

## Curriculum Map - Computing

Specifying the cumulative knowledge and skills that should be taught in this subject

## Aims of The National Curriculum for computing

The national curriculum for computing aims to ensure that all pupils: can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation. They can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems. They can evaluate and apply information technology, including new or unfamiliar technologies to analytically solve problems. They are responsible, competent, confident and creative users of information and communication technology.

## Aim of the Manor Primary School computing curriculum map

ICT is changing the lives of everyone. Through teaching ICT, we equip children to participate in a rapidly changing world where work and leisure activities are increasingly transformed by technology. We enable them to find, explore, analyse, exchange and present information. We also focus on developing the skills necessary for children to be able to use information in a discriminating and effective way. ICT skills are a major factor in enabling children to be confident, creative and independent learners. Computing lessons are taught using the NCCE Teach Computing lessons and resources and the units have been selected to teach our children skills progressively that build year upon year.

Year Group	Unit 1	Unit 2	Unit 3	Unit 4
1	Computing Systems and	Programming A – Moving a	Creating Media – Digital	Programming B –
_	Networks – Technology	Robot	Painting	<b>Programming Animations</b>
	Around Us			
	-	Children will be introduced to early programming concepts and will be		Children will be introduced to Scratch Jr and start to explore sprites and
	They will develop their	introduced to algorithms.	their own artwork taking	blocks as well as using blocks to modify
	keyboard and mouse skills and		inspiration from other artists.	and create simple programmes
	start to understand how to use			through the use of early algorithms.
	technology responsibly.			

2	Computing Systems and Networks – IT Around Us	Programming A – Robot Algorithms	Creating Media – Creating Digital Music	Programming B – Programming quizzes
	Children will learn how ICT is used for good in our lives. They will learn how to be responsible when using ICT equipment and make smart choices.	Children will develop their understanding of instructions in sequences and use logical reasoning to predict outcomes. They will design and test algorithms and then test those algorithms as programs and debug them.	Children will explore music, making patterns with both percussion instruments and digital tools before comparing the creation of music both digitally and non-digitally.	Children will begin to learn that a sequence of commands have an outcome and make predictions based on their learning. Children will use and modify designs to create their own quiz questions using blocks of code before evaluating their projects.
3	<b>Computing Systems</b>	Programming A –	Creating media – Desktop	Programming B – Events and
	and Networks –	Sequencing Sounds	Publishing	Actions in Programmes
	Connecting Computers			
	Children will develop their understanding of digital devices with a focus on inputs, processes and outputs. They will then look at computer networks that include network infrastructure devices like routers and switches.	Children will learn about the concept of sequencing. They will be introduced to a selection of motion, sound and event blocks and will create their own programs featuring sequences.	Children will learn about text and images and understand how they can be used to communicate messages. They will learn to use font size, colour and type to edit documents. They will learn how to add images to a text and look at a range of page layouts before evaluating how desktop publishing is used in the real world.	Children will explore the links between events and actions. They will begin to learn how to move a sprite in the four directions (up, down, left and right). They will begin to use some extension blocks such as the pen alongside drawing lines of varying size and colour with their sprites.
4	<b>Computing Systems</b>	Programming A –	Creating Media – Audio	Programming B – Repetition
	and Networks – The	Repetition in Shapes	Production	in Games
	Internet			
	Children will apply their knowledge and understanding of networks and learn that the internet is a network of networks that needs to be kept	Children will learn about repetition and loops. They will create programs by planning, modifying and testing commands to create shapes using a text based programming language.	Children will identify input and output devices required to work digitally with sound. They will learn to open and save audio files, producing a podcast before	Children will build on their understanding of repetition in programming and will assess the similarities between two programming environments. They will learn the

	secure. They will learn about the World Wide Web before evaluating online content assessing the information for reliability, accuracy and honesty.		evaluating their work and giving feedback.	difference between count-controlled and infinite loops, using their knowledge to modify existing animations using repetition.
5/6	Computing Systems	Programming A – Selection	Creating Media –	Programming B – selection
	and Networks –	in Physical Computing	Introduction to Vector	in quizzes
	Systems and Searching		Graphs	
Year A	Children will develop their understanding of computer systems and how information is transferred between systems and devices. They will explain the input, output, and process aspects of a variety of different real-world systems. Learners will also take part in a collaborative online project with other class members and develop their skills in working together online.	Children will use physical computing to explore the concept of selection in programming through the use of the Crumble programming environment. Learners will be introduced to a microcontroller (Crumble controller) and learn how to connect and program components (including output devices- LEDs and motors) through the application of their existing programming knowledge.	Children will learn to create vector drawings. They will learn how to use different drawing tools to help them create images recognising that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object.	Children will develop their knowledge of selection by revisiting how conditions can be used in programs 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 will represent this understanding in algorithms and then by constructing programs using the Scratch programming environment. They use their knowledge of writing programs and using selection to control outcomes to design a quiz in response to a given task and implement it as a program.
5/6	<b>Computing Systems</b>	Programming A – Variables	Creating Media – 3D	Programming B – Sensing
	and Networks –	in Games	Modelling	Movement
	Communication and			
Year	Collaboration			
	Children will explore how data	Children find out what variables are	Children will develop their	In this unit, the children will bring
В	is transferred over the internet.  Learners initially focus on	and relate them to real-world examples of values that can be set		together elements of all the four programming constructs: sequence

addressing, before they move on to the makeup and structure of data packets. Children then look at how the internet facilitates online communication and collaboration; they complete shared projects online and evaluate different methods of communication. Finally, they learn how to communicate responsibly by considering what should and should not be shared on the internet.

and changed. Then they use variables to create a simulation of a scoreboard. Children experiment with variables in an existing project, then modify them, before they create their own project.

models. They will initially familiarise themselves with working in a 3D space, moving, resizing, and duplicating objects. They will then create hollow objects using placeholders and combine multiple objects to create a model of a desk tidy. Finally, the children will examine the benefits of grouping and ungrouping 3D objects, then go on to plan, develop, and evaluate their own 3D model of a building.

from Year 3, repetition from Year 4, selection from Year 5, and variables (introduced in Year 6 – 'Programming A'). The children will develop a simple program to build in and test within the new programming environment, before transferring it to their micro:bit.