Computing at Hillside Primary School

Updated: July 2024

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
EYFS	Barefoot Computing – Parts of our Bodies Barefoot Computing – How we Grow		Barefoot Computing – Seed Sequencing Barefoot Computing – Junk Scarecrow		Barefoot Computing – Summer Colours Barefoot Computing – Fun Journeys
Year 1	**Technology Around Us**		**Digital Painting**	**Scratch Jr - Animations**	**BeeBots**
Hardware	Laptops or iPads		iPads	iPads	Beebot Floor Robots
Software	*paintz.app*		*paintz.app*	Scratch Jr App	-
Year 2	**Information Technology Around Us**		**Digital Writing**	**Scratch Jr - Quizzes**	**Pictograms**
Hardware	Laptops		Laptops	iPads	Laptops or iPads
Software	-		Microsoft Word	Scratch Jr App	*j2data Pictogram*
Year 3	**Connecting Computers**	**Scratch – Sequencing Sound**	**Scratch – Events and Actions**		**Digital Photography**
Hardware	iPads	Laptops or iPads	Laptops or iPads		Laptops and iPads
Software	*paintz.app*	*Scratch*	*Scratch*		*Pixlr*
Year 4	**The Internet**		**Data Logging**	**Scratch – Repetition in games**	**Stop-frame Animation**
Hardware	Laptops and iPads		iPads and VU+ Dataloggers	Laptops or iPads	iPads
Software	-		Arduino Science Journal OR Easy Sense 2	*Scratch*	iMotion
Year 5	**Systems and Searching**		**Crumbles**	**Scratch – Selection in Quizzes**	**Video Production**
Hardware	Laptops		Crumble Kit and Laptops	Laptops or iPads	Laptops and iPads
Software	Microsoft PowerPoint		Crumble	*Scratch*	Microsoft Video Editor
Year 6	**Communication and Collaboration**		**Webpage Creation**	**Spreadsheets**	**Micro:bit**
Hardware	Laptops		Laptops	Laptops	Micro:bit kit and Laptops
Software	Microsoft PowerPoint		Microsoft PowerPoint	Microsoft Excel	*Microsoft MakeCode*

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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.

	Term 1	Term 2 - Safer Internet Day	Term 3
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			
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.

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.

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.

Computer Science	Information Technology	Digital Literacy
How computers and computer systems work & how they are designed and programmed	The purposeful use of existing programs to develop products and solutions	The skills, knowledge and understanding needed in order to participate fully and safely in an increasingly digital world.
Foundations	**Applications**	**Implications**

	Unit of Work	National Curriculum Objective	Small Steps of Knowledge and Skills	Vocabulary
Year One	Computer Science: Beebots (Programming A)	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	
			- Combine four direction commands to make a sequence	
			- Control a floor robot	
		Create and debug simple programs	- Debug my program	
			- Plan a simple program	
			- Test the programs I have created	
		Use logical reasoning to predict the behaviour of simple programs	- 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: Technology Around Us	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	
			- 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	
	Computer Science: Scratch Jr (Programming B)	Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions	- Choose a command for a given purpose	ScratchJr, command, sprite, programming, programming area, block, background, algorithm, value, change
			- Show that a series of commands can be joined together	
		Create and debug simple programs	- Identify the effect of changing a value	
			- Explain that each sprite has its own instructions	
		Use logical reasoning to predict the behaviour of simple programs	- Design the parts of a project	
			- Use my algorithm to create a program	
	Information Technology: Digital Painting	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	
			- Make careful choices when painting a digital painting	

	Unit of Work	National Curriculum Objective	Small Steps of Knowledge	Vocabulary
Year Two	Computer Science: Scratch Jr (Programming B)	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	
		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	
	Digital Literacy: Information Technology Around Us	Recognise common uses of information technology beyond school	- Recognise the uses and features of information technology	information technology (IT), computer, barcode, scanner/scan
			- Identify that a computer is a part of information technology	
			- 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	

	Unit of Work	National Curriculum Objective	Small Steps of Knowledge	Vocabulary
Year Three	Computer Science: Scratch (Programming A)	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems	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	
		Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	Identify different sequences can achieve the same outcome	
		Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	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	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)	
	Computer Science: Scratch (Programming B)	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems	Successfully modify a program	motion, event, sprite, algorithm, logic, resize, pen up, pen down, design, debugging, errors, code, test, actions
			Create a sequence of commands using a block language to produce a given outcome	
			Debug errors to accomplish specific goals	
		Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	Identify different sequences can achieve the same outcome	
		Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	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	
	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 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	

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	Unit of Work	National Curriculum Objective	Small Steps of Knowledge	Vocabulary
Year Four	Computer Science: Scratch (Programming B)	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems	Plan a program using a block language which includes repetition	Scratch, programming, sprite, blocks, code, loop, repeat, value, infinite loop, count-controlled loop, repetition, duplicate, modify, design, debug, refine, evaluate
			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	
			Understand, identify 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	

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	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	
		Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Explain a loop can stop when a condition is met (number of times or event)	
			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	
			Evaluate different ways of working together online	
		Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	Use filters to make more effective use of a standard search engine	
			Understand that search engines use a cached copy of the crawled web to select and rank results	
	Computer Science: Scratch (Programming B)	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	Selection, condition, true, false, count-controlled loop, conditional statement, algorithm, program, debug, input, outcome, implement
			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	
		Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Explain a loop can stop when a condition is met (number of times or event)	
			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	
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	

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	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	
			Program a microcontroller with selection and variables	
		Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Explain that a variable has a name and a value	
		Solve problems by decomposing them into smaller parts	Solve problems using decomposition, tackling each part separately	
	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	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: Web Page Creation	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
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

Key Stage Three