Foston CE, Terrington CE VA & Stillington Primary Schools and in collaboration with Langton Primary school
Progression Map

Subject: Computing

Subject Intent:

At our schools we intend that children should master Computing to such an extent that they can go on to have careers within Computing and make use of Computing effectively in their everyday lives, without being completely reliant on technology.

Our children will be taught to use technology responsibly and carefully, being mindful of how their behaviour, words and actions can affect others. Our children will be taught Computing in a way that ensures progression of skills and follows a sequence to build on previous learning.

Our children will gain experience and skills of a wide range of technology in a way that will enhance their learning opportunities, enabling them to use technology across a range of subjects to be creative and solve problems, ensuring they make progress.

Key Concept	Overview	Key Stage 1- Cycle A	Key Stage 1- Cycle B	Key Stage 2- Cycle A	Key Stage 2- Cycle B	Key Stage 2- Cycle C	Key Stage 2- Cycle D
Online Safety	Topic	**Online Safety (Y1)**	**Online Safety (Y2)**	**Online Safety year 5**	**Online Safety year 3**	**Online Safety year 6**	**Online Safety year 4**
	Objectives NC	use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies		use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.			
	Milestones	Use a range of applications and devices in order to communicate ideas, work and messages.		Give examples of the risks of online communities and	Give examples of the risks posed by online communications.	Understand the effect of online comments and show responsibility	Give examples of the risks posed by online communications.

				demonstrate knowledge of how to minimise risk and report problems.		and sensitivity when online.	
	Knowledge	- To know the internet is many devices connected to one another. -To know if you feel unsafe or worried online – tell a trusted adult. -People you do not know on the internet (online) are strangers and are not always who they say they are. -To know that to stay safe online it is important to keep personal information safe. -'Sharing' online means giving something	- To understand the difference between online and offline. - To understand what information, I should not post online. - To know what the techniques are for creating a strong password. -To know that you should ask permission from others before sharing about them online	-To identify possible dangers online and learning how to stay safe. -To evaluate the pros and cons of online communication -To recognise that information on the Internet might not be true or correct and learning ways of checking validity. -To learn what to do if they experience bullying online. -To use an online community safely.	-To know that not everything on the internet is true: people share facts, beliefs and opinions online. -To understand that the internet can affect your moods and feelings. -To know that privacy settings limit who can access your important personal information, such as your name, age, gender etc. -To know what social media is and that age restrictions apply.	-To know that a digital footprint means the information that exists on the internet as a result of a person's online activity. -To know what steps are required to capture bullying content as evidence. -To understand that it is important to manage personal passwords effectively. -To understand what it means to have a positive online reputation.	-To understand some of the methods used to encourage people to buy things online. -To understand that technology can be designed to act like or impersonate living things. -To understand that technology can be a distraction and identify when someone might need to limit the amount of time spent using technology. -To understand what behaviours are appropriate in order to stay safe and be respectful online.

		specific to someone else via the internet and 'posting' online means placing information on the internet.	and that they have the right to say 'no.' -To understand that not everything I see or read online is true.			-To know some common online scams.	
	Vocabulary	internet, connect, communicate, device, digital footprint, internet safety, personal information, sharing, online	accept, consent, offline, password, personal information, permission, trusted adult, terms and conditions, deny	advice, communication, apps, permissions, judgement, bullying, mental health, private information	age-restricted, beliefs, content, Digital devices, social media, wellbeing, social network, fake news, fact, opinion	Anonymity, Antivirus, Digital Footprint, Digital personality, Online bullying, Online Reputation, Digital Personality, Scammers, Two factor authentication	online communication, summarise, technology, organisation, personal information, strong password
	Topic	**Computer Systems and**	**Word Processing**	**Networks and the internet**	**Search Engines**	**Journey inside a computer**	**Emails**

Computing Systems and Networks		**Networks: What is a computer? Improving Mouse Skills**					
	Objectives NC	Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. Recognise common uses of information technology beyond school.		To understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.			
	Milestones	Use a range of applications and devices in order to communicate ideas, work and messages. Control when drawings appear and set the pen colour, size and shape.	Use a range of applications and devices in order to communicate ideas, work and messages.	To use some of the advanced features of applications and devices in order to communicate ideas, work or messages professionally.	Understand how simple networks are set up and used.	To use the functions define, set, change, show and hide to control the variables.	Choose the most suitable applications and devices for the purposes of communication.

	Knowledge	-To know the difference between a desktop and laptop computer. -People control technology. -Some input devices that give a computer an instruction about what to do (output). -Computers often work together. -"log in" and "log out" means to begin and end a connection with a computer - A computer and mouse can be used to click, drag, fill and select and also add backgrounds, text, layers,	- To know that touch typing is the fastest way to type. - To know that I can make text a different style, size and colour. To know that "copy and paste" is a quick way of duplicating text.	-To understand what a network is and how a school network might be organised. -A server is central to a network and responds to requests made. -A router connects us to the internet. -The internet uses networks to share files. - Packet is and why it is important for website data transfer.	-To know how search engines work. -To understand that anyone can create a website and therefore we should take steps to check the validity of websites. -To know that web crawlers are computer programs that crawl through the internet. -To understand what copyright is.	-To know the roles that inputs and outputs play on computers. -To know what some of the different components inside a computer are e.g. CPU, RAM, hard drive, and how they work together. -To know what a tablet is and how it is different from a laptop/desktop computer.	-To understand that email stands for 'electronic mail.' -To know that an attachment is an extra file added to an email. -To understand that emails should contain appropriate and respectful content. -To know that cyberbullying is bullying using electronics such as a computer or phone.		

		shapes and clip art. -Passwords are important for security and to keep us safe.							

	Vocabulary	battery, camera, Buttons, computer, device, digital, function, technology, invention, electricity login, username, password, account	delete, image, home screen, keyboard, keyboard character, keyboard shortcut, cut, copy, paste, search, spacebar, text	cables, component, connection, data, DSL, server, wifi.	Algorithm, appropriate, copyright, correct, credit. data leak, deceive, fair, fake, inappropriate, incorrect, index, information, keywords, network, privacy, rank, real, search engine, TASK, web, crawler, website	algorithm, data, GPU (Graphics processing unit), HDD (Hard disk drive), input, RAM	attachment, bcc (Blind carbon copy, Cc (Carbon copy, compose, content, cyberbullying, document, domain, download, email, email account, email address, inbox, log in, log out, reply, send, spam email, subject bar		
Data Handling	Topic	**Introduction to data handling**	**International Space Station 2**	**Comparison cards database 3**	**Mars Rover 5**	**Investigating Weather 4**	**Big Data 1**		
	Objectives NC	Use technology purposefully to create, organise, store, manipulate and retrieve digital content.		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.					
	Milestones	Use simple databases to record information in areas across the curriculum.	Use simple databases to record information in areas across the curriculum.	Devise and construct databases using applications designed for this purpose in areas across the curriculum.	Select appropriate applications to devise, construct and manipulate data and present it in an effective and professional manner.	Devise and construct databases using applications designed for this purpose in areas across the curriculum.	Select appropriate applications to devise, construct and manipulate data and present it in an effective and professional manner.		

	Knowledge	-To know that charts and pictograms can be created using a computer. -To understand that a branching database is a way of classifying a group of objects. -To know that computers understand different types of 'input'.	-To understand that you can enter simple data into a spreadsheet. -To understand what steps you need to take to create an algorithm. -To know what data to use to answer certain questions. -To know that computers can be used to monitor supplies.	-To know that a database is a collection of data stored in a logical, structured and orderly manner. -To know that computer databases can be useful for sorting and filtering data. -To know that different visual representations of data can be made on a computer.	-To know that Mars Rover is a motor vehicle that collects data from space by taking photos and examining samples of rock. -To know what numbers using binary code look like and be able to identify how messages can be sent in this format. -To understand that RAM is Random Access Memory and acts as the computer's working memory. -To know what simple operations can be used to calculate bit patterns.	-To know that computers can use different forms of input to sense the world around them so that they can record and respond to data ('sensor data'). -To know that a weather machine is an automated machine that respond to sensor data. -To understand that weather forecasters use specific language, expression and pre-prepared scripts to help create weather forecast films.	-To know that data contained within barcodes and QR codes can be used by computers. -To know that infrared waves are a way of transmitting data. -To know that Radio Frequency Identification (RFID) is a more private way of transmitting data. -To know that data is often encrypted so that even if it is stolen it is not useful to the thief.		
	Vocabulary	bar chart, block graph, branching database, chart, click and drag, compare,	algorithm, data, astronaut, digital content, experiment,	Categorise, Category, Chart, Data, Database, Excel Fields, Filter	8-bit binary, ASCII, Binary code, Boolean, Byte, construction, CPU, data transmission, decimal number,	Accurate, Backdrop, Climate zone, Cold, Collaboration, Condensation,	Algorithms, Barcode, Binary Boolean, Brand Chips, Commuter, Contactless, Data, Encrypted.		

		count, data collection, data representation, line graph	galaxy, experiment, interactive map, international Space Station	Graph, Information, Interpret, PDF, Questionnaire.	input, Numerical data, output, radio signal, RAM, research, sequence, simulation, transmit	Cylinder, Degrees, Evaporation, Extreme.			
Programming	Topic	**Algorithms Unplugged (Lessons 1, 4, 5)**	**Algorithms and Debugging 2 (Lessons 1, 3, 5)**	**Scratch 3**	**Programming 1: Sonic Music Y5**	**Programming 1: Sonic Music Y5** **Further coding with scratch 4**	**Programming 2: Computational Thinking**		
	Objectives NC	understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions Use logical reasoning to predict the behaviour of simple programs		To design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	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	To 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		

	Milestones	Use a range of applications and devices in order to communicate ideas, work and messages.	Specify the nature of events (such as a single event or a loop).	Specify conditions to trigger events. Use IF THEN conditions to control events or objects.	Upload sounds from a file and edit them. Add effects such as fade in and out and control their implementation.	Create conditions for actions by sensing proximity or by waiting for a user input	Use a range of sensing tools (including proximity, user inputs, loudness and mouse position) to control events or actions.		
	Knowledge	-To understand that an algorithm is when instructions are put in an exact order. -To understand that decomposition means breaking a problem into manageable chunks and that it is important in computing. -To understand that decomposition means breaking a problem into manageable chunks and that it is	-To understand what machine learning is and how it enables computers to make predictions. -To know that loops in programming are where you set a certain instruction (or instructions) to be repeated multiple times. -To know that abstraction is the removing of unnecessary	-To know that Scratch is a programming language and some of its basic functions. -To understand how to use loops to improve programming. -To understand how decomposition is used in programming. -To understand that you can remix and adapt existing code.	-To know that a soundtrack is music for a film/video and that one way of composing these is on programming software. -To understand that using loops can make the process of writing music simpler and more effective. -To know how to adapt their music while performing.	-To understand that a variable is a value that can change (depending on conditions) and know that you can create them in Scratch. -To know what a conditional statement is in programming. -To understand that variables can help you to create a quiz on Scratch.	-To know that combining computational thinking skills can help you to solve a problem. -To understand that pattern recognition means identifying patterns to help them work out how the code works. -To understand that algorithms can be used for a number of purposes e.g. animation, games design etc.		

		important in computing. -To know that we call errors in an algorithm 'bugs' and fixing these 'debugging'.	detail to help solve a problem.						
	Vocabulary	algorithm, bug, code, decomposition, directions, instructions, robot, problem, input, output	abstraction, algorithm, bug, debug, data, decompose, artificial intelligence, error, clear, predict	algorithm, animation, application, code, code block, coding application, debug, decompose.	Beat, Buffer, Bugs, Coding, Commands, Debug, Decompose, Error, Format	broadcast block, code blocks, conditional, coordinates, decomposition, features, game information, negative, orientation, parameters	Abstraction, Computational Thinking, Decomposition, Logical Reasoning, Pattern Recognition, Sequence, Variable, Script		
	Topic	**Programming 2: Bee Bot (Lessons 1, 3, 4, 5) Year 1**	**Programming 2: Scratch Jr Y2 (Lesson 1, 2, 3, 5)**			**Programming 2: Micro: Bit Y5**			
	Objectives NC	Create and debug simple program				use sequence, selection, and repetition in programs; work with variables and various forms of input and output			
	Milestones	Control motion by specifying the number of steps to travel, direction and turn.	Select sounds and control when they are heard, their duration and volume.			Use lists to create a set of variables.			
	Knowledge	-To understand the basic	-To know that coding is			-To know that a Micro:bit is a			

		functions of a Bee-Bot. -To know that you can use a camera/tablet to make simple videos. -To know that algorithms move a Bee-Bot accurately to a chosen destination.	writing in a special language so that the computer understands what to do. -To understand that the character in Scratch Jr is controlled by the programming blocks. -To know that you can write a program to create a musical instrument or tell a joke.			programmable device. -To know that Micro:bit uses a block coding language similar to Scratch. -To understand and recognise coding structures including variables. -To know what techniques to use to create a program for a specific purpose (including decomposition).			
	Vocabulary	algorithm, artificial intelligence, bee-bot, clear, code, debug, instructions, program, predict, input	algorithm, animation, CGI, instructions, programming, ScratchJR, repeat, sequence, sound recording, loop			Bluetooth, Code block, Animation, Micro:bit, Decompose, Scoreboard, Variables, Polling, Tinkering, Algorithm			

Creating Imagery	Topic		**Creating Media: Digital Imagery Y1**	**Creating Media: Website Design Y4**	**Creating media: Video trailers Y3**		**Creating media: History of computers WW11 Y6**		
	Objectives NC		use technology purposefully to create, organise, store, manipulate and retrieve digital content	To 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	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. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.		Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration.		

	Milestones		Use a range of applications and devices in order to communicate ideas, work and messages.	Use some of the advanced features of applications and devices in order to communicate ideas, work or messages professionally.	Use some of the advanced features of applications and devices in order to communicate ideas, work or messages professionally.		Choose the most suitable applications and devices for the purposes of communication.		
	Knowledge		To understand that holding the camera or device still and considering angles and light are important to take good pictures. To know that you can edit, crop and filter photographs. To know how to search safely for images online.	To know that a website is a collection of pages that are all connected. To know that websites usually have a homepage and subpages as well as clickable links to new pages, called hyperlinks. To know that websites should be informative and interactive.	To know that different types of camera shots can make my photos or videos look more effective. To know that I can edit photos and videos using film editing software. To understand that I can add transitions and text to my video.		To know that radio plays are plays where the audience can only hear the action so sound effects are important. To know that sound clips can be recorded using sound recording software. To know that sound clips can be edited and trimmed.		
	Vocabulary		Background, Blurred, Camera,	Assessment, Audience, Checklist	Application, Camera angle, Clip, Cross blur		Byte, Devices, FX, Graphics, Megabyte, RAM, Raspberry Pi,		

			Digital Camera, Editing Software, Resize, Storage Space, Search Engine, Download, Photograph	Collaboration, Content, Contribution, Create, Design, Embed, Evaluate, Features, Google Sites	Cross fade, Cross zoom, Desktop, Digital device, Dip to black, Directional, wipe, Edit, Film		Overlay, Processor, Terrabyte, Reverb		