Overview of Progression in Computing Skills and Knowledge

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computing Systems and Networks *(systems, networks and how they are used, the internet, hardware and software)* (Digital Literacy)	To be able to identify an item in school that uses technology. To be able to identify an item at home that uses technology To tell a trusted adult if they see something online that they don't like.	To be able to identify items in school that use technology. To be able to identify items at home that use technology. To be able to explain they should tell a trusted adult if they see something online that they don't like.	Identify technology. Identify a computer and its main part. To use a mouse in different ways. To use a keyboard to type. To use a keyboard to edit text. To create rules for using technology responsibly.	Can identify examples of computers and their uses both at home and at school. Can recognise common types of technology. Understands how devices work together. Can talk about different rules for using IT and say how the rules can keep them safe. To know some of the choices that you make when using IT.	To explain how digital devices function. To identify input and output devices. To recognise how digital devices can change the way we work. To explain how a computer network can be used to share information. To explore how digital devices can be connected. To recognise the physical components of a network	To describe how networks physically connect to other networks. To recognise how networked devices make up the internet. To outline how websites can be shared via the World Wide Web. (WWW) To describe how content can be added and accessed by the WWW. To recognise how the content of the WWW is created by people. To evaluate the consequences of unreliable content.	To explain that computers can be connected together to form systems. To recognise the role of computer systems in our lives. To recognise how information is transferred over the internet. To explain how sharing information online lets people in different places work together. To contribute to a shared project online. To evaluate different ways of working together online.	To identify how to use a search engine. To describe how search engines select their results. To explain how search results are ranked. To recognise why the order of results is important, and to whom. To recognise how we communicate using technology. To evaluate different methods of online communication.
Creating Media (design and development, communicating and collaborating online, evaluating online content, respectful and responsible communication, presenting, creating content) (Information Technology)	To mark-make using the interactive whiteboard. To mark-make using other technology. To begin to use selection when designing digitally. To take a photo using an iPad/camera.	To create digital artwork. To use selection when designing digitally. To make sound digitally. To begin to make music digtally. To take photos and videos using an iPad/camera.	To describe what different freehand tools do. To use the shape tool and the line tool. To make careful choices when painting using a digital picture. To explain why I chose the tools I used. To use a computer on my own to paint a picture. To compare painting a picture on a computer and on paper. To use a computer to write. To add and remove text on a computer. To identify that the look of text can be changed on a computer. To make careful choices when changing text. To explain why I used the tools that I chose. To compare writing on a computer with writing on paper.	To know what devices can be used to take photographs. To use a digital device to take a photograph. To describe what makes a good photograph. To decide how photographs can be improved. To use tools to change an image. To recognise that images can be changed. To say how music can make us feel. To identify that there are patterns in music. To describe how music can be used in different ways. To show how music is made from a series of notes. To create music for a purpose. To review and refine our computer work.	To explain that animation is a sequence of drawing or photographs. To relate animated movement with a sequence of images. To plan an animation. To identify the need to work consistently and carefully. To review and improve an animation. To evaluate the impact of adding other media to an animation. To recognise how text and images convey information. To recognise that text and layout can be edited. To choose appropriate page settings. To add content to a desk top publishing publication. To consider how different layouts can suit different purposes. To consider the benefits of desktop publishing.	To identify that sound can be digitally recorded. To use a digital device to record sound. To explain that a digital recording is stored as a file. To explain that audio can be changed through editing. To show that different types of audio can be combined and played together. To evaluate editing choices made. To explain that digital can be changed. To change the composition of an image. To describe how images can be changed for different used. To make good choices when selecting different tools. To recognise that not all images are real. To evaluate how changes can improve an image.	To recognise video as moving pictures, which can include audio. To identify digital devices that can record video. To capture video using a digital device. To recognise the features of an effective video. To identify that video can be improve through reshooting and editing. To consider the impact of the choices made when making and sharing a video. To identify that drawing tools can be used to produce different outcomes. To create a vector drawing by combining shapes. To sue tools to achieve a desired effect. To recognise that vector drawings consist of layers. To groups object to make them easier to work with. To evaluate my vector drawing.	To review an existing website and consider its structure. To plan the features of a webpage. To consider the ownership of use of images (copyright) To recognise the need to preview pages. To outline the need of a navigation path. To recognise the implication of linking to content owned by other people. To use a computer to create and manipulate three-dimensional (3D) digital objects. To compare working digitally with 2D and 3D graphics. To construct a digital model of a physical object. To identify that physical objects can be broken down into a collection of 3D shapes. To design a digital model by combining 3D objects. To develop and improve a digital 3D model.
Data and Information (collecting, analysing, evaluating, presenting data and information)	To identify objects they can manipulate. To begin to count objects they can manipulate. To begin to	To identify objects and pictorial representations. To count objects and pictorial representations. To group objects (e.g. by size/colour)	To label objects. To identify that objects can be counted. To describe objects in different ways. To count objects with the same	To recognise that we can count and compare objects using tally charts. To recognise that objects can be represented as	To create questions with yes/no answers. To identify the object attributes needed to collect relevant data. To create a branching	To explain that data gathered over time can be used to answer questions. To use a digital device to collect data automatically. To explain that a	To use a form to record information. To compare paper and computer-based databases. To outline how grouping and	To identify questions that can be answered using data. To explain that objects can be described using data. To explain that

(Information Technology)	group objects (e.g. by size/colour) To begin to develop mouse skills.	To identify a similarity about a group of objects. To develop mouse skills.	properties. To compare groups of objects. To answer questions about groups of objects.	pictures. To create a pictogram. To select objects by attribute and make comparisons. To recognise that people can be described by attributes. To explain that we can represent information using a computer.	database. To explain why it is helpful to a database to be well structured. To plan the structure of a branching database. To create an identification tool.	data logger collects 'data points' from sensors over time. To use data collected over a long duration to find information. To identify the data needed to answer questions. To use collected data to answer questions.	then scoring data allows us to answer questions. To explain that tools can be used to select specific data. To explain that computer programs can be used to compare data visually. To apply my knowledge of a database to ask and answer real-world questions.	formula can be used to produce calculated data. To apply formulas to data, including duplicating. To create a spreadsheet to plan an event. To choose a suitable what to present data.
Programming (Interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors.) (Computer Science)	To be able to follow a simple command orally. To be able to give simple commands orally. To be able to program a Beebot to move using a command.	To be able to follow a simple algorithm orally. To be able to give a simple algorithm orally. To program a Beebot to move 2 spaces forwards. To program a Beebot to move forward and then backwards.	To explain what a given command will do. To act out a given word. To combine forwards and backwards commands to make a sequence To combine 4 direction commands to make sequences. To plan a simple program. To find more than one solution to a problem. To choose a command for a given purpose. To show that a series of commands can be joined together. To identify the effects of changing a value. To explain that each sprite has its own instructions. To design the parts of a project. To use my algorithm to create a program.	To describe a series of instructions as a sequence. To explain what happens when we change the order of instructions. To use logical reasoning to predict the outcome of a program (series of commands) To explain that programming projects can have code and artwork. To design an algorithm To create and debug a program that I have written. To explain that a sequence of commands has an outcome. To create a program using a given design. To change a given design. To create a program using my own design. To decide how my project can be improved.	To explore a new programming environment. I can identify that each sprite is controlled by the commands I choose. To explain that a program has a start. To recognise that a sequence of commands can have an order. To change the appearance of my project. To create a project from a task description. To explain how a sprite moves in an existing project. To create a program to move a sprite in four directions. To adapt a program by adding features. To identify and fix bugs in a program. To design and create a maze-based challenge.	To identify that accuracy in programming is important. To explain what 'repeat' means. To modify a count- controlled loop to produce a given outcome. To decompose a program into parts. To create a program that uses count controlled loops to produce a given outcome. To develop the use of count-controlled loops in a different programming environment. To explain that in programming there are infinite loops and count-controlled loops. To develop a design which included two or more loops which run at the same time. To modify an infinite loop in a given program. To design a project that includes repetition. To create a project that includes repetition.	To control a simple circuit connected to a computer. To write a program that includes count-controlled loops. To explain that a loop can stop when a condition is met, eg. Number of times. To conclude that a loop can be used to repeatedly check whether a condition has been met. To design a physical project that includes selection. To create a controllable system that includes selection. To explain how selection is used in computer programs. To relate that a conditional statement connects a condition to an outcome. To explain how selection directs the flow of a program. To design a program which uses selection. To create a program which uses selection. To evaluate my program.	To define a 'variable' as something that is changeable. To explain why a variable is used in a program. To choose how to improve a game using variables. To design a project that builds on a given example. To use my design to create a project. To evaluate my project. To create a program to run a controllable device. To explain that selection can control the flow of a program. To update a variable with a user input. To use a conditional statement to compare a variable to a value. To design a project that uses inputs and outputs on a controllable device. To develop a program to use inputs and outputs on a controllable device.

Internet safety is taught throughout the year within computing lessons, PSHE lessons, assemblies, Safer Internet week and using resources from 'Project Evolve', which links to each of the 330 statements from UK Council for Internet Safety's (UKCIS) framework.

KS1 NC Subject Content Pupils should be taught to: 4a use technology safely and respectfully, keeping personal information private; know where to go for help and support when they have concerns about material on the internet.
KS2 NC Subject Content Pupils should be taught to: 4a use technology safely, respectfully and responsibly; know a range of ways to report concerns and inappropriate behaviour.

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Internet Safety	**Self-image and identity**							
	If something happens that makes them feel sad, worried, uncomfortable or frightened they can tell a trusted adult (Butterfly feeling)	If something happens that makes them feel sad, worried, uncomfortable or frightened they can identify a trusted adult to speak to (Butterfly feeling)	Talk about their digital footprint. Recognise that there may be people online who could make them feel sad, embarrassed or upset If something happens that makes them feel sad, worried, uncomfortable or frightened they can give examples of when and how to speak to an adult they can trust. (Butterfly feeling)	Talk about their digital footprint and explain how other people may look and act differently online and offline Give examples of issues online that might make us feel sad, worried, uncomfortable or frightened, and give examples of how they might get help. (Butterfly feeling)	Use technology safely, respectfully, responsibly and be able to talk about their digital footprint Explain what is meant by the term 'identity' Explain how people can represent themselves in different ways online	Explain how their online identity can be different to their offline identity and be able to talk about their digital footprint Explain that others online can pretend to be someone else, including their friends, and can suggest reasons why they might do this	Talk about their digital footprint and demonstrate responsible choices about their online identity, depending on context Explain how identity online can be copied, modified or altered	Talk about their digital footprint and the importance of asking until they get the help needed Identify and critically evaluate online content relating to gender, race, religion, disability, culture and other groups, and explain why it is important to challenge and reject inappropriate representations online Describe issues online that could make anyone feel sad, worried, uncomfortable or frightened and know and give examples of how to get help, both on and offline
	Online relationships							
	Ask an adult to use technology.	Ask an adult if they can do something online.	Give examples of when they should ask permission to do something online and explain why this is important.	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) Explain why they have a right to say 'no' or 'they will have to ask someone'. Explain why they should always ask a trusted adult before clicking 'yes', 'agree' or 'accept' online	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 Explain how someone's feelings can be hurt by what is said or written online	Give examples of how to be respectful to others online and describe how to recognise healthy and unhealthy online behaviours Explain how content shared online may feel unimportant to one person but may be important to other people's thoughts feelings and beliefs	Explain how someone can get help if they are having problems and identify when to tell a trusted adult	Explain how sharing something online may have an impact either positively or negatively Describe how to be kind and show respect for others online including the importance of respecting boundaries regarding what is shared about them online and how to support them if others do not
	Online reputation							
	Recognise that what they make can be seen again.	Recognise that what they make can be seen by others.	Recognise that information can stay online and could be copied	Explain how information put online about them can last for a long time	Give examples of what anyone may or may not be willing to share about themselves online Explain the need to be careful before sharing anything personal	Describe how to find out information about others by searching online	Describe ways that information about anyone online can be used by others to make judgments about an individual and why these may be incorrect	Explain strategies anyone can use to protect their 'digital personality' and online reputation, including degrees of anonymity
	Online bullying							
	Show kindness to others.	Explain how to be kind.	Describe how to behave online in ways that do not upset others and can give examples	Explain what bullying is, how people may bully others and how bullying can make someone feel Give examples of bullying behaviour and how it could look online	Describe ways that some people can be unkind online Offer examples of how this can make others feel	Describe ways people can be bullied through a range of media (e.g. image, video, text, chat) 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)	Recognise online bullying can be different to bullying in the physical world and can describe some of those differences Describe the helpline services which can help people experiencing bullying, and how to access them (e.g. Childline / CEOP / The Mix)	Describe how to capture bullying content as evidence (e.g. screen-grab, URL, profile) to share with others who can help them.
	Health, wellbeing and lifestyle							
	Use technology to help us.	Identify ways technology can help us with health, wellbeing and lifestyle. (e.g. yoga videos)	Explain rules to keep us safe when we are using technology both in and beyond the home	Explain simple guidance for using technology in different environments and settings, e.g. accessing online technologies in public places and the home environment.	Explain why spending too much time using technology can sometimes have a negative impact on anyone, e.g. mood, sleep, body, relationships	Explain how using technology can be a distraction from other things, in both a positive and negative way	Describe ways technology can affect health and well-being both positively (e.g. mindfulness apps) and negatively Describe some strategies, tips or advice to promote health and well-being with regards to technology Recognise the benefits and risks of accessing information about health and well-being online and how we should balance this with talking to trusted adults and professionals	Describe common systems that regulate age-related content (e.g. PEGI, BBFC, parental warnings) and describe their purpose Assess and action different strategies to limit the impact of technology on health (e.g. night-shift mode, regular breaks, correct posture, sleep, diet and exercise)