





Nursery	EARLY YEARS AUTUMN	EARLY YEARS SPRING	EARLY YEARS SUMMER
Computing is not	CL	CL & UW	UW
taught discretely. Children are exposed to computing through play and links to other curriculum areas.	 Pay attention to more than one thing at a time, which can be difficult. Use a wider range of vocabulary. Understand a question or instruction that has two parts Understand 'why' questions Use longer sentences of four to six words. Be able to express a point of view and to debate when they disagree with an adult or a friend, using words as well as actions. Use talk to organise themselves and their play 	 Pay attention to more than one thing at a time, which can be difficult. Use a wider range of vocabulary. Understand a question or instruction that has two parts Understand 'why' questions Use longer sentences of four to six words. Be able to express a point of view and to debate when they disagree with an adult or a friend, using words as well as actions. Use talk to organise themselves and their play Talk about what they see, using a wide vocabulary. Explore how things work. 	 Talk about what they see, using a wide vocabulary. Explore how things work.

Reception	EARLY YEARS AUTUMN	EARLY YEARS SPRING	EARLY YEARS SUMMER
Computing is not	CL & UW	CL & UW	CL & UW
taught discretely. Children are exposed to computing through play and links to other curriculum areas.	 Understand how to listen carefully and why listening is important. Learn new vocabulary. Use new vocabulary through the day. Ask questions to find out more and to check they understand what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. Draw information from a simple map. 	 Understand how to listen carefully and why listening is important. Learn new vocabulary. Use new vocabulary through the day. Ask questions to find out more and to check they understand what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. Draw information from a simple map. 	 Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions. Make comments about what they have heard and ask questions to clarify their understanding. Hold conversation when engaged in back-and-forth exchanges with their teacher and peers. Offer explanations for why things might happen, making use of recently introduced vocabulary from stories, non-fiction, rhymes and poems when appropriate. Know some similarities and differences between things in the past and now, drawing on their experiences and what has been read in class. Understand the past through settings, characters and events encountered in books read in class and storytelling. Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps. Know some similarities and differences between different

	religious	and cultural communities in this country, drawing
	on their	experiences and what has been read in class.
	• Explain s	ome similarities and differences between life in
	this cour	try and life in other countries, drawing on
	knowled	ge from stories, non-fiction texts and (when
	appropri	ate) maps.

NOTE: Digital Literacy MUST be taught during the year. This is an idea of what may be taught in different terms; however, the strands can be taught in different terms for this year.

YEAR 1	AUTUMN TERM Digital Literacy (eSafety)	SPRING TERM Programming	SUMMER TERM Information Technology
Knowledge to acquire:	 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. 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. 	 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 "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. 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. To know how that charts and pictograms can be created using a computer. To understand that a branching database is a way of classifying a group of objects. To know that computers understand different types of 'input'.
Skills to gain:	 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. 	 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. 	 Learning how to operate a camera or tablet to take photos and videos. 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.

	Recognising what a digital footprint is and how to be careful about what we post.	 Assembling instructions into a simple algorithm. PROGRAMMING Programming a Floor robot to follow a planned route. Learning to debug instructions when things go wrong. Using programming language to explain how a floor robot works. Learning to debug an algorithm in an unplugged scenario. 	NETWORKS AND DATA REPRESENTATION N/A
YEAR 2	AUTUMN TERM Information Technology	SPRING TERM Digital Literacy	SUMMER TERM Programming
Knowledge to acquire:	 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 computers often work together. To know that touch typing is the fastest way to type. 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. To understand that you can enter simple data into a spreadsheet. To understand what steps you need to take to create an algorithm. To know what data to use to answer certain questions. To know that computers can be used to monitor supplies. 	 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 some of its features e.g. onion skinning. 	 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 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.
	NETWORKS AND DATA REPRESENTATION N/A USING SOFTWARE Developing word processing skills, including altering text, copying and pasting and using	 Learning how to create a strong password. 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 Identifying whether information is safe or unsafe to be shared online. Learning to be respectful of others when sharing 	 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.

	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 Searching for appropriate images to use in a document. Understanding what online information is. USING DATA Collecting and inputting data into a spreadsheet. Interpreting data from a spreadsheet. WIDER USE OF TECHNOLOGY Learning how computers are used in the wider world	 online and ask for their permission before sharing content. Learning strategies for checking if something they read online is true. 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. Using greater control when taking photos with cameras, tablets or computers. Developing confidence with the keyboard and the basics of touch typing. 	 Creating a clear and precise algorithm. Learning that programs execute by following precise instructions. Incorporating loops within algorithms. 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.
YEAR 3	AUTUMN TERM Digital Literacy	SPRING TERM Programming	SUMMER TERM Information Technology
Knowledge to acquire:	 To know that different types of camera shots can make my 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. 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. 	 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. To understand that you can remix and adapt existing code. 	 To know what a tablet is and how it is different from a laptop/desktop computer. To understand what a network is and how a school network might be organised. To know that a server is central to a network and responds to requests made. To know how the internet uses networks to share files. 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 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. To know what some of the different components inside a computer are e.g. CPU, RAM, hard drive, and how they work together. To know that a database is a collection of data

To know that computer databases can be useful for sorting and filtering data. To know that different visual representations of data can be made on a computer. Skills to gain: Recognising that different information is COMPUTATIONAL THINKING **HARDWARE** shared online including facts, beliefs and • Using decomposition to explain the parts of a Understanding what the different components of a opinions. laptop computer. computer do and how they work together. Learning how to identify reliable information Using decomposition to explore the code Drawing comparisons across different types of when searching online. behind an animation. computers. Learning how to stay safe on social media. Learning about the purpose of routers. Using repetition in programs. Considering the impact technology can have on Using logical reasoning to explain how simple NETWORKS AND DATA REPRESENTATION mood. algorithms work. Learning about cyberbullying. Understanding the role of the key components of a Explaining the purpose of an algorithm. network. Learning that not all emails are genuine, Forming algorithms independently. Identifying the key components within a network, recognising when an email might be fake and including whether they are wired or wireless. what to do about it. PROGRAMMING Understanding that websites and videos are files that are shared from one computer to another. Using logical thinking to explore more Learning about the role of packets. complex software; predicting, testing and Understanding how networks work and their explaining what it does. purpose. • Incorporating loops to make code more Recognising links between networks and the internet. efficient. Learning how data is transferred. Continuing existing code. USING SOFTWARE Making reasonable suggestions for how to debug their own and others' code. Taking photographs and recording video to tell a story. Using software to edit and enhance their video adding music, sounds and text on screen with transitions. USING EMAIL AND INTERNET SEARCHES Learning to log in and out of an email account. Writing an email including a subject, 'to' and 'from.' Sending an email with an attachment. Replying to an email. USING DATA Understanding the vocabulary to do with databases: field, record, data. Learning about the pros and cons of digital versus paper databases. Sorting and filtering databases to easily retrieve information. • Creating and interpreting charts and graphs to

stored in a logical, structured and orderly manner.

			understand data. WIDER USE OF TECHNOLOGY Understanding the purpose of emails. Recognising how social media platforms are used to interact.
YEAR 4	AUTUMN TERM Digital Literacy	SPRING TERM Programming	SUMMER TERM Information Technology
Knowledge to acquire:	 To know some of the features of web design software. 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. 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. 	 To understand that a variable is a value that can change (depending on conditions) and 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 (sequence, abstraction, decomposition etc) 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 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. 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 language, expression and pre-prepared scripts to help create weather forecast films.
Skills to gain:		 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 past experiences to help solve new problems. Using abstraction to identify the important parts when completing both plugged and unplugged activities. PROGRAMMING	 HARDWARE Using tablets or digital cameras to film a weather forecast. 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. USING SOFTWARE Building a web page and creating content for it. Designing and creating a webpage for a given purpose.

		 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. 	 Use online software for documents, presentations, forms and spreadsheets. Using software to work collaboratively with others. USING EMAIL AND INTERNET SEARCHES Understanding why some results come before others when searching. Using keywords to effectively search for information on the internet. Understanding that information found by searching the internet is not all grounded in fact. Searching the internet for data. USING DATA Understanding that data is used to forecast weather. Recording data in a spreadsheet independently. Sorting data in a spreadsheet to compare using the 'sort by' option. Designing a device which gathers and records sensor data. WIDER USE OF TECHNOLOGY Understanding that software can be used collaboratively online to work as a team.
YEAR 5	AUTUMN TERM Digital Literacy	SPRING TERM Programming	SUMMER TERM Information Technology
Knowledge to acquire:	 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. 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 	 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 code while performing their music. To know that a Micro:bit is a programmable device. 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 how search engines work. To understand that anyone can create a website and therefore we should take steps to check the validity of websites. To know that web crawlers are computer programs that crawl through the internet. To understand what copyright is To know the difference between ROM and RAM. 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 numbers using binary code look like.

	affected by time online.		
Skills to gain:	·	 Decomposing animations into a series of images. Decomposing a program without support. Decomposing a story to be able to plan a program to tell a story. Predicting how software will work based on previous experience. Writing more complex algorithms for a purpose. 	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 • Learning the vocabulary associated with data: data and transmit. • Learning how the data for digital images can be compressed. • Recognising that computers transfer data in binary and understanding simple binary addition. • Relating binary signals (Boolean) to the simple character-based language, ASCII. • Learning that messages can be sent by binary code, reading binary up to eight characters and carrying out binary calculations. USING SOFTWARE • Using logical thinking to explore software more independently, making predictions based on their
			 independently, making predictions based on their previous experience. Using software programme Sonic Pi/Scratch to create music. Using the 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 Developing searching skills to help find relevant information on the internet. Learning how to use search engines effectively to find information, focussing on keyword searches and evaluating search returns. USING DATA Understanding how data is collected in remote or dangerous places. Understanding how data might be used to tell us about a location.

			WIDER USE OF TECHNOLOGY
			Learn about different forms of communication that have developed with the use of technology.
YEAR 6	AUTUMN TERM Digital Literacy	SPRING TERM Programming	SUMMER TERM Information Technology
Knowledge to acquire:	 To know that radio plays are plays where the audience can only hear the action so sound effects are important. To know that sound clips can be recorded using sound recording software. To know that sound clips can be edited and trimmed. 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. 	 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. 	 To understand the importance of having a secure password and what "brute force hacking" is. 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 understand what techniques are required to create a presentation using appropriate software. 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'. I know that devices or that are not updated are most vulnerable to hackers.
			To know the difference between mobile data and WiFi.
Skills to gain:	 Learning about the positive and negative impacts of sharing online. Learning strategies to create a positive online reputation. 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. 	 COMPUTATIONAL THINKING Decomposing animations into a series of images. Decomposing a program without support. Decomposing a story to be able to plan a program to tell a story. Predicting how software will work based on previous experience. Writing more complex algorithms for a purpose. PROGRAMMING	 HARDWARE Learning about the history of computers and how they have evolved over time. 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).
		Debugging quickly and effectively to make a	NETWORKS AND DATA REPRESENTATION

program more efficient. Remixing existing code to explore a problem. Using and adapting nested loops. Programming using the language Python. Changing a program to personalise it. Evaluating code to understand its purpose. Predicting code and adapting it to a chosen purpose.	 Understanding that computer not multiple services. USING SOFTWARE Using logical thinking to independently, iterating identification. Using search and word processing presentation. Creating and editing sound reconpurpose. Creating and editing videos, add elements: music, voiceover, sour transitions. Using design software TinkerCAI Creating a website with embedding multiple pages.
	USING EMAIL AND INTERNET SEARCHES
	 Understanding how search engine
	USING DATA

networks provide

- explore software ideas and testing
- sing skills to create a
- cordings for a specific
- dding multiple ound, text and
- CAD to design a product.
- dded links and

gines work.

- Understanding how barcodes, QR codes and RFID work.
- Gathering and analysing data in real time.
- Creating formulas and sorting data within spreadsheets.

WIDER USE OF TECHNOLOGY

- Learning about the Internet of Things and how it has led to 'big data'.
- Learning how 'big data' can be used to solve a problem or improve efficiency.



