programming units. However, experience of other languages or environments may also be useful.	**Prior knowledge...** This unit assumes that learners will have prior experience of programming using block-based construction (e.g. Scratch), understand the concepts of 'sequence' and 'repetition', and have some experience of using 'selection'. Ideally, learners will have completed 'Programming A – Selection in physical computing' before undertaking this unit, as this will provide them with the required knowledge of 'selection'.
INTENT	This unit explores the links between events and actions, whilst consolidating prior learning relating to sequencing. Learners will begin by moving a sprite in four directions (up, down, left and right). They will then explore movement within the context of a maze, using design to choose an appropriately sized sprite. This unit also introduces programming extensions, through the use of pen blocks. Learners are given the opportunity to draw lines with sprites and change the size and colour of lines. The unit concludes with learners designing and coding their own maze tracing program.	Learners will identify the input device (microphone) and output devices (speaker or headphones) required to work with sound digitally. Learners will discuss the ownership of digital audio and the copyright implications of duplicating the work of others. In order to record audio themselves, learners will use Audacity to produce a podcast, which will include editing their work, adding multiple tracks, and opening and saving the audio files. Finally, learners will evaluate their work and give feedback to their peers.	In this unit, pupils develop their knowledge of 'selection' by revisiting how 'conditions' can be used in programming, and then learning how the 'if… then… else…' structure can be used to select different outcomes depending on whether a condition is 'true' or 'false'. They represent this understanding in algorithms, and then by constructing programs using the Scratch programming environment. They learn how to write programs that ask questions and use selection to control the outcomes based on the answers given. They use this knowledge to design a quiz in response to a given task and implement it as a program. To conclude the unit, learners evaluate their program by identifying how it meets the requirements of the task, the ways they have improved it, and further ways it could be improved.	This unit is the final KS2 programming unit and brings together elements of all the four programming constructs: sequence from Year 3, repetition from Year 4, selection from Year 5, and variables (introduced in Year 6 – 'Programming A'. It offers pupils the opportunity to use all of these constructs in a different, but still familiar environment, while also utilising a physical device — the micro:bit. The unit begins with a simple program for pupils to build in and test within the new programming environment, before transferring it to their micro:bit. Pupils then take on three new projects in Lessons 2, 3, and 4, with each lesson adding more depth. Design features prominently in this unit. A design template is introduced in Lesson 3, initially scaffolded to give pupils the opportunity to create code from a given design. In Lesson 4 that scaffolding is gradually reduced, then in Lesson 5, pupils create their own design, using the same template. In the final lesson, pupils will apply their knowledge of the programming constructs and use their design to create their own micro:bit-based step counter.

VOCABULARY / STICKY KNOWLEDGE	Selection, motion, sound, event, blocks, program, sequence	Input device, microphone, output device, speaker, digital audio, copyright, podcast	Selection, conditions, true, false, algorithm, program	Selection, constructs, micro:bit, physical device, repetition, variables
SEQUENCE OF LESSONS	1. To demonstrate how to use key phrases in search engines to gather accurate information online. 2. To explain how a sprite moves in an existing project 3. To create a program to move a sprite in four directions 4. To adapt a program to a new context 5. To develop my program by adding features 6. To identify and fix bugs in a program 7. To design and create a maze based challenge	1. I can describe some of the methods used to encourage people to buy things online (e.g. advertising offers; in-app purchases, pop-ups) and can recognise some of these when they appear online. 2 To identify that sound can be recorded 3. To explain that audio recordings can be edited 4. To recognise the different parts of creating a podcast project 5. To apply audio editing skills independently 6. To combine audio to enhance my podcast project 7. To evaluate the effective use of audio	1. To explain how to block abusive users. 2.To explain how selection is used in computer programs 3. To relate that a conditional statement connects a condition to an outcome 4. To explain how selection directs the flow of a program 5. To design a program that uses selection 6. To create a program that uses selection 7. To evaluate my program	1.To explain strategies anyone can use to protect their 'digital personality' and online reputation, including degrees of anonymity. 2. To create a program to run on a controllable device 3. To explain that selection can control the flow of a program 4. To update a variable with a user input 5. To use a conditional statement to compare a variable to a value 6. To design a project that uses inputs and outputs on a controllable device 7. To develop a program to use inputs and outputs on a controllable device
OUTCOME / COMPOSITE	This unit assumes that learners will have some prior experience of programming. The KS1 NCCE units focus on floor robots and Scratch Jr, however experience of other languages or environments may also be useful. The Year 3 Programming A unit introduces the Scratch programming environment and the concept of sequences.	This unit progresses students' knowledge and understanding of creating media, by focusing on the recording and editing of sound to produce a podcast. Following this unit, learners will explore combining audio with video in the 'Video editing' unit in Year 5.	This unit assumes that learners will have prior experience of programming using block-based construction (e.g. Scratch), understand the concepts of 'sequence' and 'repetition', and have some experience of using 'selection'. Ideally, learners will have completed 'Programming A – Selection in physical computing' before undertaking this unit, as this will provide them with the required knowledge of 'selection'.	This unit presumes that pupils are already confident in their understanding of sequence, repetition and selection independently within programming. If pupils are not yet ready for this, you may wish to revisit earlier programming units where these constructs are introduced.