Computing curriculum

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Intent

At Sherrier Primary School we aim to ensure that all of our pupils have access to a computing curriculum so that they have opportunities to gain knowledge and develop skills that will equip them for an ever-changing digital world. We believe the knowledge, skills and understanding taught through our curriculum will empower our pupils to become more computer literate.

Each child is taught the core computing principles of:
- Programming
- Algorithms
- Creating Programs
- Reasoning
- Using Technology
- Uses of IT beyond school
- Safe use

As they progress from Foundation, through KS1 and onto KS2, children will become increasingly confident in the application of their digital skills, becoming increasingly efficient and effective communicators, collaborators and analysts, showing imagination and creativity in their use of ICT in different aspects of their learning and life beyond school.

Implementation

Discrete computing lessons in our Computing suite, and through the use of laptops and iPads, ensure that the pupils are able to gain a more secure understanding of the knowledge and skills within our curriculum. At times, some aspects of computing lessons may be taught as 'unplugged' sessions in the classroom. In addition, when appropriate, computing may be used as a vehicle for the children to present their learning in other subject areas.

Computing lessons cover the National Curriculum areas; Digital Literacy, Information Technology and Computer Science through the five strands highlighted above.

Internet safety is a priority at Sherrier. Regular Internet safety lessons are delivered through our RSHE scheme Jigsaw. We also build on the content of the taught e-safety strand and are responsive to children's interests and parental concerns.

Staff are empowered to use the Computing planning document as a starting point for selecting suitable, matching resources for their classes. The activities that are generated/designed as a result are used as an opportunity to make assessments about the key skills from each strand. These assessments are then tracked used the Evolve assessment

system where the subject lead can monitor and evaluate outcomes in the subject. Further detail about what and when computing is taught in each year group can be found in the long-term curriculum plans.

Staff and children have access to a range of hardware and software to support them with teaching and learning in computing including; tablets, PC's, laptops and programmable robots.

Impact

By the time the children at Sherrier leave our school they should have developed:

- Competency and skills to stay safe while using the internet
- A strong understanding of how technology works
- Skills to express themselves and be creative using digital media.
- Be equipped to apply their skills in computing to different challenges.

National curriculum coverage:

Pupils Should be taught to:	Year 1			Year 2		
	AUT	SPR	SUM	AUT	SPR	SUM
1. Recognise common uses of information technology beyond school.	Aut1		Sum1	Aut2		
2. Use technology purposefully to create, organise, store, manipulate and retrieve digital content.	Aut1 Aut2		Sum1 Sum2	Aut1	Spr2	Sum2
3. Use technology safely and respectfully, keeping personal information private.		Spr1	Sum1 Sum2			Sum1 Sum2
4. Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.		Spr2	Sum1		Spr1	Sum2
5. Create and debug simple programs.		Spr2	Sum1		Spr1	Sum2
6. Use logical reasoning to predict the behaviour of simple programs.		Spr2	Sum1		Spr1	Sum2

Pupils Should be taught to:	Year 3			Year 4		
	AUT	SPR	SUM	AUT	SPR	SUM
1. Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Aut2	Spr2		Aut1 Aut2		
2. Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.	Aut1 Aut2	Spr2		Aut1 Aut2		Sum2
3. Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	Aut2	Spr2		Aut1 Aut2		
4. 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.	Aut1				Spr2	
5. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.		Spr1	Sum2		Spr1	
6. 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.	Aut1 Aut2	Spr1 Spr2	Sum1 Sum2		Spr1	Sum1 Sum2
7. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.			Sum1			Sum1

	Year 5			Year 6		
	AUT	SPR	SUM	AUT	SPR	SUM
Pupils Should be taught to:						
1. Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Aut1	Spr1	Sum2	Aut1		
2. Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.		Spr1	Sum2			
3. Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.		Spr1	Sum2			
4. 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.	Aut1			Aut1		
5. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.				Aut1		
6. 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.	Aut1 Aut2	Spr2	Sum1	Aut1 Aut2	Spr1 Spr2	Sum1 Sum2
7. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	Aut1			Aut1 Aut2	Spr1	Sum1 Sum2

Computing overview

	Autumn		Spring		Summer	
	Computing systems and network	**Creating media A**	**Programming A**	**Data and information**	**Creating media B**	**Programming B**
EYFS	• Show resilience and perseverance in the face of a challenge. • Know and talk about the different factors that support their overall healthand wellbeing: sensible amounts of 'screen time'. • Develop their small motor skills so that they can use a range of tools competently,safely and confidently. • Explore, use and refine a variety of artistic effects to express their ideasand feelings. **ELG**: • Be confident to try new activities and show independence, resilience andperseverance in the face of challenge. • Explain the reasons for rules, know right from wrong and try to behave accordingly. • Safely use and explore a variety of materials, tools and techniques, experimentingwith colour, design, texture, form and function.					
Year 1	**Technology around us** Recognising technology in school and using it responsibly.	**Digital painting** Choosing appropriate tools in a program to create art and making comparisons with working non-digitally.	**Moving a robot** Writing short algorithms and programs for floor robots and predicting program outcomes	**Grouping data** Explore object labels, then using them to sort and group objects by properties.	**Digital writing** Using a computer to create and format text, before comparing to writing non-digitally.	**Programming animations** Designing and programming the movement of a character on screen to tell stories.
Year 2	**Information technology around us** Identifying IT and how it is used to improve our school and beyond.	**Digital photography** Capturing and changing digital photographs for different purposes.	**Robot algorithms** Creating and debugging programs and using logical reasoning to make predictions.	**Pictograms** Collecting data in tally charts and using attributes to organise and present data on a computer.	**Making music** Using a computer as a tool to explore rhythms and melodies, before creating a musical composition.	**Programming quizzes** Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz.
Year 3	**Connecting computers**	**Stop-frame animation**	**Sequencing sounds** Creating sequences in a block-based	**Branching databases** Building and using branching databases	**Desktop publishing** Creating documents by modifying text,	**Events and actions in programs**

	Identifying that digital devices and inputs, and outputs, and how devices can be connected to make setworks	Capturing and editing digital still images to produce a stop-frame animation that tells a story	programming language to make music.	to group objects using yes.no questions.	images and page layouts for a specified purpose.	Writing algorithms and programs that use a range of events to trigger sequences of actions.
Year 4	**The internet** Recognising the internet as a network of networks including the WWW, and why we should evaluate online content.	**Audio editing** Capturing and editing audio to produce a podcast, ensuring that copyright is considered.	**Repetition in shapes** Using a text-based programming language to explore count-controlled loops when drawing shapes.	**Data logging** recognise how and why data is collected over time, before using data loggers to carry out an investigation.	**Photo editing** Manipulating digital images, and reflecting on the impact of changes and whether the required purpose is fulfilled.	**Repetition in games** Using a block-based programming language to explore count-controlled and infinite loops when creating a game.
Year 5	**Sharing information** Identifying and exploring hoe information is shared between digital systems.	**Video editing** Planning, capturing and editing video to produce a short film.	**Selection in physical computing** Exploring conditions and selection using a programmable microcontroller	**Flat-file databases** Using a database to order data and create charts to answer questions.	**Vector drawing** Creating images in a drawing program by using layers and groups of objects.	**Selection in quizzes** Exploring selection in programming to design and code an interactive quiz.
Year 6	**Internet communication** Recognising how the WWW can be used to communicate and be searched to find information.	**Webpage creation** Designing and creative webpages, considering copyright, aesthetics, and navigation.	**Variables in games** Exploring variables when designing and coding a game.	**Introduction to spreadsheets** Answering questions by using spreadsheets to organise and calculate data.	**3D modelling** Planning, developing and evaluating 3D computer models of physical objects.	**Sensing** Designing and coding a project that captures inputs from a physical device

Key Concept knowledge

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computing systems and networks						
See progression of skills and vocabulary.	To explain that technology is something that can help us.	To recognise different types of computers used in school.	To recognise that a digital device is made up of several parts. To recognise that a network is made up of a number of components.	To recognise that the World Wide Web is part of the internet. To outline how information can be shared via the World Wide Web.	To explain that computers can be connected together to form IT systems. To relate that search engines are examples of large IT systems.	To recognise that connections between computers, allow access to shared stored files. To recognise computers connected to the Internet allow people in different places to work together.
Presenting Information and Creating Multimedia						
	To recognise computers can be used to create art. To recognise that a keyboard is used to enter text into a computer. To recognise that the appearance of text can be changed.	To recognise that some digital devices can capture images using a camera. To recognise that photographs can be changed after they have been taken. To identify that computers can be used to play sounds or different instruments.	To explain that an animation is made up of a sequence of images. To recognise how text and images can be used together to convey information. To recognise how different font styles and effects are used for particular purposes.	To identify that an input device is needed to record sound. To identify that output devices are needed to play audio. To recognise that audio can be edited. To use an application to	To identify that a vector drawing comprises separate objects and can be modified separately or as groups. To recognise that filming techniques can be used to create different effects. To identify that videos can be edited on a	To explain that 3D models can be created on a computer. To recognise that web pages are written by people. To recognise that web pages can contain different media types. To recognise that a website is set of

				change a part of a whole digital image.	recording device or on a computer.	hyperlinked web pages.
Data and information						
	To recognise that information can be presented.	To explain that we can present information using a computer. To use a computer program to present information in different ways.	To explain that a branching database is an identification too, structured using yes/no questions.	To recognise that a sensor can be used as an input device to data collection over time.	To explain that a computer program can be used to organise data. To explain that computer programs can be used to compare data visually.	To explain what an item of data is in a spreadsheet. To explain that formulas can be used to produce calculated data.
Programming and algorithms.						
	To understand that a program is a set of commands that a computer can run. To combine commands in a program.	To describe that a series of instructions is a sequence. To recognise that you can predict the outcome of a program. To explain what happens when we change the order of instructions.	To explain that programs start because of an input. To explain that the order of commands can affect a program's output.	To explain that we can use a loop command in a program to repeat instructions. To explain that in programming there are indefinite loops and count-controlled loops.	To explain that selection can be used to branch the flow of a diagram. To explain that a loop can bs used to repeatedly check whether a condition has been met.	To define a 'variable' as something that is changeable. To explain that a variable can be used in a program, e.g. 'score'

Progression in computing

	Computing systems and network						
Key Skill:	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Use different digital devices

Recognise that you can access content on a digital device.

Use a mouse, touchscreen, or appropriate access to device to target and select options on screen.

Recognise a selection of digital devices.

Recognise the basic parts of a computer e.g. mouse, screen, keyboard.

Select a digital device to fulfil a specific task e.g. to take a photo. | Recognise a range of digital devices.

Select a digital device to fulfil a specific task e.g. to take a photo.

Name a range of digital devices, e.g. laptop, phone, games console.

Log on to the school computer/unlock the school tablet with support.

Identify the basic parts of a computer e.g. mouse, keyboard, screen.

Use suitable access device (mouse, keyboard, touchscreen, switch) to access and control an activity on a computer.

Open key applications independently. | Recognise what a computer is (input > process > output).

Recognise that a range of digital devices contain computers (phones, games console, smart speaker).

Explain what the basic parts of a computer are used for.

Identify and use input devices, e.g. mouse, keyboard; and output devices, e.g. speakers, screen.

Open key applications independently.

Save and open files to/from a given folder.

Add an image to a document from a given folder/source. | Describe what a computer is (input > process > output)

Explain the difference between input and output devices on a computer.

Know where to save and open files (e.g. shared folder).

Save files with appropriate names.

Use a keyboard effectively to type in text.

Use left/right and double click on a the mouse.

Add an image to a document from the internet. Resize and move an image in a document.

Use a search engine to find simple information. | Recognise that you can organise files using a folder.

Explain what a good file name would look like.

Delete and move files.

Use key parts of a keyboard effectively, e.g. shift, arrow keys, delete.

Know how to copy and paste text or images in a document.

Crop an image and apply simple filters.

Use a search engine to find specific information.

Recognise that school computers are connected on a network. | Type using fingers on both hands.

Use common keyboard shortcuts e.g. ctrl C and ctrl V

Explain what makes a strong password.

Use folders to organise files.

Know how to mute and unmute audio on a computer or tablet.

Recognise that there is more than one search engine, and that they may produce different results.

Use a search engine effectively to find information and images.

Know how to search for an application on a computer/tablet. | Type efficiently using both hands.

Use a range of keyboard shortcuts.

Recognise that different devices may have different operating systems.

Organise files effectively using folders and file names.

Use the advanced search tools when using a search engine to find specific information and images.

Explain the basic function of an operating system.

Recognise common file types and extensions e.g. jpeg, png, doc, wav.

Recognise a range of Internet services e.g. email, VOIP (e.g. Skype, FaceTime), |

		Save and open files with support. Add an image to a document from a given folder/source with support.	Resize an image in a document. Highlight text and use arrow keys. Capture media independently (e.g. take photos, record audio).	Recognise that school computers are connected.			World Wide Web, and what they do.

Presenting information and creating multi-media.							
Key Skill:	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Use technology to explore and access digital content. Operate a digital device with support to fulfil a task. Create simple digital content, e.g. digital art. Choose media to convey information, e.g. image for a poster.	Create digital content, e.g. digital art. Choose media from a selection (e.e. images, video, sound) to present information on a topic. Recognise that you can find out information from a website. Select basic tools/operations to change the appearance of digital content, e.e. filter on an image/font/size of paintbrush. Combine media with support to present	Create simple digital content for a purpose, e.g. digital art, poster. Recognise that we can use technology to record playback audio or take and view photographs. Apply edits to digital content to achieve a particular effect, e.g. emphasise part of a text. Present ideas and information by combining media, e.g. text and images. Explain that you can search for information on the internet.	Present ideas and information by combining media independently, e.g. text and images. Design and create simple digital content for a purpose/audience, e.g. a poster. Edit digital content to improve, e.g. resize text. Identify the features of a good piece of digital content. Explain why we use technology to create digital content. Recognise why we use different types of media to convey	Collect, organise and present information using a range of media. Design and create digital content for specific purpose, e.g. poster, animation. Edit digital content to improve it according to feedback. Identify the features of a good piece of digital content and apply these in own designs. Explain the benefits of using technology to present information.	Identify and use appropriate hardware and software to fulfil a specific task . Remix and edit a range of existing, and their own, media to create content. Consider the audience when designing and creating digital content. Recognise the benefits of using technology to collaborate with others. Identify success criteria for creating digital content for a	Select, combine and remix a range of media to create original content. Consider all steps of the design process when creating content (e.g. identify problems, plan, create, evaluate, share). Identify the most effective tools to present information for a specific purpose. Explain the benefits of using technology to collaborate with others. Evaluate existing digital content in terms of

		information, e.g. text and images.	Plan out digital content, e.g. a simple sketch or storyboard. Identify the common features of digital content, e.g. title, images. Recognise that we can use different types of media to convey Information, e.g. text, image, audio, video.	information, e.g. text, image, audio, video.	Know where to find copyright-free content, e.g. creative commons images. Collaborate with peers using online tools, e.g. blogs, Google Drive, Office 365 etc. a specific purpose, e.g. poster, animation.	given purpose and audience. Evaluate their own content against success criteria and make improvements accordingly.	effectiveness and design.

Data and information							
Key Skill:	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Access content in a range of formats, e.g. video, image, audio. Answer basic questions about information displayed in images.	Recognise different forms of digital content, e.g. text, image, video and audio. Collect simple data (e.g. likes/dislikes) on a topic. Present simple data using images e.g. number of animals/favourite colour. Recognise tally charts and	Recognise tally charts, charts, pictograms and branching databases and why we use them. Explain all information shown in a simple chart or pictogram. Identify key features of a chart of pictogram. Collect data on a topic (eye colour,	Recognise charts. Pictograms and databases and why we use them. Present information using a suitable chart. Explore a record card database to find out information. Use filters in a database to find out specific information.	Draw conclusions from information story in a database, chart or table. Design a questionnaire and collect a range of data on a theme. Choose appropriate formats to present data to convey information. Recognise that data can be collected on digital devices and	Explain the differences between data and information. Appreciate that different programs work with different types of data, e.g. text, number, video, paper database. Explain the different between the Internet and the World Wide Web.	Recognise what a spreadsheet is and what it is used for. Explain the difference between physical, mobile and wireless networks. Use simple formulae in a spreadsheet to find out information from a set of data. Collect data for a purpose and plan out a spreadsheet to present it

	pictograms and why we use them.	pets etc) and present in a pictogram or a chart. Modify simple charts/pictograms, e.g. add title, item or labels.	Name they key parts of a database, e.g. record, field, search. Answer questions about information in a database. Create questions using yes or no. Name some benefits of using a computer to create charts and databases. Recognise that search engines store information in databases. Compare databases and branching data to a pictogram.	sensors automatically. Use a computer program to sort data by attributes. Present the same data in a graph and in a chart. Know that you use a web browser to access information stored on the internet. Appreciate that you need to use specific software to work with video, images, audio etc.	Know the difference between a search engine and a web browser. Explain the basics of how search engines work. Perform searches for information using advanced settings in search engines. Recognise the benefits and risks of sharing data online. Use, create and compare visual databases.	effectively, using relevant formulae. Produce graphs from data in a spreadsheet to answer a question. Analyse and evaluate data and information in a spreadsheet, chart or database. Recognise that poor quality data leads to unreliable results.

Programming and algorithms.						
Key Skill:	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Explore technology. Repeat an action wit technology to trigger a specific outcome. Recognise the success or failure of an action.	Recognise that computers don't have a brain. Explain that we control computers by giving them instructions. Explain that we control computers	Explain that computers have no intelligence and we have to program them to do things. Create a program with multiple steps, e.g. to control a floor robot.	Predict the outcome of a block or text-based program (Scratch/discovery coding). Modify an existing program, e.g. change background, number of times things happen.	Create a program using a range of events/inputs to control what happens. Recognise that we can decompose a problem into smaller parts to help solve it.	Name a range of sensors in physical systems. Recognise that different solutions may exist for the same problem. Predict what will happen in a program	Design and program a physical computing system that uses sensors. Recognise and use producers (sub-routines) in programs.

	Follow simple instructions to control a digital device.

Recognise that we control computers.

Input a short sequence of instructions to control a device. | by giving instructions.

Create a simple program, e.g. to control a floor robot – create a simple algorithm.

Predict the outcome of a simple algorithm or program.

Explain what an algorithm is – a sequence of instructions to make something happen.

Recognise that the order of instructions in an algorithm is important.

Debug an error in a simple algorithm or program, e.g. for a floor robot. | Predict the outcome of an algorithm or program with multiple steps.

Recognise that the instructions in an algorithm need to be clear and unambiguous.

Identify and correct errors in each algorithm and program and recognise the term debugging.

Explain what an algorithm is, and that when inputted on a computer it is called a program.

Plan out a program by creating an algorithm and evaluate its success. | Identify repeated steps in a program or algorithm.

Create examples of algorithms containing count controlled loops.

Use a count-controlled loop to make a program more efficient.

Recognise that we can create an algorithm to help plan out a program.

Identify errors in a block or text-based program and correct them.

Recognise that different inputs can be used to control a program. | Explain when to use forever loops and count-controlled loops, and use them in programs.

Recognise selection in a program or algorithm.

Use selection in algorithms in programs to alter what happens when a condition changes, e.g. if…then…

Design a program for a purpose.

Recognise common mistakes in programs and how to correct them. | algorithm when the input changes (e.g. sensor, data or event).

Use two-way selection in a program and what they do.

Create problems including 'repeat until' loops.

Create and use simple variables, e.g. to keep score.

Evaluate a program and make improvements to the code or design accordingly.

Create an algorithm for a physical system containing a sensor. | Plan out a program in detail, including task, algorithm, code and execution level.

Explain common errors in programs and how to fix them.

Use nested selection statements in a program or algorithm effectively.

Combine a variable with relational operators (< = >) to determine when a program changes, e.g. if score >5 say 'well done'.

Recognise key concepts (sequence, selection, repetition and variable) in a range of languages and contexts. |

Progression in computing vocabulary

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	**Computing systems and networks.** **Technology around us and online safety.** Technology, computer, mouse, trackpad, keyboard, screen, click, drag, input, device, shift, spacebar, capital letter, full stop, safely, responsibly.	**Creating media** **Digital painting.** Paint program, tool, paintbrush, erase, fill, undo, Piet Mondrian, primary colours, shape tool, line tool, fill tool, undo tool, Henri Matisse, Wassily Kandinsky, feelings, colour, brush style, George Seurat, Pointillism, prefer, dislike, like.	**Programming A** **Moving a robot** Forwards, backwards, turn, clear, go, commands, instructions, directions, left, right, plan, algorithm, route, program.	**Data and information** **Grouping data** **Online safety** Object, label, group, search, image, colour, shape, property, value, data set, less, most, fewest, the same.	**Creating media** **Digital writing** **Online safety** Word processor, keyboard, keys, letters, Microsoft Word, letters, numbers, space, backspace, text cursor, toolbar, bold, italics, underling, undo, font, toolbar	**Programming B** **Introduction to animation.** ScratchJr, Bee-Bot, command, sprite, compare, programming, programming area, block, joining, start, program, background, delete, reset, algorithm, predict, change, value, block, instructions appropriate, design.
Year 2	**Computing system and network.** **Information technology around us** **Online safety** Information technology (IT), computer, barcode, scanner/scan	**Creating media** **Digital photography** Device, camera, photograph, capture, image, digital, landscape, portrait, horizontal, vertical, field of view, narrow, wide, format, framing, focal point, subject, matter, flash, focus, background, foreground, editing, filter, Pixl, changed, real.	**Programming A** **Robot algorithms** Instructions, sequence, clear unambiguous, algorithm, program, order, commands, prediction, artwork, design, route, mat, debugging.	**Data and information** **Pictograms** **Online safety** More than, less than, most, least, organise, data, object, tally chart, votes, total, pictogram, enter, data, compare, count, explain, attribute, group, same, different, most popular, least popular.	**Creating media** **Making music** **Online safety** Music, planets, Mars, Venus, war, peace, quiet, loud, feelings, emotions, pattern, rhythm, pulse, Neptune, pitch, tempo, notes, instrument, create open, edit.	**Programming B** **Introduction to quizzes** Sequence, command, program, run, start, predict, blocks, actions, sprite, modify, match, debug, features, evaluate.

| Year 3 | Computing systems and networks

Connecting computers

Digital devices, input, output, process, program, connection, network, network switch, server, wireless access point (WAP) | Creating media

Stop frame animation
Online safety

Animation, flip book, stop frame, sequence, image, photograph, setting, character, events, onion skinning, consistency, delete, frame, media, import, transition. | Programming A

Sequence in music

Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide, event, task, design, code, run the code, order, note, chord, algorithm, bug, debug. | Data and information

Branching databases

Attribute, value, questions, table, objects, branching, databases, objects, equal, even, separate, order, organise, j2data, selecting, pictogram, information, decision tree, questions. | Creating media

Desktop publishing
Online safety

Text, images, advantages, disadvantages, communicate, font, style, template, desktop, publishing, copy, paste, layout, purpose, benefits. | Programming B

Events and actions

Motion, event, sprite, algorithm, logic, move, resize, extension block, pen up, set up, design, action, debugging, errors, setup, test |
|---|---|---|---|---|---|---|
| Year 4 | Computing systems and networks

The internet

Internet, network, router, network security, network switch, wireless access point (WAP), router, website, web page, web address, router, routing, route tracing, browser, World Wide Web, content, links, files, use, download, sharing, ownership, permission, accurate, honest, adverts. | Creating media

Audio editing
Online safety

Audio, record, playback, microphone, speaker, headphones, input, output, start, stop, podcast, save, file, selection, edit, mixing, time shift, export, MP3, evaluate, feedback. | Programming A

Repetition in shapes

Program, turtle, commands, code, snippet, algorithm, design, debug, logo commands, pattern, repeat, repetition, count-controlled loop, value, decompose, procedure. | Data and information

Data logging

Data, table (layout), input, device, sensor, data logger, logging, data point, interval, analyse, import, export, logged, collection, review, conclusion. | Creating media

Photo editing
Online safety

Image, edit, arrange, select, digital, crop, undo, save, search, copyright, composition, save, pixels, rotate, flip, adjustments, effects, colours, hue/saturation, sepia, version, illustrator, clone, recolour, magic wand, sharpen, brighten, fake, real, composite, background, | Programming B

Repetition in games

Scratch, programming, sprite, blocks, code, loop, repeat, value, forever, infinite loop, count-controlled loop, animate, costume, even block, duplicate, modify, debug, refine, evaluate, algorithm. |

					foreground, retouch, paste, alter, publication, elements, original, font style, border, layer.	
Year 5	**Computing systems and networks** **Sharing information Online safety** System, connection, digital, input, process, output, protocol, address, packet, chat, explore, slide click, reuse, remix, collaboration.	**Creating media** **Video editing Online safety** Video audio, recording, storyboard, script, soundtrack, dialogue, tape, AV (audio vision), videographer, video techniques, zoon, pan, tilt, angle, YouTuber, content, camera, colour, export, trip/clip, titles, end credits, timeline, transitions, soundtrack, retake/reshoot, special effects, constructive feedback.	**Programming A** **Selection in physical computing** Microcontroller, crumble controller, components, LED, Sparkle, crocodile clips, connect, battery box, program, repetition, infinite loop, condition, true, false, input, action, selection, motor, switch, algorithm, debug, evaluate.	**Data and information** **Flat-file databases** Database, data, information, record, field, sort, order, group, search, criteria, value, graph, chart, axis, compare, filter, presentation.	**Creating media** **Vector drawing Online safety** Vector, drawing tools, shapes, object, icons, toolbar, move, resize, colour, rotate, duplicate/copy, zoom, select, alignment grid, handles, consistency, modify, layers, front, back, copy, paste, group, ungroup, reuse, improvement, evaluate, alternatives.	**Programming B** **Selection in quizzes.** Selection, condition, true, false, count-controlled loop, outcomes, conditional statement – the linking together of a condition and outcome, algorithm, program, debug, implement, question, answer, task, input, outcomes, test, run, setup, share, evaluate, constructive.
Year 6	**Computing systems and networks** **Communication Online safety**	**Creating medica** **Web page creation Online safety** Website, web page, browser, media,	**Programming A** **Variables in games** Variable, change, name, value, set, design, algorithm,	**Data and information** **Spreadsheets** Spreadsheet, data, data handling, data set, cells, columns	**Creating media** **3D modelling Online safety** 2D, 3D, 3D object, 3D space, view, resize,	**Programming B** **Sensing** Micro-bit, MakeCode, input, process, output, flashing, USB,

	Search, search engine, Google, Bing, Yahoo, Swisscows, DuckDuckGo, refine, index, crawler, bot, optimisation, links, web crawlers, content creator, ranking, communication, internet, public, private, one-way, two-way, one-to-one, one-to-many, SMS, email, WhatsApp, blog, YouTube, Twitter, BBC Newsround.	Hypertext Markup Language (HTML), layout, header, media, purpose, copyright, fair use, evaluate, preview, device, breadcrumb, trail, navigation, hyperlink, subpage, implication, external link, embed.	code, task, artwork, program, project, code, test, debug, improve, evaluate, share.	and rows, data item, format, common attribute, formula, calculation, cell reference, sigma, graph, evaluate, results, comparisons, questions, software, tools, data, purpose.	colour, lift, rotate, position, select, duplicate, dimensions, placeholder, hole, group, ungroup, modify, evaluate, improve.	selection, condition, if…then…else, variable, random, navigation, design, task, step counter, plan, create, code, test, debue.

SEND in computing.

Ambition – What are we aiming for children with SENs to achieve in this subject?	Access – What amendments are made to the subject in order to help children with SENs to achieve?
Be ambitious of what our SEND children can achieve. Technology is everywhere and will play a pivotal part in our children's lives. Therefore, we want to model and educate our pupils on how to use technology positively and safely. We want our students to be confident and competent in using a range of technology.	Strategies to scaffold Learning How can I support learners who struggle to access lessons because of learning difficulties? • Provide visual aids to enable learners to gain an understanding of a range of technology. It should inspire pupils' curiosity to know more about how we can use technology. • Provide a word and/or picture bank for the learner to refer to during guided and independent activities. • Use strategies such as modelling, demonstrating and imitating to support learners in understanding the step-by-step processes. How can I support learners who struggle to retain vocabulary? • Learners will hear and use a range of specific vocabulary including computer, input, output, device, algorithm, programme, instruction. • Discuss and display any key vocabulary together with its meaning. Practise saying them together. •Provide visual word banks that are accessible to the learners. • Ensure that the vocabulary becomes embedded by referring to it regularly during lessons and whilst modelling. How can I support learners who may become overwhelmed with all the new information? • Spend time with these children. • Discuss what they do understand and explain any language, facts or ideas they are finding challenging. How can I support learners who struggle with attention?

	• Reflect on the positioning of learners within the classroom to maximise their engagement. Some learners will benefit from working and interacting with selected others. A calm environment will help minimise distractions. • Consider adapting the lesson to break it into chunks that permit time for paired or group talk and allow tasks to be completed across manageable stages. • Pre-expose learners to the content of the lesson by sharing with them any resources to be used as well as the content of the lesson. This will support learners to engage in the processes. • Giving time for learners to look back through their IT books to make connections to what they already know, which in turn can help nurture motivation. • Allow movement breaks if and when necessary and give learners classroom jobs such as handing out a resource. This will support learners who struggle with self-regulation. • All learners should routinely clean and tidy away the equipment they have used and time for this needs to be built into lessons, as it is a useful tool for encouraging independence as well as managing transitions. How can I support learners who need additional time to develop conceptual understanding? • Provide opportunities for small group learning either before (pre-teach) or during the lesson. This will support learners and allow time to ask questions or explore resources alongside adult intervention. These opportunities are part of the repetition process needed to maximise capacity to build up conceptual understanding. • Take time to model and demonstrate each element of a process, allowing learners to develop their understanding through a step-by-step approach. This will benefit all learners as it allows for an active participatory approach. • Showing outcomes from the previous lesson's work can be a useful memory aid. • Have visual aids in the form of worked examples that the learners can have to hand when completing independent tasks.

Resources and websites:

Ofsted Research review series: computing - GOV.UK (www.gov.uk)

Teach Computing Curriculum https://teachcomputing.org/curriculum

Scratch programming scratch.mit.edu/projects/editor/?tutorial=getStarted