

BEDS Computing Long Term Plan

Our Computing curriculum is based on gaining computing skills, therefore the core skills for each unit have been highlighted. These are skills that each child will have mastered by the end of the unit. The curriculum uses Teach Computing Scheme of Work and Twinkl lessons which are shown with *.

Online safety is covered at the beginning of each term using Project Evolve.

		Term 1 Computing systems and networks		Term 2 Creating media		Term 3 Programming A		Term 4 Data and information		Term 5 Creating media		Term 6 Programming B	
Beech	Unit												
	Knowledge												
	Skills												
	Vocab												
	NC links												
Oak	Unit	Self-image and identity	Technology around us	Online relationships	Digital painting	Online reputation	Moving a robot	Online bullying	Grouping data	Managing online information	Digital writing	Privacy and security	Programming animations
	Knowledge	<ul style="list-style-type: none"> - I can recognise that there may be people online who could make someone feel sad, embarrassed or upset. 	<ul style="list-style-type: none"> - Know what technology is - Know what a computer is and its main parts - Know how to use a mouse in different ways - Know how to use a keyboard to type on a computer - Know how to use the keyboard to edit text. - Know rules for using technology safely. 	<ul style="list-style-type: none"> - I can give examples of when I should ask permission to do something online and explain why this is important. 	<ul style="list-style-type: none"> - Know what different freehand tools do - Know how to use the shape tool and line tool - Know how to make careful choices when painting a digital picture - Know why I chose the tools I used - know how to paint a picture on a computer - know how to compare painting a picture on a computer and on paper 	<ul style="list-style-type: none"> - I can recognise that information can stay online and could be copied. 	<ul style="list-style-type: none"> - Know what a given command will do - Know how to act out a given word - Know how to combine forwards and backwards commands to make a sequence - Know how to combine four direction commands to make sequences - Know how to plan a simple program - know how to find more than one solution to a problem 	<ul style="list-style-type: none"> - I can describe how to behave online in ways that do not upset others and can give examples. 	<ul style="list-style-type: none"> - Know how to label objects - Know that objects can be counted - Know that objects can be described in different ways - Know how to count objects with the same properties - know how to compare groups of objects - Know how to answer questions about groups of objects 	<ul style="list-style-type: none"> - I know / understand that we can encounter a range of things online including things we like and don't like as well as things which are real or make believe / a joke. 	<ul style="list-style-type: none"> - Know how to use a computer to write - Know how to add and remove text on a computer - Know that the look of text can be changed on a computer - Know how to make careful choices when changing text - Know why I used the tool that I chose - Know how to compare typing on a computer to writing on paper. 	<ul style="list-style-type: none"> - I can explain how passwords are used to protect information, accounts and devices. 	<ul style="list-style-type: none"> - Know how to choose a command for a given purpose - Know that a series of commands can be joined together. - Know the effect of changing a value - Know that each sprite has its own instructions - Know how to design the parts of a project - Know how use my algorithm to create a program
	Skills		<p>All children can:</p> <ul style="list-style-type: none"> - I can name the main parts of a computer (mouse, screen, keyboard, keys) - I can switch on and log into a computer - I can use a mouse to click and drag - I can click and drag to make objects on a screen - I can use a mouse to create a picture - I can use a mouse to open a program 	<p>All children can:</p> <ul style="list-style-type: none"> - I can draw lines on a screen and explain which tools I used - I can make marks on a screen and explain which tools I used - I can change the colour and brush sizes - I can make dots of colour on the page 	<p>All children can:</p> <ul style="list-style-type: none"> - I can match a command to an outcome - I can run a command on a device - I can follow an instruction - I can give directions - I can compare forwards and backwards movements - I can predict the outcome of a sequence involving forwards and backwards commands - I can debug my program on a robot. 	<p>All children can:</p> <ul style="list-style-type: none"> - I can describe objects using labels - I can count a group of objects - I can count objects - I can group objects - I can describe an object - I can describe a property of an object - I can group similar objects - I can choose how to group objects - I can describe groups of objects 	<p>All children can:</p> <ul style="list-style-type: none"> - I can identify and find keys on a keyboard - I can recognise keys on a keyboard - I can use backspace to remove text - I can use letter, number, and space keys - I can identify the toolbar and use bold, italic, and underline - I can type capital letters - I can change the font 	<p>All children can:</p> <ul style="list-style-type: none"> - I can use commands to move a sprite - I can run my program - I can use a Start block in a program - I can use more than one block by joining them together - I can change the value - I can delete a sprite 					

			<p>Most children can:</p> <ul style="list-style-type: none"> - I can save my work to a file - I can say what a keyboard is for - I can type my name on a computer - I can delete letters 		<p>Most children can:</p> <ul style="list-style-type: none"> - I can use the paint tools to draw a picture - I can make marks with the square and line tools - I can choose appropriate shapes - I can make appropriate colour choices - I can choose appropriate paint tools and colours to recreate the work of an artist 		<p>Most children can:</p> <ul style="list-style-type: none"> - I can start a sequence from the same place - I can compare left and right turns - I can experiment with turn and move commands to move a robot - I can predict the outcome of a sequence involving up to four commands 		<p>Most children can:</p> <ul style="list-style-type: none"> - I can identify the label for a group of objects - I can find objects with similar properties - I can count how many objects share a property - I can group objects in more than one way 		<p>Most children can:</p> <ul style="list-style-type: none"> - I can open a word processor - I can select all of the text by clicking and dragging - I can select a word by double-clicking - I can decide if my changes have improved my writing 		<p>Most children can:</p> <ul style="list-style-type: none"> - I can find blocks that have numbers - I can say what happens when I change a value - I can add blocks to each of my sprites - I can show that a project can include more than one sprite
			<p>Some children can:</p> <ul style="list-style-type: none"> I can open my work from a file - I can use the arrow keys to move the cursor 		<p>Some children can:</p> <ul style="list-style-type: none"> - I know that different paint tools do different jobs - I can use dots of colour to create a picture in the style of an artist on my own - I can explain that pictures can be made in lots of different ways 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can choose the order of commands in a sequence - I can explain what my program should do - I can identify several possible solutions - I can plan two programs - I can use two different programs to get to the same place 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can match objects to groups - I can compare groups of objects - I can decide how to group objects to answer a question - I can record and share what I have found - I can record how many objects are in a group 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can use 'undo' to remove changes 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can create an algorithm for each sprite - I can decide how each sprite will move - I can add programming blocks based on my algorithm - I can test the programs I have created - I can use sprites that match my design
Vocab			Technology, mouse, log on, log off, switch, click, drag, screen, save, safe, cursor, arrow keys delete, file, type, keyboard, text		Paint, pencil, line, tools, draw, shape, square, colours, brush, size, dots, undo, fill		Instruction, order, program, turn, left, right, forwards, backwards, sequence, command, debug,		Labels, group, count, match, properties, record		Keys, keyboard, word, text, backspace, delete, letter, number, space, toolbar, bold, italic, underline, capital letters, font, click, drag, double-click, typing, tool		Program, tools, sprite, commands, start block, value, delete, algorithm, design
NC links	1.6 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.	1.4 Use technology purposefully to create, organise, store and manipulate and retrieve digital content. 1.5 Recognise common uses of information technology beyond school. 1.6 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.	1.6 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.	1.4 Use technology purposefully to create, organise, store and manipulate and retrieve digital content.	1.6 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.	1.1 Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions 1.2 Create and debug simple programs 1.3 Use logical reasoning to predict the behaviour of simple programs 1.5 Recognise common uses of information technology beyond school	1.6 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.	1.4 Use technology purposefully to create, organise, store and manipulate and retrieve digital content. 1.6 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.	1.6 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.	1.4 Use technology purposefully to create, organise, store and manipulate and retrieve digital content. 1.6 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.	1.6 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.	1.1 Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions 1.2 Create and debug simple programs 1.3 Use logical reasoning to predict the behaviour of simple programs 1.4 Use technology purposefully to create, organise, store and manipulate and retrieve digital content.	

Elm	Unit	Self-image and identity	IT around us	Online relationships	Digital photography	Online reputation	Robot algorithms	Online bullying	Pictograms	Managing online information	Digital music	Privacy and security	Programming quizzes
	Knowledge	I can explain how other people may look and act differently online and offline.	-Know the uses and features of information technology -Know the uses of information technology in my school -Know information technology beyond school. -Know how information technology can help us. -know how to use information technology safely -know that choices can be made when using information technology.	I can give examples of how someone might use technology to communicate with others they don't also know offline and explain why this might be risky. (e.g. email, online gaming, a pen-pal in another school / country).	-Know how to use a digital device to take a photograph -Know how to make choices when taking a photograph -Know what makes a good photograph -know how photographs can be improved -know how to use tools to change an image -know that photos can be changed	I can explain how information put online about someone can last for a long time.	-Know a series of instructions is a sequence -Know what happens when we change the order of instructions -know how to use logical reasoning to predict the outcome of a program -know that programming projects can have code and artwork -know how to design an algorithm -know how to create and debug a program that I have written	I can explain what bullying is, how people may bully others and how bullying can make someone feel.	-know that we can count and compare objects using tally charts -know that objects can be represented as pictures -know how to select objects by attribute and make comparisons -know that people can be describe by attributes -know that we can present information using a computer	I can explain the difference between things that are imaginary, 'made up' or 'make believe' and things that are 'true' or 'real'	-know how music can make us feel -know that there are patterns in music -know how to use a computer to create a musical pattern -know how to create music for a purpose. -know how to review and refine our computer work	I can explain and give examples of what is meant by 'private' and 'keeping things private'.	-know that a sequence of commands has a start. -know that a sequence of commands has an outcome -know how to create a program using a given design -know how to change a design -know how to create a program using my own design -know how my project can be improved
	Skills		All children can: - I can identify that a computer is a part of IT -I can identify examples of IT -I can demonstrate how IT devices work together - I can recognise common types of technology - I can say why we use IT -I can list different uses of information technology - I can say how rules can help keep me safe	All children can: - I can recognise what devices can be used to take photographs - I can take photos in both landscape and portrait format - I can improve a photograph by retaking it - I can use a tool to achieve a desired effect	All children can: - I can use an algorithm to program a sequence on a floor robot - I can follow a sequence - I can predict the outcome of a sequence -I can explain the choices I made for my mat design - I can identify different routes around my mat - I can test and debug each part of the program	All children can: - I can use an algorithm to program a sequence on a floor robot - I can follow a sequence - I can predict the outcome of a sequence -I can explain the choices I made for my mat design - I can identify different routes around my mat - I can test and debug each part of the program	All children can: - I can record data in a tally chart -I can enter data onto a computer - I can use a tally chart to create a pictogram I can answer 'more than'/'less than' and 'most/least' questions about an attribute - I can create a pictogram to arrange objects by an attribute	All children can: - I can create a rhythm pattern - I can explain that music is created and played by humans - I can play an instrument following a rhythm pattern -I can connect images with sounds - I can use a computer to experiment with pitch	All children can: - I can create a rhythm pattern - I can explain that music is created and played by humans - I can play an instrument following a rhythm pattern -I can connect images with sounds - I can use a computer to experiment with pitch	All children can: - I can identify the start of a sequence - I can predict the outcome of a sequence of commands - I can work out the actions of a sprite in an algorithm -I can choose backgrounds for the design - I can choose characters for the design -I can build sequences of blocks to match my design - I can debug my program	All children can: - I can identify the start of a sequence - I can predict the outcome of a sequence of commands - I can work out the actions of a sprite in an algorithm -I can choose backgrounds for the design - I can choose characters for the design -I can build sequences of blocks to match my design - I can debug my program	All children can: - I can identify the start of a sequence - I can predict the outcome of a sequence of commands - I can work out the actions of a sprite in an algorithm -I can choose backgrounds for the design - I can choose characters for the design -I can build sequences of blocks to match my design - I can debug my program	
			Most children can: - I can identify that some IT can be used in more than one way - I can identify the choices that I make when using IT	Most children can: -I can explain the process of taking a good photograph - I can explain why a photo looks better in portrait or landscape format -I can experiment with different light sources	Most children can: - I can explain the process of taking a good photograph - I can explain why a photo looks better in portrait or landscape format -I can experiment with different light sources	Most children can: - I can use the same instructions to create different algorithms -I can compare my prediction to the program outcome	Most children can: - I can collect the data I need - I can create a pictogram and draw conclusions from it -I can give simple examples of why information should not be shared	Most children can: - I can refine my musical pattern on a computer -I can add a sequence of notes to my rhythm	Most children can: - I can refine my musical pattern on a computer -I can add a sequence of notes to my rhythm	Most children can: - I can build the sequences of blocks I need - I can decide which blocks to use to meet the design - I can create an algorithm	Most children can: - I can build the sequences of blocks I need - I can decide which blocks to use to meet the design - I can create an algorithm	Most children can: - I can build the sequences of blocks I need - I can decide which blocks to use to meet the design - I can create an algorithm	

			<p>Some children can:</p> <ul style="list-style-type: none"> - I can talk about different rules for using IT - I can use IT for different types of activities 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can apply a range of photography skills to capture a photo - I can identify which photos are real and which have been changed - I can explain why a picture may be unclear 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can show the difference in outcomes between two sequences that consist of the same commands - I can create an algorithm to meet my goal 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can share what I have found out using a computer - I can use a computer program to present information in different ways 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can review my work 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can show how to run my program - I can change the outcome of a sequence of commands - I can match two sequences with the same outcome - I can improve my project by adding features 	
	Vocab		Information technology, device, safe,		Device, digital photo, landscape, portrait, flash, light, autofocus, image, edit, tool, capture, real		Sequence, instruction, outcome, command, algorithm, program, floor robot, design, route, test, debug, predict		Tally chart, data, format, pictogram, organise, attribute, conclusion, computer program, information		Music, rhythm pattern, instrument, image, sound, pitch, sequence, notes		Program, command, sequence, outcome, predict, blocks, design, sprite, algorithm, characters, background, image, compare, improve, debug	
	NC links	1.6 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.	1.4 Use technology purposefully to create, organise, store and manipulate and retrieve digital content. 1.5 Recognise common uses of information technology beyond school. 1.6 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.	1.6 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.	1.4 Use technology purposefully to create, organise, store and manipulate and retrieve digital content. 1.5 Recognise common uses of information technology beyond school. 1.6 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.	1.6 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.	1.1Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions 1.2Create and debug simple programs 1.3Use logical reasoning to predict the behaviour of simple programs 1.4 Use technology purposefully to create, organise, store and manipulate and retrieve digital content.	1.6 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.	1.4 Use technology purposefully to create, organise, store and manipulate and retrieve digital content. 1.6 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.	1.6 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.	1.4 Use technology purposefully to create, organise, store and manipulate and retrieve digital content.	1.6 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.	1.1Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions 1.2Create and debug simple programs 1.3Use logical reasoning to predict the behaviour of simple programs	
A	Birch	Unit	Self-image and identity	Connecting Computers	Online relationships	Animation *	Online reputation	Sequencing Sounds	Online bullying	Word Processing *	Managing online information	Photo editing	Privacy and security	Events and actions in programs
		Knowledge	I can explain how people can represent themselves in different ways online.	<ul style="list-style-type: none"> - Know how digital devices function. - Identify input and output devices. - Know how digital devices can change the way we work. - Know how a computer network can be used to share information. - Know how digital devices can be connected. 	I can explain what it means to 'know someone' online and why this might be different from knowing someone offline.	<ul style="list-style-type: none"> -Know early forms of animation before computers and how computers have made a difference. -Know how to create a short computer animation using one or more moving stick figures. -Know how to create a recorded animation involving a number of moving characters on a background. 	I can give examples of what anyone may or may not be willing to share about themselves online. I can explain the need to be careful before sharing anything personal.	<ul style="list-style-type: none"> - Know what Scratch is. -Know that commands have an outcome. -Know that a program has a start, - Know that a sequence of commands can have an order. -know how to change the appearance of a project. 	I can describe appropriate ways to behave towards other people online and why this is important.	<ul style="list-style-type: none"> -Know basic computer skills -Know how to change the case of text. -Know how to align text. -Know how to use bullets and numbering -Know how to use <ctrl> key -Know how to use insert and format text boxes. 	I can explain the difference between a 'belief', an 'opinion' and a 'fact'. and can give examples of how and where they might be shared online, e.g. in videos, memes, posts, news stories etc.	<ul style="list-style-type: none"> -Know that the composition of digital images can be changed. -Know that colours can be changed in digital images. -Know how cloning can be used in photo editing. -Know that images can be combined. -Know how to combine images for a purpose. 	I can describe simple strategies for creating and keeping passwords private.	<ul style="list-style-type: none"> -Know how a sprite moves in an existing project. -Know how to create a program to move a sprite in four directions. -Know how to adapt a program to a new context. -Know how to develop my program by adding features. -Know how to fix bugs in a program.

			- Know the physical components of a network.		-Know how to structure specific timing of animations using a time slider. -Know how to use a camera to create a short stop motion animation film. -Know how to analyse and evaluate software.		-Know how to create a project from a task description.				-Know how to evaluate how changes can improve an image.		
	Skills		<p>All children can:</p> <ul style="list-style-type: none"> -I can explain that digital devices accept inputs - I can explain that digital devices produce outputs -I can discuss why we need a network switch - I can explain the role of a switch, server, and wireless access point in a network - I can recognise that a computer network is made up of a number of devices -I can identify how devices in a network are connected together 		<p>All children can:</p> <ul style="list-style-type: none"> -I can explain what is meant by animation. -I can create series of linked frames. -I can make slight changes to an image. -I can edit and refine still images to improve my animation. -I can use the time slider to find a new place in a clip. -I can insert a new character at a given place in a clip. -I can edit or change objects at different parts of a clip. -I can take still images using a webcam/similar digital device. 		<p>All children can:</p> <ul style="list-style-type: none"> - I can identify the objects in a Scratch project (sprites, backdrops) - I can recognise that commands in Scratch are represented as blocks - I can create a program following a design -I can combine sound commands - I can explain what a sequence is -I can build a sequence of commands - I can implement my algorithm as code 		<p>All children can:</p> <ul style="list-style-type: none"> -I can create and organise files and folders -I can print using specific options -I can create secure passwords -I can take screenshots. - I can keep typing at the end of a line -I can save work in my folder -I can use <shift>, <CAPS LOCK> <space> correctly -I can edit using <backspace>, <delete> the arrow keys, undo and redo -I can select and format text -I can align text left, centre, right or justified -I can insert a text box 		<p>All children can:</p> <ul style="list-style-type: none"> - I can improve an image by rotating it - I can use photo editing software to crop an image -I can experiment with different colour effects - I can remove parts of an image using cloning -I can combine text and my image to complete the project 		<p>All children can:</p> <ul style="list-style-type: none"> -I can choose which keys to use for actions and explain my choices - I can explain the relationship between an event and an action - I can program movement -I can choose blocks to set up my program -I can match a piece of code to an outcome - I can modify a program using a design - I can test a program against a given design
			<p>Most children can:</p> <ul style="list-style-type: none"> - I can design a digital device -I can explain how I use digital devices for different activities - I can explain how messages are passed through multiple connections - I can recognise different connections 		<p>Most children can:</p> <ul style="list-style-type: none"> -I can add a second figure and animate them interacting with each other. -I can use animation recording to animate the movement of a character. -I can animate the interaction between two characters. - I can control the timing of characters appearance in a recording. 		<p>Most children can:</p> <ul style="list-style-type: none"> - I can identify that each sprite is controlled by the commands I choose 		<p>Most children can:</p> <ul style="list-style-type: none"> -I can manipulate windows including viewing 2 windows at once -I can search for files -I can use two hands for typing -I can use the show all characters button to see where space and return are used -I can use the <ctrl> key to select several sections of text -I can format a text box 		<p>Most children can:</p> <ul style="list-style-type: none"> -I can add to the composition of an image by cloning - I can use a range of tools to copy between images 		<p>Most children can:</p> <ul style="list-style-type: none"> -I can evaluate my project -I can choose a character for my project - I can consider the real world when making design choices - I can use a programming extension
			<p>Some children can:</p> <ul style="list-style-type: none"> - I can identify suitable networks devices around me -I can demonstrate how information can be passed between devices 		<p>Some children can:</p> <ul style="list-style-type: none"> -I can import my own suitable photos to create stop motion animation. -I can change the content of a picture by the correct amount between frames. -I can order or sequence frames to create the effect of smooth movement. 		<p>Some children can:</p> <ul style="list-style-type: none"> -I can create a sequence of connected commands 		<p>Some children can:</p> <ul style="list-style-type: none"> -I can use the menu buttons for bullets and numbering -I can choose the format of bullet points 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can review images against a given criteria - I can use feedback to guide making changes 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can identify a way to improve a program - I can make design choices and justify them -I can build more sequences of commands to make my design work - I can choose suitable keys to turn on additional features
	Vocab		Digital device, input, output, process, network switch, messages, connections,		Animation, device, software, frames, image, edit, improve, interact, record, control, timing, time,		Program, Scratch, attributes, backdrops, sprite, commands, blocks, on-screen		Windows, files, folders, print, secure, password, screenshot, typing, save, folder, <shift>, <CAPS LOCK>,		Image, crop, rotate, software, photo, colour effects, clone, tools, copy, select, edit, text		Keys, actions, event, program, sprite, character, size, movement, blocks, real-world,

			information, switch, server, wireless access point, computer network		slider, clip, webcam, import, movement,		action, design, sequence, code, sound command, algorithm		<space>, <delete>, arrow, undo, redo, text, align, left, centre, right, justified, space, return, bullet points, numbering, <ctrl>, text box, insert, format				design, sequence, commands, features, code, outcome, bugs, debug, evaluate, implement
	NC links	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.2 use sequence, selection, and repetition in programs; work with variables and various forms of input and output 2.4 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 2.6 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	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.6 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	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.1 design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts 2.2 use sequence, selection, and repetition in programs; work with variables and various forms of input and output 2.3 use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs 2.6 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	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.6 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 2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.6 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 2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.1 design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts 2.2 use sequence, selection, and repetition in programs; work with variables and various forms of input and output 2.3 use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs 2.6 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
Birch	Unit	Self-image and identity	Online Searchers and Surfers*	Online relationships	Stop frame animation	Online reputation	Programming Turtle Logo and Scratch *	Online bullying	Branching databases	Managing online information	Desktop publishing	Privacy and security	Programming Turtle Logo *
B	Knowledge	I can explain ways in which someone might change their identity depending on what they are doing online (e.g. gaming; using an avatar; social media) and why.	-Know what the Internet is and how it is used around the world. -Know how the Internet works. -Know how to use search engines to make safe online searches. -Know how to use and compare different website links to find reliable information online. -Know how to copy and paste images from a web page using different methods.	I can explain what is meant by 'trusting someone online', why this is different from 'liking someone online', and why it is important to be careful about who to trust online including what information and content they are trusted with.	-Know that animation is a sequence of drawings or photographs. -Know how to relate animated movement with a sequence of images. -Know how to plan an animation. -Know the need to work consistently and carefully. -Know how to review and improve an animation. -Know the impact of adding other media to an animation.	I can explain who someone can ask if they are unsure about putting something online.	-Know how to create and debug an algorithm using the move, rotate and repeat commands. -Know how to create and debug algorithms using penup and pendown. -Know how to create and debug algorithms that draw regular polygons. -Know how to create and debug algorithms that draw shapes.	I can give examples of how bullying behaviour could appear online and how someone can get support.	-Know how to create questions with yes/no answers. -Know the attributes needed to collect data about an object. -Know how to create branching databases. -Know why it is helpful for a database to be well structured. -Know how to plan the structure of a branching database. -Know how to create an identification tool.	I can explain that not all opinions shared may be accepted as true or fair by others (e.g. monsters under the bed).	-Know how text and images convey information. -Know that text and layout can be edited. -Know how to choose appropriate page settings. -Know how to add content to a desktop publishing publication. -Know how different layouts can suit different purposes. -Know the benefits of desktop publishing.	I can give reasons why someone should only share information with people they choose to and can trust. I can explain that if they are not sure or feel pressured then they should tell a trusted adult.	-Know how to create and debug an algorithm to create a procedure. -Know how to create and debug an algorithm that uses setpos to draw shapes -Know how to create and debug an algorithm with different colours. -Know how to create and debug an algorithm to fill areas with colour. -Know how to create and debug

												an algorithm to write text. -Know how to create and debug an algorithm to draw arcs.		
	Skills		<p>All children can: -I can explain what the internet is and how it works. - I can identify the many different ways the Internet is used. -I can understand that a computer is connected to the Internet via a router. -I can explain what routers are and their function. -I can explain what a search engine is. -I can identify if I need to tell an adult if something I see online makes me feel uncomfortable. -I can identify how to trust if a website is safe.</p> <p>Most children can: -I can explain how the Internet is connected around the world. -I can explain how data is transferred from one point to another when using the Internet -I can understand what packets of data are. -I can explain what an IP address is. -I can bookmark a web page. -I can search for images online using a search engine. -I can copy and paste images from a web page.</p> <p>Some children can: -I can explain the difference between a web browser and a search engine. -I can use a search engine to find information. -I can explain how to make a search age-appropriate. -I can use tabs on a web browser to compare information on web pages. -I can use shortcuts on a keyboard. -I can type a URL into a web address bar.</p>		<p>All children can: -I can create an effective flip book— style animation -I can create an effective stop-frame animation - I can describe an animation that is achievable on screen -I can evaluate the quality of my animation - I can use onion skinning to help me make small changes between frames</p> <p>Most children can: - I can review a sequence of frames to check my work -I can add other media to my animation</p> <p>Some children can: - I can explain how an animation/flip book works</p>		<p>All children can: -I can use the commands fd, bk, lt, rt to move or rotate the turtle -I can use cs to the clear the screen -I can use the repeat command -I can use the pen up and pen down command -I can rotate the turtle angles other than 90 degrees -I can vary the pen size and colour</p> <p>Most children can: -I can write commands in the correct order -I can write a variable value where required -I can use the pen block to draw -I can use the repeat block to draw patterns</p> <p>Some children can: -I can correct any mistakes -I can use calculations as a variable -I can create algorithms that draw regular polygons</p>		<p>All children can: -I can create two groups of objects separated by one attribute - I can investigate questions with yes/no answers -I can arrange objects into a tree structure - I can create yes/no questions using given attributes -I can create a branching database that reflects my plan</p> <p>Most children can: - I can create a group of objects within an existing group - I can test my branching database to see if it works - I can suggest real-world uses for branching databases</p> <p>Some children can: - I can select an attribute to separate objects into groups -I can compare two branching database structures</p>		<p>All children can: -I can change font style, size, and colours for a given purpose - I can edit text -I can create a template for a particular purpose - I can define the term 'page orientation' - I can recognise placeholders and say why they are important - I can paste text and images.</p> <p>Most children can: - I can identify the uses of desktop publishing in the real world -I can choose the best locations for my content</p> <p>Some children can: - I can match a layout to a purpose - I can say why desktop publishing might be helpful - I can make changes to content after I've added it</p>		<p>All children can: -I can write commands in the correct order. -I can correct any mistakes. -I can write a procedure. -I can fill an area with colour. -I can write text using the label command. -I can use the commands fd, bk, rt, lt, cs, penup, pendown and repeat. -I can move the turtle using the setpos commands. -I can set the pen colour and pen size.</p> <p>Most children can:</p> <p>Some children can:</p>	Commands, order, procedure, fill,
	Vocab		Internet, router, connect, data, packets,		Animation, flip book, sequence, pictures,		Commands, variable value, fd,		Attribute, question, yes/no, tree structure,		Desktop publishing, text, image, message,	Commands, order, procedure, fill,		

			network, IP address, search engine, web browser, age-appropriate, online, safe, website, reliable, web page, images, image, URL, web address bar, secure, trusted, tabs, copy, paste		stop-frame animation, frame, predict, settings, character, events, storyboard, film, media, evaluate		bk, lt, rt, move, rotate, cs, repeat, pen up, pen down, angles, 90 degrees, calculations, pen block, draw, algorithm, regular polygon, patterns, size, colour		objects, groups, select, compare, create, branching database, structure, identification tool		information, font style, size, colour, edit, text, template, layout, paste, page orientation, placeholders		colour, text, label, fd, bk, rt, lt, cs, penup, pendown, repeat, setpos, size,
	NC links	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.4 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 2.5 use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.6 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 2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.1 design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts 2.2 use sequence, selection, and repetition in programs; work with variables and various forms of input and output 2.3 use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.6 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	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.5 use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content 2.6 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	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.1 design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts 2.2 use sequence, selection, and repetition in programs; work with variables and various forms of input and output 2.3 use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
Rowan	Unit	Self-image and identity	The Internet	Online relationships	Audio production	Online reputation	Flowol *	Online bullying	Data logging	Managing information online	Intro to vector graphics	Privacy and security	Scratch – developing games *
A	Knowledge	I can explain how my online identity can be different to my offline identity.	-Know how networks physically connect to other networks -Know how networked devices make up the internet -Know how websites can be shared via the World Wide Web (WWW) -Know how content can be added and accessed on the World Wide Web (WWW) -Know how the content of the WWW is created by people -Know the consequences of unreliable content	I can give examples of how to be respectful to others online and describe how to recognise healthy and unhealthy online behaviours.	-Know that sound can be recorded. -Know that audio recordings can be edited. - Know the different parts of creating a podcast project. -Know how to edit audio. -Know how to combine audio to enhance podcast project. Know the effective use of audio.	I can describe how to find out information about others by searching online.	-know how to draw a simple flowchart. - know how to insert symbols into a flowchart. -know how to add inputs into a flowchart -know how to identify conventional symbols, understanding the process of each stage.	I can describe ways people can be bullied through a range of media (e.g. image, video, text, chat).	-Know that data gathered over time can be used to answer questions. - know that a digital device can be used to collect data automatically. -Know that a data logger collects 'data points' from sensors over time. -Know that a computer can help us analyse data. -Know the data needed to answer questions. -Know that data from sensors can be used to answer questions.	I can describe how to search for information within a wide group of technologies and make a judgement about the probable accuracy (e.g. social media, image sites, video sites).	-Know that drawing tools can be used to produce different outcomes. -Know how to create a vector drawing by combining shapes. -Know that tools can be used to achieve a desired effect. -Know that vector drawings consist of layers. -Know how to group objects to make them easier to work with.	I can explain that internet use is never fully private and is monitored, e.g. adult supervision.	-Know how to design and program a character game -know how to design my own characters and backdrops -know how to add features or effects to enhance a game -know how to create an original animated game with a specific goal -know how to program costume changes for a sprite -know how to add point-scoring and levels to game code

	Skills		<p>All children can:</p> <ul style="list-style-type: none"> - I can describe the internet as a network of networks - I can explain what media can be found on websites - I can explain that websites and their content are created by people - I can explain that not everything on the World Wide Web is true - I can explain why some information I find online may not be honest, accurate, or legal 		<p>All children can:</p> <ul style="list-style-type: none"> - I can explain that the person who records the sound can say who is allowed to use it - I can identify the input and output devices used to record and play sound - I can use a computer to record audio - I can save my project so the different parts remain editable - I can open my project to continue working on it 		<p>All children can:</p> <ul style="list-style-type: none"> - I can draw a flowchart using the correct symbols - I can connect symbols in a sequence - I can insert symbols in sequence to create a working flowchart - I can insert new symbols to modify a flowchart. - I can edit symbols to modify the effect - I can delete symbols 		<p>All children can:</p> <ul style="list-style-type: none"> - I can explain what data can be collected using sensors - I can explain that there are different ways to view data - I can plan how to collect data using a data logger - I can use a data logger to collect data 		<p>All children can:</p> <ul style="list-style-type: none"> - I can recognise that vector drawings are made using shapes - I can move, resize, and rotate objects I have duplicated - I can use the zoom tool to help me add detail to my drawings - I can use layering to create an image - I can recognise when I need to group and ungroup objects 	<p>All children can:</p> <ul style="list-style-type: none"> - I can draw a background using blocks to make a maze. - I can select and change a character (sprite) - I can program commands that control the movement of a sprite - I can program commands that change the backdrop - I can test and debug a program after making changes - I can add appropriate commentary to a code - I can translate logical instructions into coding language (blocks) - I can create a variable 	
			<p>Most children can:</p> <ul style="list-style-type: none"> - I can discuss why a network needs protecting - I can describe networked devices and how they connect - I can describe how to access websites on the WWW - I can explain that there are rules to protect content - I can explain why I need to think carefully before I share or reshare content 		<p>Most children can:</p> <ul style="list-style-type: none"> - I can inspect the soundwave view to know where to trim my recording - I can re-record my voice to improve my recording - I can explain how sounds can be combined to make a podcast more engaging 		<p>Most children can:</p> <ul style="list-style-type: none"> - I can connect a decision symbol in a flowchart - I can include the use of an input - I can program different outputs based on the status of an input - I can create a repeating loop - I can use repetition to check multiple inputs - I can detect errors in a flowchart and correct them. 		<p>Most children can:</p> <ul style="list-style-type: none"> - I can recognise that a data logger collects data at given points - I can talk about the data that I have captured - I can sort data to find information - I can propose a question that can be answered using logged data 		<p>Most children can:</p> <ul style="list-style-type: none"> - I can explain how alignment grids and resize handles can be used to improve consistency - I can modify objects to create a new image - I can copy part of a drawing by duplicating several objects 	<p>Most children can:</p> <ul style="list-style-type: none"> - I can program consequences for specific actions. - I can use tools to draw my own character (sprite) - I can add sounds as a consequence of an action - I can create events as a consequence to another action - I can make two characters move in relation to each other 	
			<p>Some children can:</p> <ul style="list-style-type: none"> - I can describe where websites are stored when uploaded to the WWW - I can suggest who owns the content on websites 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can arrange multiple sounds to create the effect I want - I can explain the difference between saving a project and exporting an audio file 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can call multiple subroutines within a program - I can decompose a problem into smaller parts 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can interpret data that has been collected using a data logger 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can change the order of layers in a vector drawing 	<p>Some children can:</p> <ul style="list-style-type: none"> - I can design code that switches from one costume to another - I can use code to increase the value of a variable - I can add relevant messages that are linked to a final value. 	
Vocab		Network, device, connect, internet, service, website, World Wide Web (WWW), store, share, upload, online, media, content, unreliable		Sound, audio, record, input, output, device, podcast, soundwave, re-record, edit, improve, effect, save, export		Sequence, instructions, flowchart, symbols, insert, modify, delete, edit, programme, control, decision, input,, output, repeating loop, subroutine, error		Data, sensor, record, data logger, analyse, conclusion, interpret		Vector drawing, shape, line, tools, move, resize, rotate, duplicate, zoom, modify, layers, copy		Blocks, select, sprite, program, commands, move, tools, draw, test, debug, code, sound, action, sequence, instruction, algorithm,	
NC links	2.7 use technology safely, respectfully and	2.4 understand computer networks	2.7 use technology safely, respectfully and	2.5 use search technologies	2.7 use technology safely, respectfully and	2.1design, write and debug	2.7 use technology safely, respectfully and	2.2 use sequence, selection, and	2.7 use technology safely, respectfully and	2.6 select, use and combine a variety of	2.7 use technology safely, respectfully and	2.1design, write and debug	

		responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration 2.5 use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content 2.6 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 2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content 2.6 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 2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts 2.2 use sequence, selection, and repetition in programs; work with variables and various forms of input and output	responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	repetition in programs; work with variables and various forms of input and output 2.6 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	responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	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	responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts 2.2 use sequence, selection, and repetition in programs; work with variables and various forms of input and output 2.3 use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
Rowan	Unit	Self-image and identity	Strategic Searching Online*	Online relationships	Video production	Online reputation	Repetition in shapes	Online bullying	Word processing *	Managing information online	3D Modelling – SketchUp *	Privacy and security	Repetition in games
B	Knowledge	I can describe positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them.	-Know that the Internet can be used to find information using search engines. -Know that a search engine can be used more effectively by using refining terms. -Know what makes a website reliable and trustworthy. -Know how search engines work. -Know what page ranking is. -Know how to use SEO to improve a web page.	I can explain how content shared online may feel unimportant to one person but may be important to other people's thoughts feelings and beliefs.	-Know what makes a video effective. -Know digital devices that can record video. - Know how to capture video using a range of techniques. -Know how to create a storyboard. - Know that video can improved through reshooting and editing. - Know the impact of choices made when making and sharing a video.	I can explain ways that some of the information about anyone online could have been created, copied or shared by others.	-Know that accuracy in programming is important. - Know how to create a program in a text-based language. -Know what 'repeat' means. -Know how to modify a count-controlled loop to produce a given outcome. -know how to decompose a task into small steps. -know how to create a program that uses count-controlled loops to produce a given outcome.	I can explain why people need to think carefully about how content they post might affect others, their feelings and how it may affect how others feel about them (their reputation).	-Know how to format images for a purpose -know how to use formatting tools to create an effective layout -know how to use spellcheck -know how to insert and format a table in a word processing document -know how to change a page layout for a purpose -know how to create hyperlinks within a word document	I can explain that technology can be designed to act like or impersonate living things (e.g. bots) and describe what the benefits and the risks might be.	-Know how to draw 3D shapes -Knowhow to add detail to 3D drawings -Know how to manipulate 3D models -Know how to create a complex 3D model -Know how to create a 3D model of my own.	I can describe how some online services may seek consent to store information about me; I know how to respond appropriately and who I can ask if I am not sure.	-Know the use of count-controlled loops in a different programming environment. -Know that in programming there are infinite loops and count controlled loops. -Know that a design can include two or more loops which run at the same time. -Know how to modify an infinite loop in a given program. -Know how to design a project that includes repetition. -Know how to create a project that includes repetition.

	Skills		<p>All children can:</p> <ul style="list-style-type: none"> - I can search for information using appropriate search engines - I can refine searches using appropriate keywords. - I can begin to use strategies to check the reliability of information on web pages. - I children can begin to explain how search engines work using some key vocabulary. - I can talk about the way search results are selected and ranked. - I can explain what search engine optimisation (SEO) is. 		<p>All children can:</p> <ul style="list-style-type: none"> - I can explain that video is a visual media format - I can make use of a microphone - I can capture video using a range of filming techniques - I can create and save video content - I can select the correct tools to make edits to my video - I can store, retrieve, and export my recording to a computer 		<p>All children can:</p> <ul style="list-style-type: none"> - I can create a code snippet for a given purpose - I can program a computer by typing commands - I can write an algorithm to produce a given outcome - I can use a count-controlled loop to produce a given outcome - I can choose which values to change in a loop - I can identify 'chunks' of actions in the real world 		<p>All children can:</p> <ul style="list-style-type: none"> - I can select, edit and manipulate text in different ways - I can insert images onto a document - I can find and use the different functions of the spellcheck tool - I can insert a simple table - I can add and delete rows and columns - I can change the orientation of the page - I can change the size of the page - I can change the layout by using the column tool. 		<p>All children can:</p> <ul style="list-style-type: none"> - I can draw a 2D shape or line - I can use the measure tool to draw shapes - I can double click to copy push/pull and offset - I can import 3D models from the 3D warehouse - I can use the main tools in SketchUp 		<p>All children can:</p> <ul style="list-style-type: none"> - I can modify a snippet of code to create a given outcome - I can predict the outcome of a snippet of code - I can choose when to use a count-controlled and an infinite loop - I can modify loops to produce a given outcome - I can explain what the outcome of the repeated action should be
			<p>Most children can:</p> <ul style="list-style-type: none"> - I can refine searches using Boolean operators with some guidance. - I can use strategies to check the reliability of information on web pages. 		<p>Most children can:</p> <ul style="list-style-type: none"> - I can experiment with different camera angles - I can outline the scenes of my video - I can evaluate my video and share my opinions 		<p>Most children can:</p> <ul style="list-style-type: none"> - I can identify the effect of changing the number of times a task is repeated - I can predict the outcome of a program containing a count-controlled loop - I can use a procedure in a program 		<p>Most children can:</p> <ul style="list-style-type: none"> - I can format images to achieve various effects - I can format the borders of the cells within a table - I can choose a relevant website to link my document to - I can copy the URL that I need 		<p>Most children can:</p> <ul style="list-style-type: none"> - I can manipulate 2D shapes into 3D shapes - I can use inference points to draw lines and shapes - I can copy and manipulate 3D models. 		<p>Most children can:</p> <ul style="list-style-type: none"> - I can identify which parts of a loop can be changed - I can re-use existing code snippets on new sprites - I can build a program that follows my design - I can evaluate the steps I followed when building my project
			<p>Some children can:</p> <ul style="list-style-type: none"> - I can confidently suggest some SEO improvements for a web page. 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can explain how to improve a video by reshooting and editing 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can design a program that includes count-controlled loops - I can develop my program by debugging it 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can add a spelling to the spelling dictionary - I can format my hyperlink and find an appropriate place to insert it 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can select the tools I need to use for different features 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can refine the algorithm in my design
Vocab		Internet, Search Engine Optimisation (SEO), Search Engine Results Page, Uniform Resource Locator (URL), web browser, web crawler, web page, web site		Video, visual media, camera angles, microphone, technique, scenes, reshoot, edit, tools, store, retrieve, export, evaluate, improve		Code, program, value, command, algorithm, text-based, repeat, sequence, patterns, count-controlled loop, outcome, procedure, debug		Select, edit, manipulate, text, insert, image, document, format, layout, spellcheck, tool, dictionary, table, rows, columns, borders, cells, orientation, size, website, URL, hyperlink		2D shape, line. 3D shape, measure, tool, draw, shape, inference point, double click, copy, import, manipulate, model,		Count-controlled loops, instructions, repeat, code, outcome, infinite loop, modify, sequence, program, sprite	
NC links	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to	2.4 understand computer networks including the internet; how they can provide multiple services, such as the world wide	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to	2.5 use search technologies effectively, appreciate how results are selected and ranked, and be discerning in	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to	2.1design, write and debug programs that accomplish specific goals, including	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to	2.6 select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to	2.6 select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to	2.1design, write and debug programs that accomplish specific goals, including	

		report concerns about content and contact.	web; and the opportunities they offer for communication and collaboration 2.5 use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content 2.6 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 2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	report concerns about content and contact.	evaluating digital content 2.6 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 2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	report concerns about content and contact.	controlling or simulating physical systems; solve problems by decomposing them into smaller parts 2.2 use sequence, selection, and repetition in programs; work with variables and various forms of input and output 2.3use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs 2.6 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	report concerns about content and contact.	range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information	report concerns about content and contact.	range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information	report concerns about content and contact.	controlling or simulating physical systems; solve problems by decomposing them into smaller parts 2.2 use sequence, selection, and repetition in programs; work with variables and various forms of input and output 2.3use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
Willow	Unit	Self-image and identity	Systems and searching	Online relationships	Radio station *	Online reputation	Variables in games	Online bullying	Flat file databases	Managing information online	Film making *	Privacy and security	Sensing movement
A	Knowledge	I can explain how identity online can be copied, modified or altered.	-Know that computers can be connected together to form systems -Know the role of computer systems in our lives -Know how search engines select results -Know how search results are ranked -Know why the order of results is important, and to whom	I can explain that there are some people I communicate with online who may want to do me or my friends harm. I can recognise that this is not my / our fault.	- I can use software to create my own sounds by recording, editing and playing - I can combine audio effects to create an original radio jingle. - I can research and plan digital content for a radio podcast. - I can use software to create and present digital content for a radio podcast. - I can design and record a persuasive radio advert for a product or service. - I can present and evaluate audio content.	I can search for information about an individual online and summarise the information found.	-Know that a 'variable' is something that is changeable. -Know why a variable is used in a program. -Know how to improve a game by using variables. -Know how to design a project that builds on a given example. -Know how to use a design to create a project. -Know how to evaluate a project.	I can explain how anyone can get help if they are being bullied online and identify when to tell a trusted adult.	-Know that a form can be used to record information. -Know differences between paper and computer-based databases. -Know that questions can be answered by grouping and sorting data. -Know that tools can be used to select specific data. -Know that computer programs can be used to compare data visually. -Know how to use a real-world database to answer questions.	I can evaluate digital content and can explain how to make choices about what is trustworthy e.g. differentiating between adverts and search results.	-Know how to use appropriate software and other tools effectively to write a film script. -Know how to locate and check appropriate digital content, and provide accurate crediting of sources. -Know how to use digital recording devices to film and import into video editing software. -Know how to plan, conduct and import video interviews as part of a short film. -Know how to use video editing software to create a short film -know how to use video editing software to turn a film project into a finished movie and present it.	I can explain what a strong password is and demonstrate how to create one.	-Know how to create a program to run on a controllable device. -Know that selection can control the flow of a program. -Know how to update a variable with a user input. -Know how to use a conditional statement to compare a variable to a value. -Know how to design and develop a program that uses inputs and outputs on a controllable device.

	Skills	<p>All children can:</p> <ul style="list-style-type: none"> -I can describe that a computer system features inputs, processes, and outputs - I can explain that computer systems communicate with other devices - I can make use of a web search to find specific information - I can recognise the role of web crawlers in creating an index -I can explain that a search engine follows rules to rank results 		<p>All children can:</p> <ul style="list-style-type: none"> -I can name different devices used for sound recording. - I can use a digital device to record my own voice. -I can play back the recording and listen to it. -I can delete and re-record sounds. -I can import existing sounds. -I can describe what is meant by a podcast. 		<p>All children can:</p> <ul style="list-style-type: none"> - I can identify that variables can hold numbers or letters -I can explain that a variable has a name and a value - I can identify a program variable as a placeholder in memory for a single value - I can test the code that I have written -I can identify ways that my game could be improved 		<p>All children can:</p> <ul style="list-style-type: none"> - I can order, sort, and group my data cards - I can explain what a field and a record is in a database - I can navigate a flat-file database to compare different views of information - I can group information using a database - I can outline how 'AND' and 'OR' can be used to refine data selection - I can refine a chart by selecting a particular filter 		<p>All children can:</p> <ul style="list-style-type: none"> -I can structure the timing of sections to meet a given running time. -I can search for relevant information using appropriate websites -I can evaluate whether information is reliable or not -I can use a digital video camera to record -I can use a variety of camera angles and shots to record -I can import video files into video editing software -I can arrange video files to form a complete film -I can create transitions and visual effects to enhance a movie project 		<p>All children can:</p> <ul style="list-style-type: none"> - I can test my program on an emulator - I can transfer my program to a controllable device -I can determine the flow of a program using selection - I can use a condition to change a variable - I can use an operand (e.g. <=>) in an if, then statement - I can use a range of approaches to find and fix bugs
		<p>Most children can:</p> <ul style="list-style-type: none"> - I can refine my web search -I can explain why we need tools to find things online - I can explain how search engines make money - I can recognise some of the limitations of search engines 		<p>Most children can:</p> <ul style="list-style-type: none"> -I can add effects to enhance a track. 		<p>Most children can:</p> <ul style="list-style-type: none"> - I can decide where in a program to change a variable 		<p>Most children can:</p> <ul style="list-style-type: none"> -I can combine grouping and sorting to answer specific questions - I can explain that data can be grouped using chosen values 		<p>Most children can:</p> <ul style="list-style-type: none"> -I can cross-check information using different sources -I can preview a movie project using software and then refine, based on the preview -I can add finishing touches, including titles and credits, to complete a movie -I can convert a movie editing project into a finished movie file 		<p>Most children can:</p> <ul style="list-style-type: none"> - I can use a variable in an if, then, else statement to select the flow of a program -I can experiment with different physical inputs - I can modify a program to achieve a different outcome
		<p>Some children can:</p> <ul style="list-style-type: none"> - I can relate a search term to the search engine's index 		<p>Some children can:</p> <ul style="list-style-type: none"> -I can rehearse timings to combine two audio tracks. 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can share my game with others - I can use variables to extend my game 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can choose which field and value are required to answer a given question 		<p>Some children can:</p> <ul style="list-style-type: none"> -I can provide accurate crediting for sources of information 		<p>Some children can:</p>
Vocab		Computer system, input, output, processes, device, communicate, search engine, web search, online, web crawlers, index, rank		Device, sound, record, play back, delete, re-record, import, voiceover, audio, track, software, podcast, broadcast, download,		Variable, numbers, letters, value, program, placeholder, algorithm, code, game		Database, data, record, order, sort, group, flat-file database, criteria, field, value, refine, chart, filter		Script, software, film-making, timing, reliable, digital video camera, record, angles, shots, import, files, frame, transitions, visual effects, movie project, preview, titles, credits, convert, edit,		Program, emulator, transfer, controllable device, flow, selection, real-world, variable, input, value, output, condition, modify, operand, algorithm, bug, debug
NC links	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.1 design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.6 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	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.1design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.5 use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content 2.6 select, use and combine a variety of	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.4 understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.1design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by

			2.2 use sequence, selection, and repetition in programs; work with variables and various forms of input and output 2.4 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 2.6 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		collecting, analysing, evaluating and presenting data and information		decomposing them into smaller parts 2.2 use sequence, selection, and repetition in programs; work with variables and various forms of input and output 2.3 use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs 2.6 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		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		communication and collaboration 2.5 use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content 2.6 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		decomposing them into smaller parts 2.2 use sequence, selection, and repetition in programs; work with variables and various forms of input and output 2.3 use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs 2.6 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
Willow B	Unit	Self-image and identity	Communication and collaboration	Online relationships	Web page creation	Online reputation	Selection in physical computing	Online bullying	Spreadsheets	Managing information online	3D Modelling	Privacy and security	Selection in quizzes
	Knowledge	I can demonstrate how to make responsible choices about having an online identity, depending on context.	-Know the importance of internet addresses -Know how data is transferred across the internet -Know how sharing information online can help people to work together -Know different ways of working together online -Know how we communicate using technology	I can explain how someone can get help if they are having problems and identify when to tell a trusted adult.	-Know how to review an existing website and consider its structure. -Know how to plan features of a webpage. -Know the ownership and use of images (copyright). -Know the need to preview pages. -Know the need for a navigation path. -Know the implications of linking to content owned by other people.	I can describe ways that information about anyone online can be used by others to make judgments about an individual and why these may be incorrect	-Know how to control a simple circuit connected to a computer. -Know how to write a program that includes count-controlled loops. -Know that a loop can stop when a condition is met. -Know that a loop can be used to repeatedly check whether a condition has been met. -Know how to design a physical project that includes selection. -Know how to create a program that controls a physical computing project.	I can identify a range of ways to report concerns and access support both in school and at home about online bullying.	-Know that a data set can be created and built in a spreadsheet. -Know that formulas can be used to produce calculated data. -Know how to apply formulas to data. -Know that a spreadsheet can be created to plan an event. -Know suitable ways to present data.	I can describe how fake news may affect someone's emotions and behaviour, and explain why this may be harmful.	-Know that you can work in three dimensions on a computer. -Know that digital 3D objects can be modified. -Know that objects can be combined in a 3D model. -Know how to create a 3D model for a given purpose. -Know how to plan a 3D model. -Know how to create my own 3D model.	I can explain how many free apps or services may read and share private information (e.g. friends, contacts, likes, images, videos, voice, messages, geolocation) with others.	-Know how selection is used in computer programs. -Know that a conditional statement connects to a condition to an outcome. -Know how selection directs the flow of a program. -Know how to design and create a program which uses selection.
	Skills		All children can: - I can recognise that data is transferred using agreed methods -I can explain that all data transferred over the internet is in packets - I can explain that data is transferred		All children can: - I can explore a website - I know that websites are written in HTML - I can recognise the common features of a web page -I can describe what is meant by the term 'fair use'		All children can: - I can explain what an infinite loop does -I can connect more than one output component to a microcontroller - I can design sequences that		All children can: - I can enter data into a spreadsheet -I can apply an appropriate format to a cell - I can explain what an item of data is -I can construct a formula in a spreadsheet		All children can: -I can add 3D shapes to a project - I can move 3D shapes relative to one another - I can view 3D shapes from different perspectives -I can lift/lower 3D objects		All children can: -I can identify conditions in a program - I can modify a condition in a program - I can use selection in an infinite loop to check a condition

		<p>over networks in packets</p> <ul style="list-style-type: none"> - I can identify and explain the main parts of a data packet 			<ul style="list-style-type: none"> - I can find copyright-free images - I can add content to my own web page - I can describe why navigation paths are useful - I can create hyperlinks to link to other people's work 		<ul style="list-style-type: none"> use count-controlled loops - I can use a count-controlled loop to control outputs - I can design a conditional loop - I can program a microcontroller to respond to an input - I can test and debug my project - I can write an algorithm that describes what my model will do 		<ul style="list-style-type: none"> - I can identify that changing inputs changes outputs - I can create a formula which includes a range of cells - I can use a spreadsheet to answer questions - I can produce a chart 		<ul style="list-style-type: none"> - I can recolour a 3D object - I can resize an object in three dimensions - I can duplicate 3D objects - I can group 3D objects - I can rotate objects in three dimensions 		<ul style="list-style-type: none"> - I can design the flow of a program which contains 'if... then... else...' - I can show that a condition can direct program flow in one of two ways - I can identify the outcome of user input in an algorithm
		<p>Most children can:</p> <ul style="list-style-type: none"> - I can explain that the internet allows different media to be shared - I can recognise how to access shared files stored online - I can send information over the internet in different ways 		<p>Most children can:</p> <ul style="list-style-type: none"> - I can say why I should use copyright-free images - I can explain what a navigation path is 		<p>Most children can:</p> <ul style="list-style-type: none"> - I can identify a condition and an action in my project - I can use selection (an 'if...then...' statement) to direct the flow of a program 		<p>Most children can:</p> <ul style="list-style-type: none"> - I can explain which data types can be used in calculations - I can apply a formula to multiple cells by duplicating it 		<p>Most children can:</p> <ul style="list-style-type: none"> - I can accurately size 3D objects - I can combine a number of 3D objects - I can show that placeholders can create holes in 3D objects - I can construct a 3D model based on a design - I can explain how my 3D model could be improved - I can modify my 3D model to improve it 		<p>Most children can:</p> <ul style="list-style-type: none"> - I can implement my algorithm to create the first section of my program - I can share my program with others - I can test my program - I can extend my program further 	
		<p>Some children can:</p>		<p>Some children can:</p> <ul style="list-style-type: none"> - I can make multiple web pages and link them using hyperlinks 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can use selection to produce an intended outcome 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can calculate data using different operations 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can analyse a 3D model - I can combine objects in a design 		<p>Some children can:</p> <ul style="list-style-type: none"> - I can identify the setup code I need in my program - I can identify ways the program could be improved 	
Vocab		Websites, addresses, internet, device, data, transfer, packets, online, network, media, share, store, files, send, public, private, communicate		Media, websites, HTML, web page, layout, fair us, copyright-free images, navigation paths, hyperlinks		Simple circuit, microcontroller, LED, output, input, component, count-controlled loops, conditional loop, flow, program, sequence, debug, algorithm		Data, spreadsheet, structure, cell, format, formula, input, output, duplicate, calculate, chart, table		3D shapes, move, perspective, lift, lower, recolour, resize, duplicate, rotate, combine, placeholder, analyse, model, construct		Conditions, program, modify, selection, infinite loop, flow, input, algorithm, setup code, code	
NC links	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.4 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 2.6 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 2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.5 use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content 2.6 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 2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.1design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts 2.2 use sequence, selection, and repetition in programs; work with variables and various forms of input and output 2.3use logical reasoning to explain how some simple algorithms work and to	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.6 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	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.6 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 2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	2.1design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts 2.2 use sequence, selection, and repetition in programs; work with variables and various forms of input and output 2.3use logical reasoning to explain how some simple algorithms work and to	

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Planning Inclusive Lessons

Tasks

Incorporate learning materials that are accessible for learners of all abilities. For learners with special educational needs and disabilities, specific resources or approaches may be required to enable them to access the curriculum. Ensure you have considered what barriers learners may have within a lesson and embed support strategies to help them overcome these.

Scaffold learning so that learners benefit from support during initial phases of learning. Adapt tasks to make the curriculum accessible to all. For example, tools such as *CodeJumper* and *Blocks4All* can be used for learners who are visually impaired.

Problem Solving

In computer science, there can be multiple solutions to a problem. Focus your instruction and encouragement on solving problems and the problem-solving process, rather than finding a single right answer. Emphasize guided inquiry, designing learning opportunities where learners can ask questions, explore, try different approaches and challenge their own and each other's ideas.



Encourage learners to take ownership over their learning, strategies such as the 'BBBGBs' (Brain, Board, Buddy, Google, Boss) and expert learners are effective ways to embed this into lessons. If a learner struggles with complex, multi-step problem-solving, give them additional support in the beginning, then slowly remove the support once learners build their skills and confidence.

High Expectations

One of the largest subject barriers we face is learners' own belief systems about who can succeed in computer science. If a teacher holds lower expectations of a learner, it can have a negative impact on a learner's achievement in the subject.

Encourage learners to reflect on their perspectives and potential biases and challenge yourself to do the same. Build relationships with learners to identify opportunities to connect learning to their personal experience. Look for stories and experiences about using computer science that will be meaningful and relatable to your learners.



Creating an Inclusive Environment

Vocabulary

Whilst you model the skills and understanding required to develop a rich vocabulary knowledge, consider your use of words within a lesson. Familiarise learners with Tier 2 words by embedding them into classroom displays and lesson activities. It's important that you find ways for learners to encounter these terms, as this will empower them to access a higher level of language with which they can communicate and understand ideas across the curriculum.

Vision Impairment

At Key Stage 1 and 2, coding is primarily taught using block-based programming languages such as Scratch. Carefully consider what inclusive practices are appropriate. For example, embedding the use of braille, allowing learners to orient themselves to the classroom space, careful selection of colours within resources, installing a screen reader and magnifier aids. Together these approaches support learners in solving complex challenges.

Space

The learning environment is important in making learners feel included. Incorporate visuals that will appeal to a wide range of learner interests and backgrounds. Include examples of learners and professionals with disabilities, the representation of a diverse range of figures in computing can send a powerful message to your learners.

Arrange the learning space to promote collaboration and hands-on activities, whilst also being mindful of how learners will access their workstations. Arrange aisles and workstations so that learners with mobility aids can get to all the areas they need to access to participate fully.

Consider what assistive technology devices could be embedded into practice to give opportunities for all learners to fully access lesson content.

Curriculum Considerations

Computing equips learners to use computational thinking and creativity to understand the digital world we live in. Computing has deep links with mathematics, science and design and technology, and ensures that learners become digitally literate, offering the opportunity to learn in different ways.

Key Stage 1

At this stage, learning should be focused on the concept of computational thinking and equipping learners with the skills to tackle challenging problems using logical reasoning. Practical activities that encourage them to get hands-on with problems can help them visualise solutions. Giving learners the opportunity to predict behaviour of simple programs can also develop their problem-solving skills. It's important to use and to teach learners the correct technical terminology within lessons, to ensure that misconceptions are not embedded early into their computing education.

Key Stage 2

At this stage, learners begin to apply and build upon the skills learnt at Key Stage 1 through designing and writing programs that accomplish specific goals. Learners should be able to detect and correct errors in algorithms. When teaching learners to solve various problems, encourage them to be resilient and think outside the box.

Learners should also be shown how to use technology safely, respectfully and responsibly. Learners need to be able to identify unacceptable behaviour and know how to report concerns.

Strategies to Scaffold Learning

How can I support learners who struggle to access lessons because of literacy difficulties?

- Model the correct use of vocabulary. Show examples of common errors/misconceptions and work with learners to improve literacy within given text.
- For those with appropriate access arrangements, encourage the use of a reader to support learners in reading and interpreting large sections of text.
- Chunk key information and create clear, easy-to-follow checklists. This can help your learner focus on one section at a time and have a clear set of goals.
- During classroom discussions, listen to the answers given and when re-iterating points, rephrase sentences to include key vocabulary.
- Consider your classroom display and how you can promote the definitions and use of Tier 2 words.
- Provide learners with a glossary of key terms which they can refer to during the lesson.

How can I support learners who struggle to retain vocabulary?

- Embed opportunities to recall key terms within lessons. Memorisation techniques such as tracked retrieval practice can give learners the opportunity to revisit topics across the curriculum.
- Provides learners with a glossary of key terms which they can refer to during the lesson.
- Use rephrasing techniques to strengthen learner answers with correct vocabulary.
- Introduce new terms slowly and rehearse new words. Get learners to interact with the key terms in various ways such as writing, speaking, mini games, questioning and more.

How can I support learners who need additional time to develop conceptual understanding?

- Model answers and get learners to look at and discuss completed examples.
- Assess and use learners' prior knowledge to create links between old and new content.
- Walk through examples together, giving learners the opportunity to ask questions.
- Address misconceptions early.

How can I support learners who struggle with attention?

- Learn what hobbies or topics the learners are interested in. Find ways to incorporate this into lessons and questions. Use learners' names in written questions to further engage them in text.
- Give clear instructions within the form of a checklist. This will break down the task into more manageable chunks.
- Praise learners on their contributions and for targets met, encourage them to continue and to have a [growth mindset](#).
- Consider the learning environment and potential distractions and make appropriate arrangements to remove these barriers.
- Ensure instructions are clear and signposted.
- Be concise in teacher-led delivery. Chunk material in larger topics so learners can complete a range of engaging activities.
- Check in with the learners throughout the activity, initially to check they have understood the task, to praise work completed and to challenge them further.

Case Study

A learner in Year 9 with ASD, articulate and passionate about computing, was anxious about change and new environments.

Transitioning into a new year, class or seating plan were changes they found particularly difficult. The learner did not like group work, sitting next to others, sharing or learning new content. The teacher embedded the following strategies into lessons to support this learner:

- Spoke with the learner to discuss their interests and friendships. Worked with them in structuring a seating plan in advance. The learner often wanted to sit on their own and at times when this wasn't possible, the teacher spoke with them about what other options were available and gave them ownership of the appropriate solution.
- Pre-warned the learner about any assessments, topic changes, teacher/room changes. Pre-warned the learner about group activity, discussed with them alternative ways they could get involved.
- Gave the learner time out when needed.
- Incorporated learner's hobbies and interests into lesson content.
- Used praise to motivate and support the learner.
- Allowed the learner to work independently.
- Built strong positive relationships with the learner, which had the biggest impact on their engagement and willingness to try something new.
- Provided the learner with a topic list, glossary and revision slides in advance of each term.