At Coulsdon Church of England Primary School, we follow the Kapow Primary Computing curriculum. This document outlines how computing knowledge and skills develop progressively from EYFS to Year 6 through our computing scheme of work. It demonstrates clear progression across the key areas of computer science, information technology and digital literacy, including online safety.

Clear and specific statements are provided for both knowledge and skills, reducing ambiguity and supporting consistency in teaching. This approach enables the school to communicate clearly with parents and carers about what pupils learn in computing and how understanding deepens over time.

EYFS (Reception) content is aligned with the Early Years Foundation Stage Framework, supporting pupils' early development in using technology, following instructions and developing logical thinking. These foundations are built upon throughout Key Stage 1 and Key Stage 2, ensuring continuity and a smooth transition as pupils develop confidence, independence and increasingly sophisticated computational understanding.

The Kapow Primary Computing curriculum fully meets the statutory requirements of the National Curriculum for Computing (2014). It supports pupils to understand and apply the fundamental principles of computer science, analyse problems computationally, develop and debug programs, and evaluate and apply information technology in a range of contexts. Through this progression, pupils become responsible, competent, confident and creative users of digital technology.

Teachers at Coulsdon Church of England Primary School use professional judgement when delivering computing content, adapting learning to meet the needs of pupils and reflecting the context of our school community.

Progression of Skills & knowledge

Computer science

EYFS	
Skills Hardware	Knowledge Programming

• Learning how to operate a camera to take photographs of meaningful creations or moments. • Learning how to explore and tinker with hardware to develop familiarity and introduce relevant vocabulary. • Recognising and identifying familiar letters and numbers on a keyboard. • Developing basic mouse skills such as moving and clicking. Computational thinking • Using logical reasoning to understand simple instructions and predict the outcome. Programming • Following instructions as part of practical activities and games. • Learning to give simple instructions. • Experimenting with programming a Bee-bot/Blue-bot and learning how to give simple commands. • Learning to debug instructions, with the help of an adult, when things go wrong.	• To know that being able to follow and give simple instructions is important in computing. • To understand that it is important for instructions to be in the right order. • To understand why a set of instructions may have gone wrong. • To know that you can program a Bee-Bot with some simple commands. • To understand that debugging means how to fix some simple programming errors. • To understand that an algorithm is a set of clear and precise instructions.

Year 1	
Skills Hardware	Knowledge Programming

- Learning how to explore and tinker with hardware to find out how it works.
- Recognising that some devices are input devices and others are output devices.
- Learning where keys are located on the keyboard.
- Learning how to operate a camera to take photos and videos.

Computational thinking

- Learning that decomposition means breaking a problem down into smaller parts.
- Using decomposition to solve unplugged challenges.
- Using logical reasoning to predict the behaviour of simple programs.
- Developing the skills associated with sequencing in unplugged activities.
- Following a basic set of instructions.
- Assembling instructions into a simple algorithm.

Programming

- Making suggestions for how to fix errors in algorithms.
- Beginning to identify errors in algorithms.
- Using terms like 'start,' 'end' and 'next' to describe the steps in algorithms.

- To understand that an algorithm is when instructions are put in an exact order.
- To know that input devices get information into a computer and that output devices get information out of a computer.
- To understand that decomposition means breaking a problem into manageable chunks and that it is important in computing.
- To know that we call errors in an algorithm 'bugs' and fixing these 'debugging'.
- To understand the basic functions of a Bee-Bot.
- To know that you can use a camera/tablet to make simple videos.
- To know that algorithms move a bee-bot accurately to a chosen destination.
- To know that humans need to give robots instructions to follow and that they will carry out these instructions exactly, even if they are wrong.
- To know that humans need to give instructions in the correct language for the robot to understand.
- To know that instructions (algorithms) must give every step of a task.

• Writing clear, sequenced algorithms for familiar tasks • Explaining what they are trying to achieve with their algorithms. • Recognising that robots are programmed by humans. • Learning to debug an algorithm in an unplugged scenario. • Using programming language to explain how a floor robot works. • Learning to debug instructions when things go wrong. • Programming a floor robot to follow a planned route. • Changing their instructions or algorithms into code that the robot understands.	• To know that an algorithm must give clear, sequenced instructions. • To know that there may be an error if a set of instructions (an algorithm) does not give the expected result. • To know that errors could result from sequencing, unclear instructions or missing steps. Data handling • To know that computers understand different types of 'input'.

Year 2	
Skills Hardware • Understanding what a computer is and that it's made up of different components. • Recognising that buttons cause effects and that technology follows instructions. • Learning how we know that technology is doing what we want it to do via its output.	Knowledge Computing systems and networks • To know that computers often work together. Programming • To understand what machine learning is and how that enables computers to make predictions. • To know that loops in programming are where you set a certain instruction (or

- Using greater control when taking photos with cameras, tablets or computers.
- Developing confidence with the keyboard and the basics of touch typing.

Computational thinking

- Articulating what decomposition is
- Decomposing a game to predict the algorithms used to create it.
- Learning that there are different levels of abstraction.
- Explaining what an algorithm is.
- Following an algorithm.
- Learning that programs execute by following precise instructions.
- Incorporating loops within algorithms.
- Creating a clear and precise algorithm.

Programming

- Using logical thinking to explore software, predicting, testing and explaining what it does.
- Using an algorithm to write a basic computer program.
- Using loop blocks when programming to repeat an instruction more than once.

instructions) to be repeated multiple times.

- To know that abstraction is the removing of unnecessary detail to help solve a problem.
- To know that coding is writing in a special language so that the computer understands what to do
- To understand that the character in ScratchJr is controlled by the programming blocks.
- To know that you can write a program to create a musical instrument or tell a joke.
- To know that programming a computer or device involves giving it instructions to perform specific tasks
- That video games, phones, websites and apps are all created using programming.
- To know that different devices and programs use different programming languages or 'codes'
- To know that an algorithm becomes a program when it is coded.
- That programs execute the exact instructions they are given, even if they are incorrect.
- That a program is a series of instructions (algorithms) that

	are written for a computer to follow. • That a person can program a device by giving it an algorithm/algorithms to follow. • That there must be an error if a program does not execute as expected. • That an error in a computer program is known as a 'bug' and fixing errors is known as 'debugging'. Data handling • To understand what steps you need to take to create an algorithm.

National curriculum - end of KS1

Understand what algorithms are, how they are implemented as programs on digital devices and that programs execute by following precise and unambiguous instructions.

Create and debug simple programs.

Use logical reasoning to predict the behaviour of simple programs.

Use technology purposefully to create, organise, store, manipulate and retrieve digital content.

Recognise common uses of information technology beyond school.

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.

Year 3

Skills Hardware

- Understanding what the different components of a computer do and how they work together.
- Learning about the purpose of routers.
- Drawing comparisons across different types of computers.

Networks and data representation

- Recognising links between networks and the internet.
- Learning how data is transferred.
- Identifying the key components within a network, including whether they are wired or wireless.
- Understanding how networks work and their purpose.
- Learning about the role of packets.
- Understanding that websites & videos are files that are shared from one computer to another.
- Understanding the role of the key components of a network.

Computational thinking

- Forming algorithms independently.
- Explaining the purpose of an algorithm.

Knowledge Computing systems and networks

- To know the components that make up a network (Wireless access point/WAP, Network switch, Router, Server and devices).
- To know that a server is central to a network and responds to requests made.
- To know that the internet connects all the networks around the world.
- To know that a router connects us to the internet.
- To know what a packet is and why it is important for website data transfer.
- To know the roles that inputs and outputs play on computers.
- To know what some of the different components inside a computer are e.g. CPU, RAM, hard drive, and how they work together.

Programming

- To know that Scratch is a programming language and some of its basic functions.
- To understand how to use loops to improve programming.
- To understand how decomposition is used in programming.

- Using logical reasoning to explain how simple algorithms work.
- Using repetition in programs.
- Using decomposition to explore the code behind an animation.
- Using decomposition to explain the parts of a laptop computer

Programming

- Making reasonable suggestions for how to debug their own and others' code.
- Continuing existing code.
- Incorporating loops to make code more efficient.
- Using logical thinking to explore more complex software; predicting, testing and explaining what it does.
- Recognising visual and text-based programming languages.
- Recognising further examples of computers being programmed by humans to perform simple tasks.
- Working towards a given goal that a program needs to accomplish.
- Breaking down what they want to achieve into smaller, manageable parts.
- Using logic, pattern recognition and decomposition to solve simple problems.

- To understand that you can remix and adapt existing code.
- To know that websites have all been programmed, often using HTML.
- To know that programming languages can be visual (Scratch) or text-based (HTML).
- To know that 'coding' is the process of turning an algorithm into a programming language.
- To know that HTML tells a browser how to display text, images and multimedia on a webpage.
- To know that 'decomposition' is the process of breaking down a task or problem into smaller parts.
- To know that breaking down a problem into smaller parts makes it easier to solve the problem.
- To know that 'abstraction' is identifying the important detail and ignoring irrelevant information.
- To know that loops are used to save time when writing code by reducing repetition.
- To know that a variable is a container or holder for storing information that can change, e.g. numbers or text.

• Tinkering with an existing text-based code to see how it affects a program (website). • Remixing code to alter and add to an existing program. • Recognising repeating patterns in a program or code. • Creating loops to make code more efficient in block-based programs. • Beginning to use variables in block-based programming languages to make programs more interactive. • Including a conditional statement in block-based programming languages. • Recognising the relationship between what is happening in a program and the written (block) code. • Working backwards, beginning to identify the code they think a program uses. • Running small chunks of code at a time to find the error or 'bug.'	• To know that conditional statements tell the computer what to do next based on a user's input. • To know that it is important to identify where the mistake is in the programming as part of the debugging process. • To know that errors in a program could result from sequencing errors, coding errors or missing code. Data handling • To know that different visual representations of data can be made on a computer.

Year 4	
Skills Hardware • Using tablets or digital cameras to film a weather forecast.	Knowledge Programming • To understand that a variable is a value that can change (depending on conditions) and

- Understanding that weather stations use sensors to gather and record data which predicts the weather.

Networks and data representation

- Understanding that computer networks provide multiple services, such as the World Wide Web, and opportunities for communication and collaboration.

Computational thinking

- Using decomposition to solve a problem by finding out what code was used.
- Using decomposition to understand the purpose of a script of code.
- Identifying patterns through unplugged activities.
- Using abstraction to identify the important parts when completing both plugged and unplugged activities.
- Using past experiences to help solve new problems.

Programming

- Creating algorithms for a specific purpose.
- Coding a simple game.
- Using abstraction and pattern recognition to modify code.
- Incorporating variables to make code more efficient.
- Remixing existing code.

know that you can create them in Scratch.

- To know what a conditional statement is in programming.
- To understand that variables can help you to create a quiz on Scratch.
- To know that combining computational thinking skills can help you to solve a problem.
- To understand that pattern recognition means identifying patterns to help them work out how the code works.
- To understand that algorithms can be used for a number of purposes e.g. animation, games design etc
- To know that websites have all been programmed, often using HTML.
- To know that programming languages can be visual (Scratch) or text-based (HTML).
- To know that 'coding' is the process of turning an algorithm into a programming language.
- To know that HTML tells a browser how to display text, images and multimedia on a webpage.
- To know that 'decomposition' is the process of breaking down

- Recognising visual and text-based programming languages.
- Recognising further examples of computers being programmed by humans to perform simple tasks.
- Working towards a given goal that a program needs to accomplish.
- Breaking down what they want to achieve into smaller, manageable parts.
- Using logic, pattern recognition and decomposition to solve simple problems.
- Tinkering with an existing text-based code to see how it affects a program (website).
- Remixing code to alter and add to an existing program.
- Recognising repeating patterns in a program or code.
- Creating loops to make code more efficient in block-based programs.
- Beginning to use variables in block-based programming languages to make programs more interactive.
- Including a conditional statement in block-based programming languages.
- Recognising the relationship between what is happening in a a task or problem into smaller parts.
- To know that breaking down a problem into smaller parts makes it easier to solve the problem.
- To know that 'abstraction' is identifying the important detail and ignoring irrelevant information.
- To know that loops are used to save time when writing code by reducing repetition.
- To know that a variable is a container or holder for storing information that can change, e.g. numbers or text.
- To know that conditional statements tell the computer what to do next based on a user's input.
- To know that it is important to identify where the mistake is in the programming as part of the debugging process.
- To know that errors in a program could result from sequencing errors, coding errors or missing code.

program and the written (block) code. • Working backwards, beginning to identify the code they think a program uses. • Running small chunks of code at a time to find the error or 'bug.'	

Year 5	
Skills Hardware • Learning that external devices can be programmed by a separate computer • Learning the difference between ROM and RAM. • Recognising how the size of RAM affects the processing of data. • Understanding the fetch, decode, execute cycle. Networks and data representation • Understanding how bit patterns represent images as pixels. • Learning that messages can be sent by binary code, reading binary up to eight characters and carrying out binary calculations. • Relating binary signals (Boolean) to the simple	Knowledge Computing systems and networks • To know how search engines work. • To know that web crawlers are computer programs that crawl through the internet. • To know the difference between ROM and RAM. Programming • To know that a soundtrack is music for a film/video and that one way of composing these is on programming software. • To understand that using loops can make the process of writing music simpler and more effective. • To know how to adapt their music while performing. • To know that a Micro:bit is a programmable device.

character-based language, ASCII.
- Recognising that computers transfer data in binary and understanding simple binary addition.
- Learning how the data for digital images can be compressed.
- Learning the vocabulary associated with data: data and transmit.

Computational thinking
- Decomposing animations into a series of images.
- Writing more complex algorithms for a purpose.
- Predicting how software will work based on previous experience.
- Decomposing a story to be able to plan a program to tell a story
- Decomposing a program without support.

Programming
- Iterating and developing their programming as they work.
- Confidently using loops in their programming.
- Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected.
- Amending code within a live scenario.

- To know that Micro:bit uses a block coding language similar to Scratch.
- To understand and recognise coding structures including variables.
- To know what techniques to use to create a program for a specific purpose (including decomposition).
- To know that code may sometimes need to be downloaded onto a physical system/device.
- To know that devices with sensors (such as pedometers, security systems, thermostats and light sensors) are often programmed to perform specific tasks in reaction to the input from the sensors.
- To know that programmers often save time when creating code by taking code from one program and turning it into another.
- To know that nested loops are loops within loops.
- To know that it is important to follow the syntax rules in a programming language so the computer understands what we are trying to tell it but that we do not need to remember all these rules.

- Using repetition within a program.
- Using a range of programming commands.
- Writing code to create a desired effect.
- Programming an animation.
- Making links between different programming interfaces they are faced with.
- Planning a program to be downloaded to a physical system/device to solve a particular problem.
- Programming a physical system that has the capability for sensory input (e.g. a micro:bit).
- Recognising a wider range of text-based programming languages.
- Making links between different programming interfaces they are faced with.
- Recognising examples of programming elements in real-life applications.
- Looking at programming blocks and considering how they could be used in a program.
- Decomposing a program independently when given a specific outcome or task to achieve.

- To know that computers use pixels to measure length in digital visuals.
- To know that positions are often understood by a computer as x and y coordinates.
- To know that turns or rotations are often described as degrees.
- To know that many text-based coding languages use brackets or indentation to show which code belongs to a particular function or loop.
- To know that running a program to identify errors should be done before checking the code.
- To know that errors in a program could be as a result of forgetting to 'end' a loop.
- To know that typing and spacing are very important in text-based languages and can cause errors in code if used incorrectly.

Data handling

- To know what numbers using binary code look like and be able to identify how messages can be sent in this format.
- To understand that RAM is Random Access Memory and acts as the computer's working memory.

• Live coding (improvising with code). • Altering existing code with a new, specific outcome in mind. • Independently using loops to make code more efficient in text-based programs. • Using nested loops to make code more efficient. • Recognising real-life applications of conditional statements • Using variables in block-based programming languages and understanding the impact of changing the variables in their code. • Explaining what a program does and how it works, referring to the inputs and outputs. • Becoming more efficient and effective at debugging their programs. • Systematically identifying mistakes, problems or 'bugs' in a program.	

Year 6	
Skills Hardware • Learning about the history of computers and how they have evolved over time.	Knowledge Computing systems and networks

- Using the understanding of historic computers to design a computer of the future.
- Understanding and identifying barcodes, QR codes and RFID.
- Identifying devices and applications that can scan or read barcodes, QR codes and RFID.
- Understanding how corruption can happen within data during transfer (for example when downloading, installing, copying and updating files).
- Identify different types of AI and their applications in everyday life.

Networks and data representation

- Understanding that computer networks provide multiple services.

Computational thinking

- Analysing the effectiveness of prompts and refine them for improved AI outputs.
- Writing increasingly complex algorithms for a purpose.
- Using past experiences to help solve new problems.
- Decomposing a program into an algorithm.

Programming

- Debugging quickly and effectively to make a program more efficient.
- To know that AI is trained on data to recognise patterns and generate outputs.
- To know that AI can help generate basic HTML code to create the structure and layout of a website.

Programming

- To know that there are text-based programming languages such as Logo and Python.
- To know that nested loops are loops inside of loops.
- To understand the use of random numbers and remix Python code.

Data handling

- To know that data contained within barcodes and QR codes can be used by computers.
- To know that infrared waves are a way of transmitting data.
- To know that Radio Frequency Identification (RFID) is a more private way of transmitting data.
- To know that data is often encrypted so that even if it is stolen it is not useful to the thief.
- To know that data can become corrupted within a network but this is less likely to happen if it is sent in 'packets'.

• Remixing existing code to explore a problem. • Applying coding skills like decomposition and pattern recognition to interact with AI applications. • Predicting code and adapting it to a chosen purpose. • Evaluating code to understand its purpose. • Changing a program to personalise it. • Programming using the language Python. • Using and adapting nested loops.	

National curriculum - end of KS2

Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.

Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.

Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

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.

Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.

Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Information technology

EYFS

Skills Using software • Using a simple online paint tool to create digital art. Using data • Representing data through sorting and categorising objects in unplugged scenarios. • Representing data through physical pictograms. • Exploring branch databases through physical games.	Knowledge Computing systems and networks • To know that different types of technology can be found at home and in school. • To know that you can take simple photographs with a camera or iPad. • To know that you must hold the camera still and ensure the subject is in the shot to take a photo. Data handling • To know that sorting objects into various categories can help you locate information. • To know that using yes/no questions to find an answer is a branching database. • To know that a pictogram is a way of showing information.

Year 1

Skills Using software

- Using a basic range of tools within graphic editing software.
- Taking and editing photographs.
- Developing control of the mouse through dragging, clicking and resizing of images to create different effects.
- Developing understanding of different software tools.

Using email and internet searches

- Searching and downloading images from the internet safely.
- Understanding that we are connected to others when using the internet.
- Recognising devices that are connected to the internet.

Using data

- Using software to explore and create pictograms and branching databases.
- Using data representations to answer questions about data.
- Understanding that technology can be used to represent data in different ways: pictograms, tables, pie charts, bar charts, block graphs etc.

Wider use of technology

Knowledge Computing systems and networks

- To know that when we create something on a computer it can be more easily saved and shared than a paper version.
- To know some of the simple graphic design features of a piece of online software.

Creating media

- To understand that holding the camera still and considering angles and light are important to take good pictures.
- To know that you can edit, crop and filter photographs.
- To know how to search safely for images online.

Data handling

- To know how that charts and pictograms can be created using a computer.
- o understand that a branching database is a way of classifying a group of objects.

• Recognising common uses of information technology, including beyond school. • Understanding some of the ways we can use the internet.	

Year 1	
Skills Using software • Using a basic range of tools within graphic editing software. • Taking and editing photographs. • Developing control of the mouse through dragging, clicking and resizing of images to create different effects. • Developing understanding of different software tools. Using email and internet searches • Searching and downloading images from the internet safely. • Understanding that we are connected to others when using the internet. • Recognising devices that are connected to the internet. Using data • Using software to explore and create pictograms and branching databases.	Knowledge Computing systems and networks • To know that when we create something on a computer it can be more easily saved and shared than a paper version. • To know some of the simple graphic design features of a piece of online software. Creating media • To understand that holding the camera still and considering angles and light are important to take good pictures. • To know that you can edit, crop and filter photographs. • To know how to search safely for images online. Data handling • To know how that charts and pictograms can be created using a computer. • o understand that a branching database is a way of classifying a group of objects.

• Using data representations to answer questions about data. • Understanding that technology can be used to represent data in different ways: pictograms, tables, pie charts, bar charts, block graphs etc. Wider use of technology • Recognising common uses of information technology, including beyond school. • Understanding some of the ways we can use the internet.	

Year 2	
Skills Using software • Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts. • Using word processing software to type and reformat text. • Using software (and unplugged means) to create story animations. • Creating and labelling images. Using email and internet searches • Understanding what online information is. • Searching for appropriate images to use in a document. Using data	Knowledge Computing systems and networks • To know that I can make text a different style, size and colour. • To know that "copy and paste" is a quick way of duplicating text. Creating media • To understand that an animation is made up of a sequence of photographs. • To know that small changes in my frames will create a smoother looking animation. • To understand what software creates simple animations and

• Interpreting data from a spreadsheet. • Collecting and inputting data into a spreadsheet. Wider use of technology • Learning how computers are used in the wider world.	some of its features e.g. onion skinning. Data handling • To understand that you can enter simple data into a spreadsheet. • To know what data to use to answer certain questions. • To know that computers can be used to monitor supplies.

National curriculum - end of KS1

Understand what algorithms are, how they are implemented as programs on digital devices and that programs execute by following precise and unambiguous instructions.

Create and debug simple programs.

Use logical reasoning to predict the behaviour of simple programs.

Use technology purposefully to create, organise, store, manipulate and retrieve digital content.

Recognise common uses of information technology beyond school.

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.

Year 3	
Skills Using software • Taking photographs and recording video to tell a story.	Knowledge Creating media • To know that different types of camera shots can make my

• Using software to edit and enhance their video adding music, sounds and text on screen with transitions. Using email and internet searches • Replying to an email. • Sending an email with an attachment. • Writing an email including a subject, 'to' and 'from'. • Learning to log in and out of an email account. Using data • Creating and interpreting charts and graphs to understand data. • Sorting and filtering databases to easily retrieve information. • Learning about the pros and cons of digital versus paper databases. • Understanding the vocabulary associated with databases: field, record, data. Wider use of technology • Understanding the purpose of emails. • Recognising how social media platforms are used to interact.	photos or videos look more effective. • To know that I can edit photos and videos using film editing software. • To understand that I can add transitions and text to my video. Data handling • To know that a database is a collection of data stored in a logical, structured and orderly manner. • To know that computer databases can be useful for sorting and filtering data.

Year 4

Skills	Knowledge
Using software • Building a web page and creating content for it. • Designing and creating a webpage for a given purpose. • Use online software for documents, presentations, forms and spreadsheets. • Using software to work collaboratively with others. Using email and internet searches • Searching the internet for data. • Understanding that information found by searching the internet is not all grounded in fact. • Using keywords to effectively search for information on the internet. • Understanding why some results come before others when searching. Using data • Understanding that data is used to forecast weather • Sorting data in a spreadsheet to compare using the 'sort by…' option. • Recording data in a spreadsheet independently. • Designing a device which gathers and records sensor data. Wider use of technology	Computing systems and networks • To understand that software can be used collaboratively online to work as a team. • To know what type of comments and suggestions on a collaborative document can be helpful. • To know that you can use images, text, transitions and animation in presentation slides. Creating media • To know that a website is a collection of pages that are all connected. • To know that websites usually have a homepage and subpages as well as clickable links to new pages, called hyperlinks. • To know that websites should be informative and interactive. Data handling • To know that computers can use different forms of input to sense the world around them so that they can record and respond to data. This is called 'sensor data'. • To know that a weather machine is an automated machine that responds to sensor data. • To understand that weather forecasters use specific

• Understanding that software can be used collaboratively online to work as a team.	language, expression and pre-prepared scripts to help create weather forecast films.

Year 5	
Skills Using software • Using logical thinking to explore software more independently, making predictions based on their previous experience. • Using a software programme (Sonic Pi/Scratch) to create music. • Using video editing software to animate. • Identify ways to improve and edit programs, videos, images etc. • Independently learning how to use 3D design software package TinkerCAD. Using email and internet searches • Learning how to use search engines effectively to find information, focussing on keyword searches and evaluating search returns • Developing searching skills to help find relevant information on the internet. Using data	Knowledge Computing systems and networks • To understand what copyright is. Creating media • To understand that stop motion animation is an animation filmed one frame at a time using models, and with tiny changes between each photograph. • To know that decomposition of an idea is important when creating stop-motion animations. • To know that editing is an important feature of making and improving a stop motion animation. Data handling • To know that Mars Rover is a motor vehicle that collects data from space by taking photos and examining samples of rock. • To know what simple operations can be used to calculate bit patterns.

• Understanding how data might be used to tell us about a location. • Understanding how data is collected in remote or dangerous places. Wider use of technology • Learn about different forms of communication that have developed with the use of technology.	

Year 6	
Skills Using software • Using logical thinking to explore software independently, iterating ideas and testing continuously. • Using search and word processing skills to create a presentation • Planning, recording and editing an audio recording. • Creating and editing sound recordings for a specific purpose. • Creating and editing videos, adding multiple elements: music, voiceover, sound, text and transitions. • Using design software TinkerCAD to design a product.	Knowledge Computing systems and networks • To know that the first computers were created at Bletchley Park to crack the Enigma code to help the war effort in World War 2. • To know about some of the historical figures that contributed to technological advances in computing. • To know what techniques are required to create a presentation using appropriate software. • To know that AI is artificial intelligence and is used in everyday life. • To know that AI can be used to generate written content.

• Creating a website with embedded links and multiple pages. • Using text-based and image-based AI tools to generate content. Using email and internet searches • Understanding how search engines work. Using data • Creating formulas and sorting data within spreadsheets. • Gathering and analysing data in real time. • Understanding how barcodes, QR codes and RFID work. Wider use of technology • Learning how 'big data' can be used to solve a problem or improve efficiency. • Learning about the Internet of Things and how it has led to 'big data'.	• To know that AI can be used to create visual content like pictures. • To know that there are ethical issues surrounding AI, including data privacy, bias and responsible use. Creating media • To know that sound clips can be recorded using sound recording software and that sound clips can be edited and trimmed.

National curriculum - end of KS2

Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.

Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.

Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

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.

Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.

Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

Use technology safely, respectfully and responsibly; recognize acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Digital literacy

EYFS	
Skills • Recognising that a range of technology is used for different purposes. • Learning to log in and log out.	Knowledge • To be able to understand what a computer keyboard is and recognising some letters and numbers. • To know that a mouse can be used to click, drag and create simple drawings. • To know that to use a computer you need to log in to it and then log out at the end of your session.

Year 1

Skills

- Logging in and out and saving work on their own account.
- When using the internet to search for images, learning what to do if they come across something online that worries them or makes them feel uncomfortable.
- Understanding how to interact safely with others online.
- Recognising how actions on the internet can affect others.
- To be able to recognise what a digital footprint is and how to be careful about what we "post".

Knowledge Computing systems and networks

- To know that "log in and log out" means to begin and end a connection with a computer.
- To know that a computer and mouse can be used to click, drag, fill and select and also add backgrounds, text, layers, shapes and clip art.
- To know that passwords are important for security.

Online Safety

- To know that the internet is many devices connected to one another.
- To know that you should tell a trusted adult if you feel unsafe or worried online.
- To know that people you do not know on the internet (online) are strangers and are not always who they say they are.
- To know that to stay safe online it is important to keep personal information safe.
- To know that 'sharing online means giving something specific to someone else via the internet and 'posting' online means placing information on the internet.

Year 2

Skills

- Identifying whether information is safe or unsafe to be shared online.
- Learning how to create a strong password.
- Learning to be respectful of others when sharing online and ask for their permission before sharing content.
- Learning strategies for checking if something they read online is true.
- Understanding how to stay safe when talking to people online and what to do if they see or hear something online that makes them feel upset or uncomfortable.

Knowledge

Computing systems and networks

- To know the difference between a desktop and laptop computer.
- To know that people control technology.
- To know that buttons are a form of input that give a computer an instruction about what to do (output).
- To know that touch typing is the fastest way to type.

Online safety

- To understand the difference between online and offline.
- To understand what information I should not post online.
- To know what the techniques are for creating a strong password.
- To know that you should ask permission from others before sharing about them online and that they have the right to say 'no.'
- To understand that not everything I see or read online is true.

National curriculum - end of KS1

Understand what algorithms are, how they are implemented as programs on digital devices and that programs execute by following precise and unambiguous instructions.

Create and debug simple programs.

Use logical reasoning to predict the behaviour of simple programs.

Use technology purposefully to create, organise, store, manipulate and retrieve digital content.

Recognise common uses of information technology beyond school.

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

Year 3

Skills

- Recognising that different information is shared online including facts, beliefs and opinions.
- Learning how to identify reliable information when searching online.
- Learning how to stay safe on social media.
- Considering the impact technology can have on mood.
- Learning about cyberbullying.
- Learning that not all emails are genuine, recognising when an email might be fake and what to do about it.

Knowledge Computing systems and networks

- To know what a tablet is and how it is different from a laptop/desktop computer.
- To understand that email stands for 'electronic mail.'
- To know that an attachment is an extra file added to an email.
- To understand that emails should contain appropriate and respectful content.

Online safety

- To know that not everything on the internet is true: people share facts, beliefs and opinions online.
- To understand that the internet can affect your moods and feelings.

	• To know that privacy settings limit who can access your important personal information Information, such as your name, age, gender etc. • To know what social media is and that age restrictions apply.

Year 4	
Skills • Learning to make judgements about the accuracy of online searches. • Identifying forms of advertising online. • Recognising what appropriate behaviour is when collaborating with others online. • Reflecting on the positives and negatives of time online. • Identifying respectful and disrespectful online behaviour. • Recognising that information on the Internet might not be true or correct and that some sources are more trustworthy than others.	Knowledge Online safety • To understand some of the methods used to encourage people to buy things online. • To understand that technology can be designed to act like or impersonate living things. • To understand that technology can be a distraction and identify when someone might need to limit the amount of time spent using technology. • To understand what behaviours are appropriate in order to stay safe and be respectful online.

Year 5

Skills	Knowledge Computing systems and networks
• Identifying possible dangers online and learning how to stay safe. • Evaluating the pros and cons of online communication. • Recognising that information on the Internet might not be true or correct and learning ways of checking validity. • Learning what to do if they experience bullying online. • Learning to use an online community safely.	• To understand that anyone can create a website and therefore we should take steps to check the validity of websites. Online safety • To know different ways we can communicate online. • To understand how online information can be used to form judgements. • To understand some ways to deal with online bullying. • To know that apps require permission to access private information and that you can alter the permissions. • To know where I can go for support if I am being bullied online or feel that my health is being affected by time online.

Year 6	
Skills • Learning about the positive and negative impacts of sharing online. • Learning strategies to create a positive online reputation.	Knowledge Computing systems and networks • To understand the importance of having a secure password and what "brute force hacking" is. Data handling

• Understanding the importance of secure passwords and how to create them. • Learning strategies to capture evidence of online bullying in order to seek help. • Using search engines safely and effectively • Recognising that updated software can help to prevent data corruption and hacking • Exploring ethical considerations around AI use and its impact on society.	• To know that devices or that are not updated are most vulnerable to hackers. • To know the difference between mobile data and WiFi. Online safety • To know that a 'digital footprint' means the information that exists on the internet as a result of a person's online activity. • To know what steps are required to capture bullying content as evidence. • To understand that it is important to manage personal passwords effectively. • To understand what it means to have a positive online reputation. • To know some common online scams.

National curriculum - end of KS2

Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.

Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.

Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

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.

Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.

Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.