



Christopher Pickering Computing Progression Document 2024-2025

Computing Progression Document 2024-2025



The intention for our young digital learners

The computing curriculum will:

- equip pupils to use computational thinking and creativity to understand and change the world.
- make deep links with mathematics, science and design and technology, and provides insights into both natural and artificial systems.
- teach the principles of information and computation, how digital systems work and how to put this knowledge to use through programming.
- build on this knowledge and understanding to ensure pupils are equipped to use information technology to create programs, systems and a range of content.
- enable pupils to become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

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Early Years Objectives linked to Computing			
Three and Four Year Olds	Personal, Social and Emotional Development	<ul style="list-style-type: none"> Remember rules without needing an adult to remind them. 	
	Physical Development	<ul style="list-style-type: none"> Match their developing physical skills to tasks and activities in the setting. 	
	Understanding the World	<ul style="list-style-type: none"> Explore how things work. 	
Reception	Personal, Social and Emotional Development	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Develop their small motor skills so that they can use a range of tools competently, safely and confidently. 	
	Understanding the World	<ul style="list-style-type: none"> Explore, use and refine a variety of artistic effects to express their ideas and feelings. 	
ELG	Personal, Social and Emotional Development	Managing Self	<p>Be confident to try new activities and show independence, resilience and perseverance in the face of challenge.</p> <p>Explain the reasons for rules, know right from wrong and try to behave accordingly.</p>
	Expressive Arts and Design	Creating with Materials	<p>Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</p>



Programme of Study

Key Stage 1

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. Pupils should be aiming to analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems. They will be able to evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems. Pupils are aiming to be responsible, competent, confident and creative users of information and communication technology.

Pupils should be taught to:

- (C1) Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- (C2) Create and debug simple programs
- (C3) Use logical reasoning to predict the behaviour of simple programs
- (C4) Use technology purposefully to create, organise, store, manipulate and retrieve digital content
- (C5) Recognise common uses of information technology beyond school
- (C6) 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.

Key Stage 2

Pupils should be taught to:

- (C7) design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- (C8) use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- (C9) use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- (C10) 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
- (C11) use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- (C12) 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
- (C13) use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.



Data and Information

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Data and information Progression	<p>Grouping data</p> <p>To label objects To identify that objects can be counted. To describe objects in different ways To count objects with the same properties To compare groups of objects To answer questions about groups of objects</p>	<p>Pictograms</p> <p>To understand what the term data means To collect data in the form of a tally chart To create a pictogram on a computer To select objects by attribute and make comparisons. To recognise that people can be described by attributes. To explain how we can present information using a computer.</p>	<p>Branching databases</p> <p>To create yes/no questions to gain an understanding of what attributes are and how to use them to sort groups of objects. To create physical and on-screen branching databases To create an identification tool using a branching database. To recall real-world applications for branching databases.</p>	<p>Data logging</p> <p>To use a digital device to collect data automatically. To explain that a data logger collects 'data points' from sensors over time To explain how a computer can help us analyse data. To use data from sensors to answer questions.</p>	<p>Flat file databases</p> <p>To explain how a flat-file database can be used to organise data in records. To use tools within a database to order and answer questions about data. To create graphs and charts from their data to help solve problems. To use a real-life database to answer a question and present their work to others.</p>	<p>Introduction to spreadsheets</p> <p>To organise data into columns and rows to create their own data set. To format data to support calculations, To use formulas to produce calculated data. To apply formulas that include a range of cells and apply formulas to multiple cells by duplicating them. To use spreadsheets to plan an event and answer questions. To create charts and evaluate their results in comparison to questions asked.</p>
Key vocabulary	<p>Object, label, group, search, image, label, property, colour, size, shape, value, data set, more, less, most, fewest, the same.</p>	<p>More than, less than, most, least, organise, data, object, tally chart, votes, total, compare, Pictogram, enter, count, Attribute, group, same, different, most popular, least popular, conclusion, block diagram, sharing.</p>	<p>Attribute, value, questions, table, objects, branching database, database, equal, even, separate, structure, compare, order, organise, selecting, information, decision tree.</p>	<p>Data, table, layout, Input device, sensor, data logger, logging, data point, interval, analyse, set, import, export logged, collection, analyse, review, conclusion.</p>	<p>Database, data, information, record, field, sort, order, group, search, value, criteria, graph, chart, axis, compare, filter, presentation</p>	<p>Data, collecting, table, structure, spreadsheet, Cell, cell reference, data item, format, Formula, calculation, input, output, calculate, operation, cell, range, duplicate, sigma, Propose, question, data set, organised, Chart, evaluate, results, comparison, questions, software, tools</p>



Computing Systems and Networks

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computing Systems and Networks	<p>Technology around us</p> <p>To describe how technology can help in everyday lives. To list different components of a computer. To develop the use keyboard and mouse skills. To describe how to use technology responsibly.</p>	<p>Information technology around us</p> <p>To describe where information technology is used in the home. To describe how information technology benefits the society in places such as shops, libraries and hospitals. To describe how to use technology responsibly and how to make smart choices when using it.</p>	<p>Connecting computers</p> <p>To explain inputs processes and outputs of digital devices. To compare digital and non-digital devices. To explain how a computer network can be used to share information. To recall how digital devices can be connected. To list some of the physical components of a network</p>	<p>The internet</p> <p>To describe how networks physically connect to other networks. To recall how networked devices, make up the internet To outline how websites can be shared via the World Wide Web and describe how content can be added and accessed. To recognise how the content of the WWW is created by people To evaluate the consequences of unreliable content</p>	<p>Systems and searching</p> <p>To explain how computers can be connected together to form systems To recognise the role of computer systems in our lives To explain the input, output, and process aspects of a variety of different real-world system. To explain how information is found on the World Wide Web, To explain what influences searching</p>	<p>Communication and collaboration</p> <p>To explain the importance of internet addresses To summarise how data is transferred over the internet. To complete shared projects online and evaluate different methods of communication. To communicate responsibly by considering what should and should not be shared on the internet.</p>
Key Vocabulary	<p>Technology Computer, mouse, trackpad, keyboard, screen, double-click, typing</p>	<p>Information technology (IT), computer, barcode, scanner/scan</p>	<p>Digital device, input, process, output Program, digital, non-digital Connection, network, network switch Server, wireless access point Network cables, network sockets</p>	<p>Internet, network, router, network security, Network switch, server, wireless access point (WAP), Website, web page, web address, routing, web browser, World Wide Web, content, links, files, download, sharing, ownership, permission, use, Information, accurate, honest, adverts</p>	<p>System, connection, digital, input, process, output Search, search engine, refine Index, crawler, bot, search engine Ordering, ranking, links, algorithm, search engine optimisation (SEO) Searching, web crawler, content creator, selection</p>	<p>Communication, protocol, data, address, Internet Protocol (IP) address, Domain Name Server (DNS) Packet, header, data payload Chat, explore, slide deck Reuse, remix, collaboration Communication, internet public, private, one-way, two-way, one-to-one, one-to-many</p>



Programming A

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Programming A	<p>Moving a robot</p> <p>To explain what a given command will do</p> <p>To act out a given word</p> <p>To combine 'forwards' and 'backwards' commands to make a sequence</p> <p>To combine four direction commands to make sequences</p> <p>To plan a simple program</p> <p>To find more than one solution to a problem</p>	<p>Robot algorithms</p> <p>To describe a series of instructions as a sequence</p> <p>To explain what happens when we change the order of instructions</p> <p>To use logical reasoning to predict the outcome of a program</p> <p>To explain that programming projects can have code</p> <p>To design an algorithm</p> <p>To create and debug a program that I have written</p>	<p>Sequencing sounds</p> <p>To explore a new programming environment</p> <p>To identify that commands, have an outcome</p> <p>To explain that a program has a start</p> <p>To recognise that a sequence of commands can have an order</p> <p>To change the appearance of my project</p> <p>To create a project from a task description</p>	<p>Repetition in shapes</p> <p>To explain why accuracy in programming is important</p> <p>To create a program in a text-based language</p> <p>To explain what 'repeat' means</p> <p>To modify a count-controlled loop to produce a given outcome</p> <p>To decompose a task into small steps</p> <p>To create a program that uses count-controlled loops to produce a given outcome</p>	<p>Selection in physical computing</p> <p>To control a simple circuit connected to a computer</p> <p>To write a program that includes count-controlled loops</p> <p>To explain that a loop can stop when a condition is met</p> <p>To explain that a loop can be used to repeatedly check whether a condition has been met</p> <p>To design a physical project that includes selection</p> <p>To create a program that controls a physical computing project</p>	<p>Variables in games</p> <p>To define a 'variable' as something that is changeable</p> <p>To explain why a variable is used in a program</p> <p>To choose how to improve a game by using variables</p> <p>To design a project that builds on a given example</p> <p>To use my design to create a project</p> <p>To evaluate my project</p>
Key Vocabulary	<p>Forwards, backwards, turn, clear, go, commands, Instructions, directions, Left, right, turn, Plan, algorithm, program route</p>	<p>Instruction, sequence, clear, unambiguous, algorithm, program, order, prediction, Artwork, design, route, mat, Debugging, decomposition</p>	<p>Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop</p> <p>Sprites, motion, turn, point in direction, go to, glide, Sequence, event, task, design, code, run the code, Sequence, order, note, chord, costume, algorithm, bug, debug</p>	<p>Program, turtle, Commands, Code snippet, algorithm, design, debug, logo, pattern, repeat, repetition, count-controlled loop, value, trace, decompose, procedure</p>	<p>Microcontroller, components, connection, infinite loop, output component, motor, repetition, count-controlled loop, Crumble controller, switch, motor, LED, sparkle, crocodile clips, Input, output, selection, condition, action</p> <p>connect, battery box, program, condition, Selection, action, repetition, debug</p>	<p>Variable, change, name, value, set, change, design, event, algorithm, code, Task, artwork, program, project, test, debug, Improve, evaluate, share</p>



Programming B

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Programming B	<p>Programming animations To choose a command for a given purpose</p> <p>To show that a series of commands can be joined together</p> <p>To identify the effect of changing a value</p> <p>To explain that each sprite has its own instructions</p> <p>To design the parts of a project</p> <p>To use my algorithm to create a program</p>	<p>Programming quizzes</p> <p>To explain that a sequence of commands has a start</p> <p>To explain that a sequence of commands has an outcome</p> <p>To create a program using a given design</p> <p>To change a given design</p> <p>To create a program using my own design</p> <p>To decide how my project can be improved</p>	<p>Events and actions in programs</p> <p>To explain how a sprite moves in an existing project</p> <p>To create a program to move a sprite in four directions</p> <p>To adapt a program to a new context</p> <p>To develop my program by adding features</p> <p>To identify and fix bugs in a program</p>	<p>Repetition in games</p> <p>To develop the use of count-controlled loops in a different programming environment</p> <p>To explain that in programming there are infinite loops and count-controlled loops</p> <p>To develop a design that includes two or more loops which run at the same time</p> <p>To modify an infinite loop in a given program</p> <p>To design a project that includes repetition</p> <p>To create a project that includes repetition</p>	<p>Selection in quizzes</p> <p>To explain how selection is used in computer programs</p> <p>To relate that a conditional statement connects a condition to an outcome</p> <p>To explain how selection directs the flow of a program</p> <p>To design a program that uses selection</p> <p>To create a program that uses selection</p> <p>To evaluate my program</p>	<p>Sensing</p> <p>To create a program to run on a controllable device</p> <p>To explain that selection can control the flow of a program</p> <p>To update a variable with a user input</p> <p>To use a conditional statement to compare a variable to a value</p> <p>To design a project that uses inputs and outputs on a controllable device</p> <p>To develop a program to use inputs and outputs on a controllable device</p>
Key Vocabulary	ScratchJr, Bee-Bot, command, sprite, compare, programming, programming area Block, joining, start block, run, program, background, delete, reset, algorithm, predict, effect, change, value, block, instructions, sprite, program, appropriate, design, programming blocks	Sequence, command, program, run, start, outcome, predict, blocks, design, blocks, Actions, sprite, project, modify, change, algorithm, build, match, Compare, design, debug, program, features, evaluate	Motion, event, sprite, algorithm, logic, Move, resize, extension block, pen up, set up, design, action, Debugging, errors, setup, code test, debug	Scratch, programming, sprite, blocks, code, loop, repeat, value, Block, repeat, forever, infinite loop, count-controlled loop, costume, repetition, forever, infinite loop, count-controlled loop, animate, costume, event block, duplicate, modify design, repetition, algorithm, debug, refine, evaluate	Selection, condition, true, false, count-controlled loop, outcomes, conditional statement (the linking together of a condition and outcomes), question, answer, algorithm, program, debug, Task, design, input, program, Implement, design, test, run, setup	Micro: bit, MakeCode, input, process, output, flashing, USB, trace, Selection, condition, if then else, variable, random, sensing, accelerometer, value, Compass, direction, navigation, design, task, algorithm, variable, step counter, Plan, create, code, test, debug



Creating Media, A

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Creating Media A	<p>Digital painting</p> <p>To use a range of tools for digital painting</p> <p>To express preferences when painting with and without the use of digital devices.</p>	<p>Digital photography</p> <p>To list devices that can be used to capture photographs</p> <p>To capture, edit, and improve photos.</p> <p>To recall that images, they see, may not be real.</p>	<p>Stop frame animation</p> <p>To explain what animation is (a sequence of drawings or photographs)</p> <p>To create an animation To review and improve an animation</p> <p>To evaluate the impact of adding other media to an animation</p>	<p>Audio production</p> <p>To identify the input device (microphone) and output devices (speaker or headphones) required to work with sound digitally.</p> <p>To explain the ownership of digital audio and the copyright implications of duplicating the work of others.</p> <p>To produce an audio piece which will include editing their work, adding multiple tracks, and opening and saving the audio files.</p> <p>To evaluate audio recordings created by themselves and their peers</p>	<p>Video production</p> <p>To use a digital device to record video</p> <p>To develop the skills of capturing, editing, and manipulating videos</p> <p>To improve videos through reshooting and editing</p> <p>To evaluate the impact of the choices made when making and sharing a video</p>	<p>Webpage creation</p> <p>To review an existing website and consider its structure</p> <p>To create a website for a chosen purpose</p> <p>To consider the ownership and use of images (copyright)</p> <p>To define the need for a navigation path</p> <p>To review the implications of linking to content owned by other people</p>
Key Vocabulary	paint program, tool, paintbrush, erase, fill, undo, Piet Mondrian, primary colours, shape tools, line tool, fill tool, undo tool, Henri Matisse, shape tool, Wassily Kandinsky, feelings, colour, brush style, Georges Seurat, pointillism pictures, painting, computers, like, prefer, dislike	Device, camera, photograph, capture, image, digital, Landscape, portrait, Light sources, flash, focus, background, Framing, subject, compose, Editing, filter, Format, framing, lighting, focus, filter	Animation, flip book, Stop-frame animation, frame, sequence, image, photograph, Setting, character, events, onion skinning, consistency, evaluation, delete, frame, media, import, transition	Audio, microphone, speaker, headphones, input device, output device, sound, podcast, edit, trim, align, layer, import, record, playback, edit, selection, load, import, save, export, MP3, editing, evaluate, feedback	Video, audio, camera, talking head, panning, close up, microphone, lens, close up, mid-range, long shot, moving subject, side by side, high angle, low angle, normal angle, Static camera, zoom, pan, tilt, storyboard, Storyboard, filming, review, Import, split, trim, clip, edit, reshoot, Delete, trim, reorder, export, evaluate, share	Website, web page, browser, media, Hypertext Mark-up Language (HTML), logo, layout, header, media, purpose, Copyright, fair use, home page, preview, evaluate, device, Google Sites, breadcrumb trail, navigation, hyperlink, subpage, Hyperlink, evaluate, implication, external link, embed



Creating Media B

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Creating Media B	<p>Digital writing</p> <p>To open a word processor and recognise keys on a keyboard</p> <p>To type on a keyboard</p> <p>To use tools to change the look of writing</p> <p>To compare the differences between using a computer and writing on paper to create text.</p>	<p>Digital music</p> <p>To experiment with sound using a computer</p> <p>To use a computer to create a musical pattern</p> <p>To review and refine our computer work</p>	<p>Desktop publishing</p> <p>To recognise how text and images convey information</p> <p>To use desktop publishing software and consider careful choices of font size, colour and type to edit and improve premade documents.</p> <p>To recall the terms 'templates', 'orientation', and 'placeholders'.</p> <p>To add text and images to create their own pieces of work using desktop publishing software.</p> <p>To evaluate the benefits of desktop publishing</p>	<p>Photo editing</p> <p>To describe how digital images can be changed and edited</p> <p>To explain how images can be resaved and reused.</p> <p>To evaluate the impact that editing images can have and evaluate the effectiveness of their choices.</p>	<p>Vector drawing</p> <p>To create vector drawings</p> <p>To use different drawing tools to help them create images.</p> <p>To recall that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object.</p> <p>To layer their objects and begin grouping and duplicating them to support the creation of more complex pieces of work.</p>	<p>3D Modelling</p> <p>To work in a 3D space, moving, resizing, and duplicating objects.</p> <p>To create hollow objects using placeholders and combine multiple objects to create a model of a desk tidy.</p> <p>To examine the benefits of grouping and ungrouping 3D objects</p> <p>To plan, develop, and evaluate their own 3D model of a building</p>
	Key Vocabulary	Word processor, keyboard, keys, letters, type, Numbers, space, backspace, text cursor, Capital letters, toolbar, bold, italic, underline, Mouse, select, font, Undo, redo, font, format, Compare, typing, writing	Music, planets, Mars, Venus, war, peace, quiet, loud, feelings, emotions, Pattern, rhythm, pulse, Neptune, pitch, tempo, notes, instrument, Create, emotion, pulse/beat, Open, edit	Text, images, advantages, disadvantages, communicate, Font, font style, template, Landscape, portrait, orientation, placeholder, layout, content, Desktop publishing, copy, paste, Layout, purpose, benefits	Image, edit, digital, crop, rotate, undo, save, Image, adjustments, effects, colours, hue, saturation, sepia, vignette, retouch, clone, select, copy, paste, combine, made up, real, composite, cut, alter, background, foreground, Rotate, crop, zoom, select, font	Vector, drawing tools, object, toolbar, move, resize, colour, rotate, duplicate/copy, Zoom, select, rotate, align, resize, modify layers, order, Copy, paste, group, ungroup, duplicate, drawing, reuse, reflection

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