



Computing at Hillside Primary School

Updated: Sep 2023

This is the long term plan. It details the term topics are taught throughout the year. For more information relating to content, progression, skills and vocabulary, see below.

Computing Long Term Plan				
	Term 1	Term 2		Term 3
Nursey	Barefoot Computing – Parts of our Bodies	Barefoot Computing – Seed Sequencing		Barefoot Computing – What is a Boat?
Reception	Barefoot Computing – Pumpkin Soup	Barefoot Computing – Tangram Lighthouses		Barefoot Computing – Movement Algorithms
Year 1	Technology Around Us	Digital Painting		Grouping Data BeeBots
Hardware	<i>Laptops or iPads</i>	<i>iPads</i>		<i>Laptops</i> <i>Beebot Floor Robots</i>
Software	paintz.app	paintz.app		<i>Microsoft PowerPoint</i> -
Year 2	Information Technology Around Us	Digital Writing		Pictograms Scratch Jr
Hardware	<i>Laptops</i>	<i>Laptops</i>		<i>Laptops or iPads</i> <i>iPads</i>
Software	<i>Microsoft Powerpoint</i>	<i>Microsoft Word</i>		j2data Pictogram <i>Scratch Jr App</i>
Year 3	Connecting Computers	Scratch	Branching Databases	Digital Photography
Hardware	<i>iPads</i>	<i>Laptops or iPads</i>	<i>Laptops or iPads</i>	<i>Laptops and iPads</i>
Software	paintz.app	Scratch	j2data Branch and Pictogram	Pixlr
Year 4	The Internet	Data Logging		Text-based Coding Stop-frame Animation
Hardware	<i>Laptops and iPads</i>	<i>iPads</i>		<i>Laptops</i> <i>iPads</i>
Software	-	<i>Arduino Science Journal</i>		<i>FMSLogo</i> <i>iMotion</i>
Year 5	Systems and Searching	Crumbles		Flat-file Databases Video Production
Hardware	<i>Laptops</i>	<i>Crumble Kit and Laptops</i>		<i>Laptops or iPads</i> <i>Laptops and iPads</i>
Software	<i>Microsoft PowerPoint</i>	-		j2data Database <i>Microsoft Video Editor</i>
Year 6	Communication and Collaboration	Webpage Creation		Spreadsheets Micro:bit
Hardware	<i>Laptops</i>	<i>Laptops</i>		<i>Laptops</i> <i>Micro:bit kit and Laptops</i>
Software	<i>Microsoft PowerPoint</i>	Google Sites		<i>Microsoft Excel</i> Microsoft MakeCode



This is the Online Safety Long Term Plan. It is a range of tasks that prepare children for safely using technology in the wider world.

Digital Literacy: Online Safety Lessons linked to Education for a Connected World			
Online safety lessons make up part of a Computing lesson or can be standalone depending on task			
	Term 1	Term 2 - Safer Internet Day	Term 3
Nursery		Online Bullying	Self-image and Identity
Reception	Privacy and Security Online reputation	Managing Online Information Health, wellbeing and lifestyle	Online Relationships
Year 1	Online Bullying Health, wellbeing and lifestyle Copyright and Ownership	Self-Image and Identity Online Reputation	Online Relationships Managing Online Information
Year 2	Self-Image and Identity Managing Online Information	Online Relationships Online Bullying	Online Reputation Privacy and Security
Year 3	Self-Image and Identity Online Relationships	Online Reputation Managing Online Information	Online Bullying
Year 4	Self-Image and Identity Online Relationships	Online Reputation Online Bullying Health, wellbeing and lifestyle	Online relationships Privacy and security
Year 5	Self-Image and Identity Online Relationships	Privacy and security Health, Wellbeing and lifestyle	Online Bullying. Managing Online Information Copyright and ownership
Year 6	Self-Image and Identity Managing Online information	Privacy and security Online Bullying	Copyright and ownership Online Reputation



This is the Progression of Skills for Computing. It starts with the topic name and the area of computing it fits into. Then, the national curriculum objective is shown and broken down into smaller steps of knowledge and skills. Finally, vocabulary relevant to the topic is shown.

Early Years Foundation Stage		
Nursery	Personal, Social and Emotional Development	Remember rules without needing an adult to remind them.
	Physical Development	Match their developing physical skills to tasks and activities in the setting.
	Understanding the World	Explore how things work.
Reception	Personal, Social and Emotional Development	Show resilience and perseverance in the face of a challenge. Know and talk about the different factors that support their overall health and wellbeing: sensible amounts of 'screen time'.
	Physical Development	Develop their small motor skills so that they can use a range of tools competently, safely and confidently.
	Expressive Arts and Design	Explore, use and refine a variety of artistic effects to express their ideas and feelings.

<p>In addition to the above, Nursery and Reception complete activities based around computational thinking concepts and approaches. These help to teach the children the necessary problem-solving skills needed for computing in year one and for everyday life. The activities are outlined above in the long term plan.</p> <p>The units in the progression document are split into the three categories on the right. Please see the relevant definitions to fully understand the curriculum.</p>	<p>Computer Science</p> <p>How computers and computer systems work & how they are designed and programmed</p> <p>Foundations</p>	<p>Information Technology</p> <p>The purposeful use of existing programs to develop products and solutions</p> <p>Applications</p>	<p>Digital Literacy</p> <p>The skills, knowledge and understanding needed in order to participate fully and safely in an increasingly digital world.</p> <p>Implications</p>
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	Unit of Work	National Curriculum Objective	Small Steps of Knowledge and Skills	Vocabulary			
Year One	Computer Science:	Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions	- I can follow an instruction	forwards, backwards, left, right, turn, clear, go, commands, instructions, directions, plan, algorithm, program, route, robot			
			- Recognise that the order of instructions in an algorithm is important				
	Beebots (Programming A)	Create and debug simple programs	- Combine four direction commands to make a sequence		- Control a floor robot		
			- Debug my program		- Plan a simple program		
			- Test the programs I have created		- Explain what my program should do		
			- Predict the outcome of a command on a device		- Predict the outcome of a sequence of commands		
			Digital Literacy:		Recognise common uses of information technology beyond school	- Identify technology in my life	technology, computer, mouse, trackpad, keyboard, screen, typing, double-click
						- Explain technology as something that helps us	
	Technology Around Us		- Identify a computer and its main parts (screen, mouse, keyboard)	- Use a mouse in different ways			
			- Use a keyboard to type on a computer	- Save and open my work			
			Information Technology:	Use technology purposefully to create, organise, store, manipulate and retrieve digital content	- Label objects	object, label, group, search, image, property, data set, value	
					- Identify that objects can be counted		
	Grouping Data		- Describe properties	- Count and group objects			
			Information Technology:	Use technology purposefully to create, organise, store, manipulate and retrieve digital content	- Use the freehand, shape, fill and line tools		program, paintbrush, shape tools, line tool, fill tool, undo tool, brush style, computers
	- Change colour and brush styles						
	Digital Painting	- Make careful choices when painting a digital painting					

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	Unit of Work	National Curriculum Objective	Small Steps of Knowledge	Vocabulary
Year Two	Computer Science:	Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions	- Recognise the importance of giving clear instructions	sequence, command, program, run, start, outcome, predict, blocks, sprite, algorithm, design, build, actions, project, modify, debug, evaluate
			- Identify that a program needs to be started	
	Scratch Jr (Programming B)	Create and debug simple programs	- Create an algorithm to meet my goal	
			- Test and debug each part of the program	
			- Decide the most appropriate blocks to use to meet my design	
			- Build the sequences of blocks I need	
	Use logical reasoning to predict the behaviour of simple programs	- Explain what my algorithm should achieve		
		- Predict the outcome of a sequence using the sprites in the algorithm		
		- Recognise the uses and features of information technology	information technology (IT), computer, barcode, scanner/scan	
	Digital Literacy:	- Identify that a computer is a part of information technology		
		Information Technology Around Us		- Identify the uses of information technology in the school
				- Talk about uses of information technology beyond school eg. In a shop
	Information Technology: Pictograms	Use technology purposefully to create, organise, store, manipulate and retrieve digital content	- Recognise that objects can be represented as pictures	tally chart, data, total, organise, enter, compare, pictogram, attribute, group, conclusion, block diagram
			- Create a pictogram	
			- Select objects by attribute	
- Explain that we can present information using a computer				
Information Technology: Digital Writing	Use technology purposefully to create, organise, store, manipulate and retrieve digital content	- Use letters, numbers, space and back key	word processor, keyboard, leys, letters, type, space, backspace, text cursor, caps lock, toolbar, bold, italic, underline, select, font, undo, redo, format	
		- Type capital letters		
		- Use the arrow keys to move the cursor		
		- Use bold, italic and underline		
		- Change the font style, size and colour		
- Explain why I used the tools I choose				



Year Three	Unit of Work	National Curriculum Objective	Small Steps of Knowledge	Vocabulary	
	Computer Science: Scratch (Programming A)	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems	Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	Successfully modify a program	search, programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, sequence, event, task, design, order, algorithm, bug, debug
				Create a sequence of commands using a block language to produce a given outcome	
				Debug errors to accomplish specific goals	
		Identify different sequences can achieve the same outcome			
		Explain how the order (sequence) of commands can effect the outcome (same commands, different order -> same or different outcome)			
	Solve problems by decomposing them into smaller parts	Work with others to decompose a problem into smaller steps in planning a project			
	Computer Science: Connecting Computers	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 logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Explain how digital devices function (input, output, process)	device, input, process, output, program, digital, non-digital, connection, network, network switch, server, wireless access point, cables, sockets
				Identify input and output devices	
				Explain how a computer network can be used to share information	
Recognise the physical components of a network (switch, sever, wireless access point)					
Information Technology: Branching Databases	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 logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Identify object attributes needed to collect relevant data	attribute, value, questions, table, objects, branching database, structure, order, selecting, information, decision tree	
			Create a branching database		
			Identify objects using a branching database		
			Compare branching database structures and comment on their effectiveness		
			Compare information shown in a pictogram with a branching database		
			Explain that data can be used to answer questions		
Information Technology: Digital Photography	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 logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Use a digital device to take a photograph	device, camera, photograph, capture, image, digital, landscape, portrait, framing, subject, composure, light sources, flash, focus, background, editing, filter, format	
			Take photos landscape and portrait		
			Explore the effect of light on a photo		
			Recognise that images can be altered		
			Use tools to change an image		



	Unit of Work	National Curriculum Objective	Small Steps of Knowledge	Vocabulary
Year Four	Computer Science: Text-based Programming (Programming A)	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems	Plan a program using text-based coding language which includes repetition	program, turtle, commands, code snippet, algorithm, design, debug, pattern, repeat, repetition, count-controlled loop, value, trace, decompose, procedure
			Debug errors in increasingly complex programs to accomplish specific goals	
			Evaluate the effectiveness of a program	
		Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	Identify patterns (repetition) in a sequence	
			Understand repetition in programming is also called looping	
			Identify a loop in a program	
			Understand and justify when to use 'infinite' or 'count-controlled' loops	
	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Explain the importance in instruction order in a loop		
		Solve problems by decomposing them into smaller parts	Independently decompose a problem into smaller steps in planning a project	
	Computer Science: The Internet	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	Describe how networks physically connect to other networks	internet, network, router, security, network switch, server, wireless access point (WAP), website, web page, web address, browser, world wide web, hyperlink, content, files, download, ownership, permission, adverts
			Describe the internet as a network of networks	
			Describe how the world wide web is part of the internet	
			Describe how content can be added and accessed on the World Wide Web	
		Recognise how the content of the World Wide Web is created and shared by people		
		Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	Use a standard search engine to find information	
	Understand that search engines rank pages according to relevance.			
	Information Technology: Data Logging	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	Collect data using a digital device	data, table, layout, input device, sensor, data logger, data point, interval, analyse, data set, import, export, collection, conclusion
			Recognise that a sensor can be used as an input device for data collection	
			Use a larger data set to find information	
			Use a computer program to sort data by one attribute	
Export information and present data in a table and a graph				
Interpret data that has been collected and draw conclusions				
Information Technology: Stop-frame Animation	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	Understand how animation works	animation, flip book, stop-frame animation, frame, sequence, image, photograph, events, onion skinning, consistency, delete, evaluation, media, import, transition	
		Plan an animation		
		Use onion skinning to create small changes between frames		
		Review and improve an animation		
		Add and evaluate the impact of adding other media to an animation		



	Unit of Work	National Curriculum Objective	Small Steps of Knowledge	Vocabulary
Year Five	Computer Science: Crumbles (Programming A)	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems	Plan a program which includes selection to produce a given outcome	microcontroller, components, connection, infinite loop, output component, motor, repetition, count-controlled loop, motor, switch, LED, crocodile clips, battery, program, condition, input, output, action, selection, debug
			Debug errors in increasingly complex programs to accomplish specific goals	
			Evaluate the effectiveness of a program and ways it could be improved	
		Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	Define that conditional statements (selection) are used in computer programs	
			Program a microcontroller to control lights and a motor	
			Use a condition in an if...then... statement to produce a given outcome	
			Explain a loop can stop when a condition is met (number of times or event)	
	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Explain that a program flow can branch according to a condition		
		Solve problems by decomposing them into smaller parts	Plan a solution to a problem using decomposition	
	Computer Science: Systems and Searching	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	Explain that computers can be connected together to form systems	System, connection, digital, input, process, output, search, search engine, refine, index, web crawler, bot, ranking, hyperlinks, algorithm, search engine optimisation (SEO), content creator, selection
			Describe a computer system	
			Recognise the role of computer systems in our lives	
			Recognise how information is transferred over the internet using packets	
			Explain how sharing information online lets people in different places work together	
		Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	Evaluate different ways of working together online	
			Use filters to make more effective use of a standard search engine	
	Information Technology: Flat-file Databases	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	Understand that search engines use a cached copy of the crawled web to select and rank results	database, data, information, record, field, sort, order, group, search, criteria, graph, chart, filter, presentation
			Explain 'fields' and 'records'	
			Navigate a flat -file database	
			Apply knowledge of a database to ask and answer real -world questions	
Design a structure for a flat -file database				
Choose tools to select and analyse data to answer questions				
Use 'AND' and 'OR' to refine data selection				
Select an appropriate graph to visually compare data				
Information Technology: Video Production	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	Identify the features of a good video	Video, audio, camera, talking head, panning, close up, lens, range, long shot, angle, side-by-side, static camera, zoom, pan, tilt, storyboard, filming, import, split, trim, edit, reshoot, delete, reorder, export, evaluate, share	
		Plan a video production using a story board		
		Use a computer to make a video		
		Make edits to a video to improve the outcome		
		Consider the impact of changes made on the quality of the video		



	Unit of Work	National Curriculum Objective	Small Steps of Knowledge	Vocabulary		
Year Six	Computer Science: Micro:bit (Programming B)	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems	Plan a program which includes variable to produce a given outcome	Micro:bit, MakeCode, input, process, output, flashing, USB, trace, selection, condition, variable, random, sensing, accelerometer, algorithm, step counter, plan, create, code, test, debug		
			Test programs on an emulator			
			Use a range of approaches to debug errors in increasingly complex programs to accomplish specific goals			
		Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	Define 'variable' as something that is changeable			
			Identify a variable in an existing program			
			Use a variable in a conditional statement to control the flow of a program			
	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Program a microcontroller with selection and variables				
		Solve problems by decomposing them into smaller parts	Explain that a variable has a name and a value			
	Computer Science: Communication and Collaboration	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	Solve problems using decomposition, tackling each part separately		Describe different ways people communicate online	communication, protocol, data, address, Internet Protocol (IP) address, Domain Name Server (DNS), packet, header, data payload, chat, slide deck, reuse, remix, collaboration, internet, public, private
			Choose a method of communication to suit a particular purpose			
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content		Use of a range of search engines appropriate to finding information that is required				
		Understand that search engines rank pages based on the number and quality of inbound links				
Information Technology: Spreadsheets	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	Identify questions that can be answered using data	data, collecting, table, structure, spreadsheet, cell, cell reference, data item, format, formula, input, output, calculation, range, duplicate, sigma, comparison, software, tools, evaluate, results, chart			
		Create a spreadsheet for a purpose				
		Apply a formula that can be used to produce calculated data				
		Recognise data can be calculated using different operations				
		Evaluate results in comparison to the question asked				
		Choose suitable ways to presents data such as a graph				
Information Technology: Video Production	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	Recognise components of a webpage layout	website, web page, browser, media, Hypertext Markup Language (HTML), logo, layout, header, media, purpose, copyright, far use, home page, preview, evaluate, device, breadcrumb trail, navigation, hyperlink, subpage, implication, external link, embed			
		Create a webpage including text, images, hyperlinks and embedded content				
		Understand the need for a navigation path				



National Curriculum Objective	
Key Stage Three	design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems
	understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem
	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 [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions
	understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]
	understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems
	understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits
	undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users
	create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability
	understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns