St. Thomas'

CofE PRIMARY ACADEMY

Learning for life with Jesus

Computing Learning Journey

Intent, Implementation and Impact

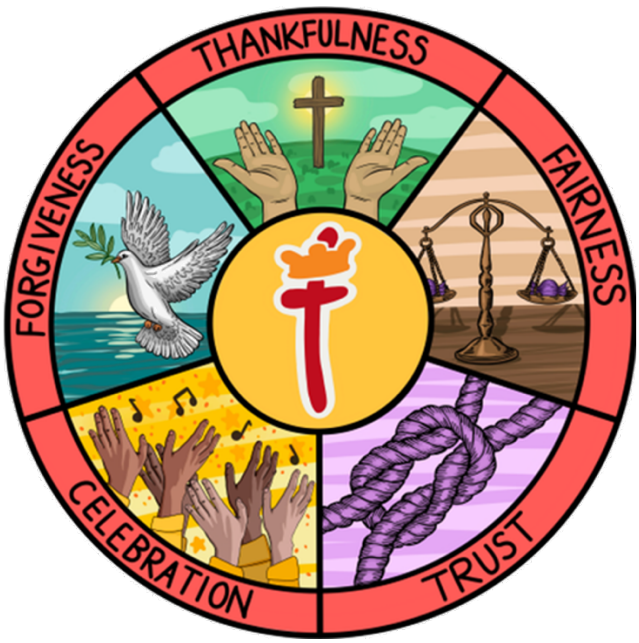
Learning for life with Jesus

Intent

All areas of our curriculum are underpinned by our Gospel values and we ensure that our curriculum makes links to these values. At the heart of each subject is a set of core skills which form a subject learning journey, this journey is built from EYFS through to year 6 and the skills progressive as you move through the school. Knowledge is communicated to ensure coverage of National curriculum and it is through this knowledge that children apply their skills.

Children at St Thomas' leave with a secure knowledge of both the academic knowledge and skills needed for the next stage of their education. They will have developed a clear set Christian and moral values which they can apply in all areas of their lives and will have taken part in real-life experiences which will have raised their aspirations and given them a thirst for wisdom and knowledge.

The intention of the St Thomas' Computing learning journey is first and foremost to provide children with the skills and knowledge they need to embrace new technologies and flourish, both responsibly and safely, in an increasingly digital world. To achieve this, we focus on developing the skills, knowledge and understanding that children need in order to become autonomous, independent users of computing technologies, and gain confidence through active learning and enjoyable activities.



Implementation

St Thomas' Computing Learning Journey follows the Kapow scheme of learning. In line with the National Curriculum, the learning journey identifies five key areas, which stem from the key strands of computing: **Computer Science, Information Technology and Digital Literacy.** These key areas are woven together to create an engaging and enriching learning experience.

- **Computer systems and networks**
- **Programming**
- **Creating media**
- **Data handling**
- **Online safety**

These areas create a cyclical route via a spiral curriculum model, through which pupils can develop their computing knowledge and skills by revisiting and building on previous learning.

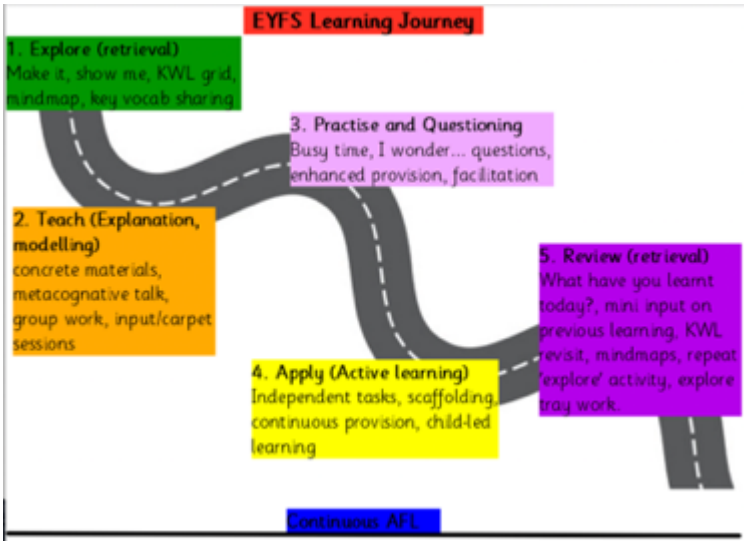
The implementation of this curriculum ensures a broad and balanced coverage of National Curriculum requirements, and our 'Skills Showcase' units provide pupils with the opportunity to learn and apply transferable skills. Where appropriate, units have been created to link to other subjects, such as art, science and music to enable the development of further transferable skills, and genuine cross-curricular learning.

Computing is taught for 1 hour each week or 2 hours every two weeks depending on the unit and year group being taught. Each new unit of learning Is introduced through an 'explore' activity which summarises previous knowledge and skills shared by the children. Children are then introduced to the key knowledge and vocabulary which will be shared during the unit in the form of a knowledge organiser. The knowledge organiser will be shared at the start and end of each lesson with key knowledge for each lesson highlighted. During the lesson activities are differentiated where appropriate and assessment and feedback will focus on misconceptions and next steps for learning. At the end of each unit of learning children will complete an end of unit 'review' which will feed into future planning.

Online Safety is taught for 1 hour per half term, and follows the same lesson and learning journey outlined above.

In Computing, work is recorded in a class floor book, and on the network's Pupil Share channel in year group folders for monitoring and sharing purposes.

EYFS



Impact

In addition to the outcomes shown on our curriculum tree, the specific impact of the St Thomas' Computing Learning Journey is that children will:

- ✓ Be critical thinkers and able to understand how to make informed and appropriate digital choices in the future.
- ✓ Understand the importance that computing will have going forward in both their educational and working life and in their social and personal futures.
- ✓ Understand how to balance time spent on technology and time spent away from it in a healthy and appropriate manner.
- ✓ Understand that technology helps to showcase their ideas and creativity. They will know that different types of software and hardware can help them achieve a broad variety of artistic and practical aims.
- ✓ Show a clear progression of technical skills across all areas of the National curriculum - computer science, information technology and digital literacy.
- ✓ Be able to use technology both individually and as part of a collaborative team.
- ✓ Be aware of online safety issues and protocols and be able to deal with any problems in a responsible and appropriate manner.
- ✓ Have an awareness of developments in technology and have an idea of how current technologies work and relate to one another.
- ✓ Meet the end of key stage expectations outlined in the National curriculum for Computing.

Formative assessment takes part in each lesson and misconception and next steps of the focus for feedback. Summative assessment is completed for each child at the end of each unit of teaching using the assessment framework at the end of this documents. A best fit approach to statements achieved results in an end of year summative grade.

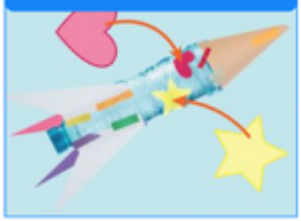
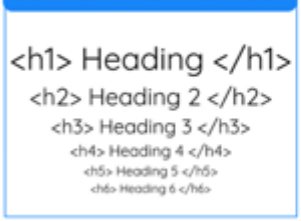
Computing Overview

We have categorised our lessons into the five key areas below, which we return to in each year group making it clear to see prior and future learning for your pupils and how what you are teaching fits into their wider learning journey.

Computing systems and networks	Programming	Creating media	Data handling	Online safety
Identifying hardware and using software, while exploring how computers communicate and connect to one another.	Understanding that a computer operates on algorithms, and learning how to write, adapt and debug code to instruct a computer to perform set tasks.	Learning how to use various devices — record, capture and edit content such as videos, music, pictures and photographs.	Ensuring that information is collected, recorded, stored, presented and analysed in a manner that is useful and can help to solve problems.	Understanding the benefits and risks of being online — how to remain safe, keep personal information secure and recognising when to seek help in difficult situations.

Skills showcase units

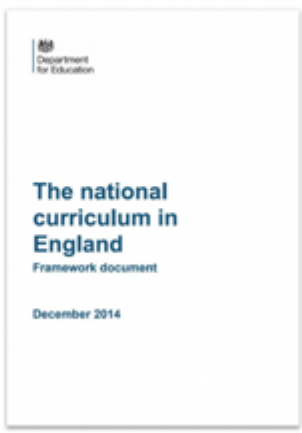
There are four units entitled Skills showcase. These units give children the chance to combine and apply skills and knowledge gained, from a range of the five key areas above, to produce a specific outcome.

Y1 - Rocket to the moon	Y4 - HTML	Y5 - Mars Rover 2	Y6 - Inventing a product
			

Online Safety

In addition to our PSHE curriculum which covers all aspects of E-Safety, teachers use the assigned units in this scheme of work, and their own planning, to teach one specific Online Safety lesson every half term.

Our scheme of work fulfils the statutory requirements for computing outlined in the **National Curriculum (2014)** and, when used in conjunction with our RSE & PSHE scheme, also covers the government's **Education for a Connected World -2020 edition** framework (see our Education for a Connected World framework mapping).



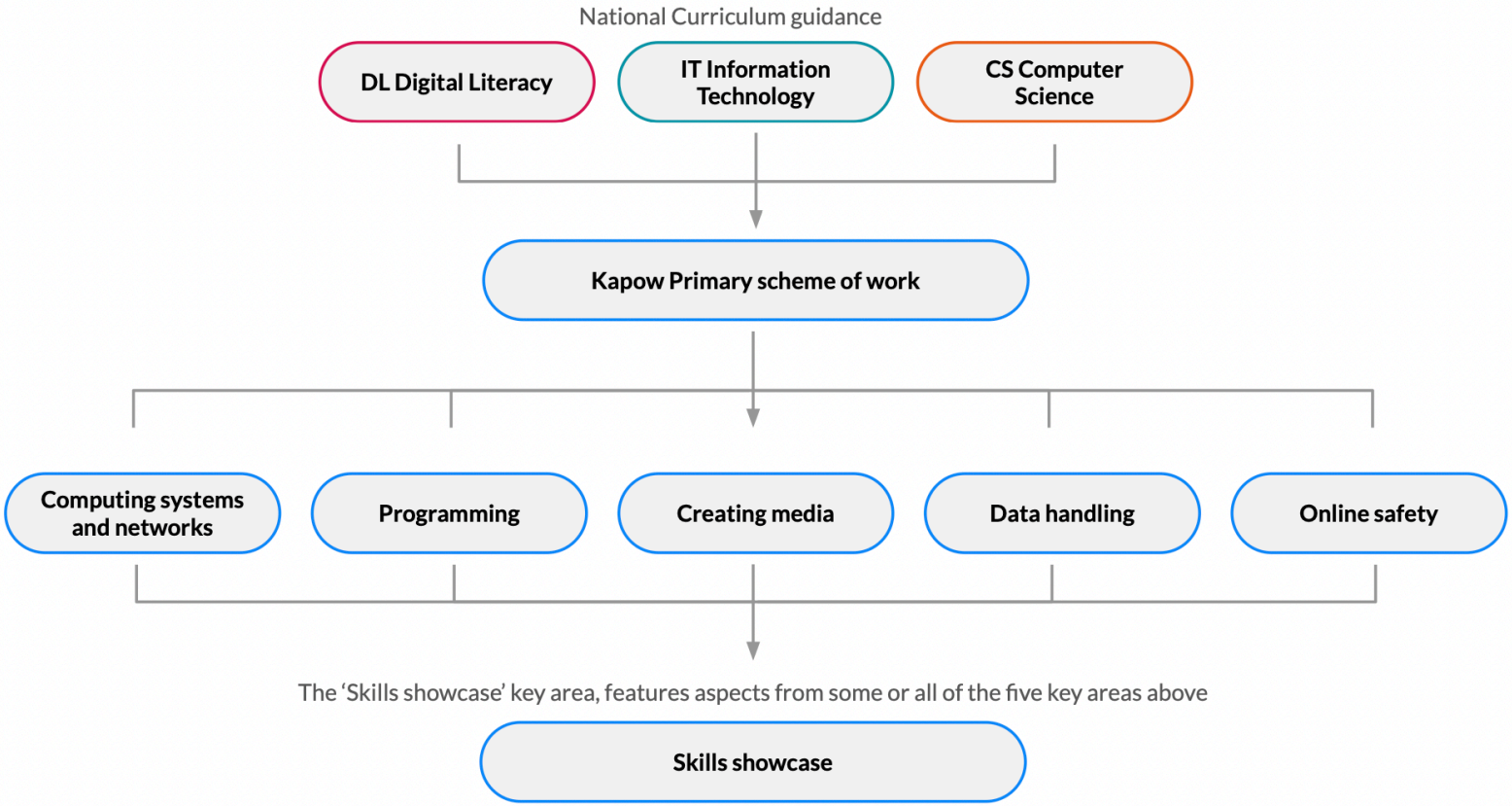
Long Term Plan

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	Online Safety
EYFS	**Set up continuous provision in your classroom:** Computing through continuous provision	**Programming 1** All about instructions The children learn to receive and give instructions and understand the importance of precise instructions.	**Programming 2** Programming Bee-Bots Children learn about directions, experiment with programming a Bee-bot/Blue-bot and tinker with hardware.	**Computing systems and networks** Exploring hardware Tinkering and exploring with different computer hardware and learning to operate a camera.	**Computing systems and networks** Using a computer Learning about the main parts of a computer and how to use the keyboard and mouse. Learning how to log in and out.	**Data handling** Introduction to data Children sort and categorise data and are introduced to branching databases and pictograms.	
Year 1, 2 and 3 Year A	**Computing systems and networks 1**	**Programming 1**	**Computer systems and networks 2**	**Programming 2**	**Creating media**	**Data Handling**	**Online Safety**
	Improving mouse skills (Yr 1)	Algorithms Unlugged (yr 2)	Rocket to the moon (Yr 1)	Programming Scratch Jr (Yr 2)	Video Trailers Using I-Pads (Yr 3)	International Space Station (Yr 2)	Online Safety (Yr 2)
Year 1, 2 and 3 Year B	**Computing systems and networks 1**	**Programming 1**	**Computer systems and networks 2**	**Programming 2**	**Creating media**	**Data Handling**	**Online Safety**
	Networks and the internet (Yr 3)	Algorithms (Yr 1)	Word Processing Option 1: Google Option 2: Microsoft Word	Programming Bee Bots (Yr 1)	Stop Motion Using Tablets (Yr 2)	Comparisons cards databases (Yr 3)	Online Safety (Yr1)
Year 1, 2 and 3 Year C	**Computing systems and networks 1**	**Programming 1**	**Computer systems and networks 2**	**Computer systems and networks 3**	**Creating media**	**Data Handling**	**Online Safety**
	What is a computer (Yr 2)	Programming Scratch (yr 3)	Emailing	Journey inside a computer (Year 3)	Digital Imagery (Yr 1)	Intro to data (Yr 1)	Online Safety (Yr3)

Year 4	Computing systems and networks	Programming 1	Creating media	Skills showcase	Programming 2	Data handling	Online safety
	Collaborative Learning Option 1: Google Option 2: Microsoft Office 365 OS: Y3 L1	**Further coding with Scratch** Option 1: Google Option 2: Microsoft Office 365	**Website design** Option 1: Google Option 2: Microsoft Office 365 OS: Y3 L2	HTML OS: Y3 L3	Computational thinking OS: Y3 L4	**Investigating weather** Option 1: Google Option 2: Microsoft Office 365	Online safety Y4 **(6 lessons)**
Year 5	Computing systems and networks	Programming	Data handling	Programming 2	Creating media	Skills showcase	Online safety
	Search engines Option 1: Google Option 2: Microsoft Office 365 OS: Y4 L1	Programming: Scratch	Mars Rover 1 OS: Y4 L2	Micro:bit OS: Y4 L3	**Stop motion animation** Option 1: Stop motion studio Option 2: Using cameras OS: Y4 L5	Mars Rover 2	Online safety Y5
Year 6	Computing systems and networks	Programming	Data handling	Creating media	Data handling	Skills showcase	Online safety
	Bletchley Park Option 1: Google Option 2: Microsoft Office 365	Intro to Python	Big data 1	**History of computers** Option 1: Google Option 2: Microsoft Office 365	Big data 2	**Inventing a product** Option 1: Google Option 2: Microsoft Office 365	Online safety Y6 **(6 lessons)**

Skills and Knowledge Progression

How is Kapow Primary's Computing scheme of work organised?



Progression of skills

Computer science

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Hardware	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.	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. Learning where keys are located on the keyboard.	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. Developing confidence with the keyboard and the basics of touch typing.	Understanding what the different components of a computer do and how they work together. Drawing comparisons across different types of computers. Learning about the purpose of routers.	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.	Learning that external devices can be programmed by a separate computer.	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.
Networks and data representation	N/A	N/A	N/A	Understanding the role of the key components of a network. Identifying the key components within a network, including whether they are wired or wireless. Understanding that websites and videos are files that are shared from one computer to another. Learning about the role of packets. Understanding how networks work and their purpose. Recognising links between networks and the internet. Learning how data is transferred.	Understanding that computer networks provide multiple services, such as the World Wide Web, and opportunities for communication and collaboration.	Learning the vocabulary associated with data: data and transmit. Recognising that computers transfer data in binary and understanding simple binary addition. Learning that messages can be sent by binary code, reading binary up to eight characters and carrying out binary calculations.	N/A

Progression of skills

Computer science

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computational thinking	Using logical reasoning to understand simple instructions and predict the outcome.	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.	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. Creating a clear and precise algorithm.	Using decomposition to explain the parts of a laptop computer. Using decomposition to explore the code behind an animation. Using repetition in programs. Using logical reasoning to explain how simple algorithms work. Explaining the purpose of an algorithm. Forming algorithms independently.	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.	Decomposing animations into a series of images. 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.	Decomposing a program into an algorithm. Using past experiences to help solve new problems. Writing increasingly complex algorithms for a purpose.
Programming	Following instructions as part of practical activities and games. Learning to give simple instructions. Learning to debug instructions, with the help of an adult, when things go wrong.	Programming a Floor robot to follow a planned route. Learning to debug instructions when things go wrong. Learning to debug an algorithm in an unplugged scenario.	Using logical thinking to explore software, predicting, testing and explaining what it does. Using an algorithm to write a basic computer program.	Using logical thinking to explore more complex software; predicting, testing and explaining what it does. Incorporating loops to make code more efficient. Continuing existing code.	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.	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. Writing code to create a desired effect. Using a range of programming commands. Using repetition within a program.	Debugging quickly and effectively to make a 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.

Progression of skills

Information technology

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Using Software	Using a simple online paint tool to create digital art.	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.	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.	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.	Use online software for documents, presentations, forms and spreadsheets. Using software to work collaboratively with others.	Using logical thinking to explore software more 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 logical thinking to explore software independently, iterating ideas and testing continuously. Using search and word processing skills to create a presentation.
Using email and internet searches	N/A	Recognising devices that are connected to the internet. Understanding that we are connected to others when using the internet.	Searching for appropriate images to use in a document.	N/A	Understanding why some results come before others when searching. Understanding that information found by searching the internet is not all grounded in fact. Searching the internet for data.	Developing searching skills to help find relevant information on the internet.	Understanding how search engines work.
Using data	Representing data through sorting and categorising objects in unplugged scenarios. Exploring branch databases through physical games.	N/A	Collecting and inputting data into a spreadsheet. Interpreting data from a spreadsheet.	N/A	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.	Understanding how data is collected in remote or dangerous places. Understanding how data might be used to tell us about a location.	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	N/A	Recognising common uses of information technology, including beyond school. Understanding some of the ways we can use the internet.	Learning how computers are used in the wider world.	Recognising how social media platforms are used to interact.	Understanding that software can be used collaboratively online to work as a team.	Learn about different forms of communication that have developed with the use of technology.	Learning how 'big data' can be used to solve a problem or improve efficiency.

Progression of skills

Digital Literacy

EYFS	Year 1	Year 2	
Recognising that a range of technology is used for different purposes. Learning to log in and log out.	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. Recognising what a digital footprint is and how to be careful about what we post.	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 online and ask for their permission before sharing content. Learning strategies for checking if something they read online is true.	
Year 3	**Year 4**	**Year 5**	**Year 6**
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.	Recognising that information on the internet might not be true or correct and that some sources are more trustworthy than others. 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 spent online. Identifying respectful and disrespectful online behaviour.	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	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.

Progression of knowledge

Computing systems and networks

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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. 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.	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 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 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 how the internet uses networks to share files. 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.	To understand that software can be used collaboratively online to work as a team. To know that you can use images, text, transitions and animation in presentation slides.	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 understand what copyright is. To know the difference between ROM and RAM.	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.

Progression of knowledge

Programming

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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 understand that an algorithm is when instructions are put in an exact order. 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 understand what machine learning is and how that enables computers to make predictions. 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 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 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 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 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 that there are text-based programming languages such as Logo and Python. To know that nested loops are loops inside of loops.

Progression of knowledge

Creating media

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
N/A	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.	N/A	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.	N/A	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.	N/A

Progression of knowledge

Data handling

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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.	N/A	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.	N/A	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.	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 and be able to identify how messages can be sent in this format. To know what simple operations can be used to calculate bit patterns.	To know that data contained within barcodes and QR codes can be used by computers. 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.

Progression of knowledge

Online safety

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
N/A	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 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.	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 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 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.	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.

Year One	Working towards/Learning intention (WT)	Secure understanding (SU)	Greater depth (GD)
Computing systems and networks	Logging into a computer and accessing a website.	The ability to explain how to log in to computers and use the	Logging into computers using confident keyboard and
	Using mouse skills to draw and manipulate shapes, dragging	Creating a piece of artwork which demonstrates clear control	Use of more advanced tools such as menus to duplicate or
	Using mouse skills to draw and manipulate shapes, dragging	Creating a piece of artwork which demonstrates clear control	Accurately drawn shapes, lined up inside each other.
	Using drag and drop to resize and reposition objects and a	Logging in and using a variety of different tools to draw a	Logging in independently and using advanced tools such as
	Identifying key features of an object and breaking it down	Logging and out of computers unaided, creating a self-	Supporting peers with logging in and out of computers,
Programming 1	Understanding that an algorithm is a clear set of instructions	Writing clear algorithms, considering the different steps	Giving detailed feedback to other groups suggesting ways of
	Following instructions precisely to carry out an action	Using clear instructions in their algorithm and following an	Using clearer, more detailed algorithms and following an
	Understanding that computers and devices around us use	Creating a clear, achievable program for their virtual	Recognising that some devices can be inputs and outputs.
	Explaining that decomposition refers to the breaking down of	Showing clear decomposition of their designs into the steps	Matching up the designs with the decompositions and a
	To know how to debug an algorithm Spotting and fixing bugs	Identifying bugs and fixing algorithms	Solving problems and identifying more than one way of
Skills showcase	Using a computer to create a list	Using a computer to make a list, explaining how this is safer	Using more appropriate language when comparing the
	Creating a digital image using a graphics editor	Designing a rocket using a basic range of tools on graphics	Creating a detailed design for a rocket on graphics editing
	Sequencing a set of instructions and understanding the	Putting a set of instructions in the correct order and	Suggesting what they would program the rocket to do to
	Building a rocket according to instructions	Building a model rocket according to instructions and their	Taking photos of their finished rocket and annotating it with
	Inputting data into a table or spreadsheet and measuring	Inputting data into a table or spreadsheet and measuring	Comparing and ordering values in a spreadsheet or table and
Programming 2	Exploring a new device, predicting what it might do, trying it	Explaining what happened when they pressed given	Recognising the cause and effect of the buttons they press
	Creating a demonstration video to explain how to use a Bee-	Discussing what each button did and demonstrating how it	Discussing how to make the video clearer for the audience.
	Planning and following a set of instructions precisely,	Recognising which buttons are necessary in the sequence of	Predicting/planning an increasing number of steps.
	Programming a device, considering how it moves from one	Identifying a destination and getting Bee-Bot there (in as	Discussing the most efficient route with as few steps as
	Programming using clear instructions and debugging them if	Programming the Bee-Bot to reach the goal as specified in	An awareness of route efficiency.
Programming 2	Exploring a virtual Bee-Bot, predicting what it might do, trying	Explaining what happened when they pressed given buttons	Recognising the cause and effect of the buttons they press
	Creating a demonstration video to explain how to use a	Discussing what each button did and demonstrating how it	Discussing how to make the video clearer for the audience.
	Planning and following a set of instructions precisely,	Recognising which buttons are necessary in the sequence of	Predicting/planning an increasing number of steps.
	Programming a device, considering how it moves from one	Identifying a destination and getting a paper Bee-Bot there	Discussing the most efficient route with as few steps as
	Programming using clear instructions and recognising	Programming the Bee-Bot to reach the goal as specified in	An awareness of route efficiency.
Creating media	Understanding the importance of sequencing in computing	Explaining what is happening in a photo story. Planning three	Explaining how their photos will show their story. Discussing
	Taking clear photos; getting down to the level of the subject,	Identifying clear photos from less clear photos. Taking their	Explaining what they've done to make their photos clearer.
	Editing photos to improve them, cropping, resizing and	Acknowledging that images can be changed after being	Suggesting why you might make changes to photos.
	Searching for and importing images from the internet, using	Knowing that images can be found on the Internet.	Resizing images appropriate to scale, e.g.: a tree isn't
	Creating a collage of photos, organising them on the page	Recognising that a collage means several photos on a page.	Considering layout - resizing and adding decoration

Data handling	Representing data in different ways and answering	Representing data in different ways and using this to answer	Representing data in a variety of organised ways, allowing
	Comparing and ordering values in a spreadsheet or table and	Logging in and using mouse and keyboard skills to navigate	Independently exploring the website; explaining their
	Collecting and recording data and representing this data	Identifying different minibeasts. Recording the number of	Recording the number of minibeasts they find in a structured,
	Identifying questions to sort data in the most efficient way	Clicking and dragging objects to create a branching	Typing questions to sort data in the most efficient way
	Designing a computerised invention to gather data and	Designing a computerised invention to gather data;	Explaining and annotating their design in detail,
Online safety	Discussing what the internet is	Discussing what the internet is and what you can do online	Identifying what they should and should not do to keep
	Recognising times when they have had a strong emotion	Recognising that internet use may affect mood or emotions	Considering when the internet has had a strong positive or
	Identifying when the characters in the story were kind or	Recognising how the internet can upset others	Recalling all the top tips for using the internet safely
	Understanding that we shouldn't share some information	Identify which information is appropriate to share and post	Explaining rules to help others avoid sharing or posting things

Year 2	Unit	Lesson name	Lesson no.	Working towards/Learning intention (WT)	Secure understanding (SU)	Greater depth (GD)
Computing systems and networks 1	What is a Computer?	Computer parts	1	Naming the key parts of a computer and explaining what	Confidently naming the peripherals: screen, keyboard and	Suggesting how to control a computer that doesn't have the
		Inputs	2	Understanding that technology is controlled	Recognising that buttons cause effects and that technology	Suggesting how we know technology is doing what we want
		Technology safari	3	Identifying items that might have a computer inside and	Recognising different forms of technology beyond laptops	Giving a more detailed explanation about what different
		Invention	4	Creating a design for an invention, making a detailed plan,	Including inputs and/or outputs as part of their invention and	Adding clear labels and explanations to their design
		Real world roleplay	5	Understanding the role of computers, explaining where	Recognising computers in the world around them and	Suggesting how the computers are connected in different
Programming 1	Algorithms and debugging	Dinosaur algorithm	1	Decomposing a game to predict the algorithms that are used	Writing a creative algorithm planned for the dinosaur game	Giving accurate predictions of the algorithm behind the
		Machine learning	2	Knowing that computers can use algorithms to make	Writing clear and precise algorithms that can be understood	Explaining why algorithms need to be clear and precise and
		Through the maze	3	Creating algorithms to solve problems, including loops	Creating algorithms to solve problems and beginning to use	Explaining their chosen algorithms clearly and using loops to
		Making maps	4	Understanding what abstraction is and giving examples of	Clearly explaining what abstraction is and creating a plan	Discussing the level of abstraction, e.g.: too much/too little
		Dancing robots	5	Planning an algorithm using different types of loops	Planning a dance that has a clear structure that can be	Using all three loops in their algorithm and identifying where
Computing systems and networking 2	Word processing	Getting to know the keyboard	1	Learning to touch type, identifying the home keys on a	Understanding which are the home row keys and how to	The ability to type words with increasing confidence and a
		Getting started with word	2	Using a word processor to type a sentence and selecting the	Typing and making simple alterations to text using buttons	Using keyboard shortcuts to confidently make changes to
		Newspaper writer	3	Searching for an appropriate image and adding it to a	Creating a document, which contains appropriate images	Using a wide variety of modifications to text including using
		Poetry book	4	Creating a poetry book, learning how to use text styles to	Understanding how to use copy and paste to copy text from	Using keyboard shortcuts confidently to create a document
		Making friends online	5	Understanding how to stay safe when talking to people	Creating a poster with clear information about how to	Using word processing skills and keyboard shortcuts taught
Programming 2	ScratchJr	Usinng ScratchJr	1	Explain simple code blocks	Recognising what code blocks to use	Explaining how to work out errors in their code
		Creating an animation	2	Identifying blocks used and why	Explaining what a loop is	Explaining what a loop is and why it is useful
		Making a musical instrument	3	Can include several button characters	Can include blocks chosen for playing music	Selecting appropriate blocks for a specific purpose
		Programming a joke	4	Use an algorithm to help with programming	Sequencing blocks appropriately	Explainign what each block in the program does
		The Three Little Pigs'	5	Explaining what an algorithm is	Choosing a code to match their algorithm	Using an algorithm to write a computer program
Creating media	Stop Motion (Option 1: Using tablet devices)	What is animation?	1	Creating a flip book animation of a ball	Creating a flip book animation of a ball with small changes	Creating a flipbook animation of a balloon which changes
		What is stop motion?	2	Understanding what stop motion animation is and creating a	Creating a short stop motion with small changes between	Creating an animation between individual frames
		My first animation	3	Creating a short stop motion with movements between	Creating a short stop motion with small changes between	Creating a short stop motion with small changes between
		Planning my project	4	Planning out an animation with support from a group	Planning out an animation with one object	Planning out an animation with two objects
		Creating my project	5	Creating a short stop motion animation and show awareness	Creating a stop-motion animation with small changes	Creating an animation that includes two objects which both
Creating media	Stop Motion (Option 2: Devices with cameras)	What is animation?	1	Creating a flip book animation of a ball	Creating a flip book animation of a ball with small changes	Creating a flipbook animation of a balloon which changes
		What is stop motion?	2	Understanding what stop motion animation is and creating a	Creating a short stop motion with small changes between	Creating an animation between individual frames
		Taking photographs	3	The ability to take a photograph using a digital camera and	The ability to take a clear, in focus photograph using a digital	The ability to take clear photographs, provide feedback and
		My first animation	4	Create a stop motion by uploading relevant images	Able to create a stop motion animation by locating and uploading the relevant images and setting an appropriate	Refine the duration and edit images if needed to create a more fluid animation
		Planning my project	5	Planning out an animation with support from a group	Planning out an animation with one object	Planning out an animation with two objects
Creating media	Stop Motion (Option 3: devices without cameras)	Creating my project	6	Creating a short stop motion animation and show awareness	Creating a stop-motion animation with small changes	Creating an animation that includes two objects which both
		What is animation?	1	Creating a flip book animation of a ball	Creating a flip book animation of a ball with small changes	Creating a flipbook animation of a balloon which changes
		What is stop motion?	2	Understanding what stop motion animation is and creating a	Creating a short stop motion with small changes between	Creating an animation between individual frames
		Adding effects	3	Creating an animation with two objects. Use the pen tool to	Creating an animation with two animated objects. Using the	Creating an animation with two animated objects. Using the
		Creation	4	Creating a short stop motion animation that fits the 'sea' theme	Creating a stop-motion animation that fits the 'sea' theme. The animation will have both a static animated object and a	Creating a themed animation which includes a range of animated objects
			5			
Data handling	International Space Station	Homes in apace	1	Retrieving digital content from an interactive map and	Navigating the digital map and describing and explaining at	Using the digital map efficiently to extract specific
		Space bag	2	Considering how computers would monitor items aboard the	Identifying and digitally drawing at least six items which fulfil	Drawing items which cover a range of human needs,
		Warmer, colder	3	Understanding the role of sensors on the ISS and designing a	Reading the correct temperature on a thermometer and	Taking accurate readings from a thermometer and
		Experiments in apace	4	Creating an algorithm for growing a plant in space	Creating an algorithm which addresses all plants' needs and	Creating an algorithm which includes the use of sensors to
		Goldilocks planets	5	Interpreting data and identifying temperatures within a	Explaining that water is important to life on Earth and	Interpreting data from a spreadsheet to decide whether a
Online safety		What happens when I post	1	Children can discuss whether given information is safe or	Children can explain what is meant by online information	Children are aware of what information is safe to be shared
		How do I keep my things safe	2	Can follow the guidance to create a strong password	Can explain why we need passwords and the need for a	Knowing why we use passwords to secure our devices and
		Who should I ask?	3	Able to explain why it is important to ask permission before	Understanding that they need to ask permission before	Thinking critically about the content they share about
		It's my choice	4	Are able to identify a trusted adult who they can ask for help	Understanding that they have a right to say no or deny their	Being able to provide examples of when they may want to

Year 3	Unit	Lesson name	Lesson no.	Working towards/Learning intention (WT)	Secure understanding (SU)	Greater depth (GD)
Computing systems and networks 1	Networks and the internet	What is a network?	1	Learning that a network joins things together and that it can	Recognising that a network is two or more devices	Explaining why networks are used and what they're used
		A file's journey	2	Understanding how information moves around a network,	Recognising that files are saved on a server and that they	Applying their understanding of retrieving files from the
		A website's journey	3	Understanding that computers have to locate websites,	Understanding that networks connect to the internet via a	Acknowledging that a website is a file that is sent and
		Routers	4	Exploring the role and purpose of routers	Explaining that routers connect us to the internet and	Suggesting ways in which websites could load more quickly,
		Understanding packets	5	Understanding the role of packets and that they take their	Explaining that websites are split into small pieces to be sent	Understanding that websites are too big to send whole and
Programming	Scratch	Using loops	2	Using repetition (a loop) in a program	Explaining what a loop is and its role within a program.	Explaining what a loop is and when one should be used.
		Tinkering with Scratch	1	Exploring a programming application independently,	Explaining what happened to the program when they added	Explaining a wider range of blocks from different groups
		Programming an animation	3	Programming an animation, decomposing a project;	Selecting blocks to create a desired effect. Suggesting	Using less common blocks, such as 'sensing'. Using the
		Storytelling	4	Programming a story, choosing appropriate blocks,	Explaining which blocks/features have been used.	Adding more instructions at each stage, e.g.: sound effects.
		Robot bop	5	Programming a game, explaining the purpose of an	Explaining what an algorithm is and understanding the	Beginning to form algorithms independently (as seen in the
Computing systems and networks 2	Emailing	Sending an email	1	Understanding what email is and that it can be used to send	Understanding how to log in and log out of email and	Sending and replying to emails, giving careful consideration
		Adding attachments	2	Replying to an email, editing email content and adding an	Editing an email, typing the correct email address and adding	Understanding how to use hyperlinks within the email body
		Be kind online	3	Understanding the importance of being kind online,	Writing an email with instructions using positive language	Writing an email with instructions using positive language
		Cyberbullying	4	Understanding what cyberbullying is and how to support	Creating a flowchart showing how to deal with cyberbullying	Indicating that they recognise that bullying behaviour could
		Fake emails	5	Knowing that not all emails are genuine, recognising when	Sending an email which describes some of the best ways to	Explaining in their email how to avoid scammers, showing a
Computing systems and networks 3	Journey inside a computer	Inputs and outputs	1	Recognising basic inputs and outputs and understanding that	Suggesting what input and output are and recognising that	Explaining the instructions that are being sent and received
		Build a paper laptop	2	Understanding that a laptop is made up of many parts and	Explaining that parts work together to make the laptop work	Suggesting how the parts work together and what messages
		Following instructions	3	Suggesting the purpose of different parts of a computer and	Naming the different parts of a computer and explaining	Naming the different parts of a computer, giving a clear
		Computer memory	4	Understanding the purpose of computer parts and using a	Suggesting what computer memory is and using a QR code	Suggesting how computer memory works with CPU to
		Dismantling a tablet	5	Decomposing a tablet computer, describing similarities and	Recognising that some computer parts relate to functions	Recognising that some computer parts relate to functions,
Creating media	Video trailers (Option 1: using devices other than iPads)	Planning a book trailer	1	Planning a book trailer, picking out the key events in a story	Creating a storyboard to plan a book trailer and describing the purpose of a book trailer	Creating a detailed storyboard for a book trailer from the main character's perspective, understanding the audience
		Filming	2	Using digital devices to record video or take photos to tell a	Using digital devices to record video or take photos, framing	and planning relevant sound effects, voiceovers and music
		Editing the trailer	3	Editing videos and photos using film editing software,	Importing videos and photos into film editing software,	Incorporating music and sound effects into their video, so
		Transitions and text	4	Adding text and transitions to a video	transitions between shots or images	Adding text to the trailer at relevant times and incorporating
		Video reviews	5	Evaluating video editing, explaining what makes a successful	Identifying and articulating what makes a successful book	and videos in general, based on book trailers they have

Creating media	**Video trailers (Option 2: Using iPads)**	Planning a book trailer	1	Planning a book trailer, picking out the key events in a story	Creating a storyboard to plan a book trailer and describing the purpose of a book trailer	Creating a detailed storyboard for a book trailer from the main character's perspective, understanding the audience
		Filming	2	Using digital devices to record video or take photos to tell a story	Using digital devices to record video or take photos, framing shots carefully to create the desired effects	Using a range of camera angles to film scenes for their trailer and planning relevant sound effects, voiceovers and music
		Editing the trailer	3	Importing videos and photos into film editing software	Importing videos and photos into film editing software in order	Importing videos and photos into film editing software incorporating text into their video to provide context on what
		Transitions and text	4	Adding some text and a transition to their video	Adding text to the trailer, as well as incorporating different transitions between shots or images	Adding text to the trailer at relevant times and incorporating a variety of transitions between shots
		Video reviews	5	Using the success criteria to evaluate the book trailers	Identifying and articulating what makes a successful book trailer and suggesting ideas on how to share book	Sharing ideas for the success criteria for both book trailers and videos in general, based on book trailers they have
Data handling	**Comparison cards databases**	Records, fields and aata	1	Understanding the terminology around databases	Explaining what is meant by field, record and data and playing Comparison cards by accurately comparing numbers and scanning for relevant information.	Quickly scanning a field for relevant information and comparing numbers as well as considering other ways of comparing the information on the cards.
		Race against the computer	2	Comparing paper and computerised databases	Identifying examples of paper and computerised databases from a list of statements	Independently creating a list of the advantages and disadvantages of computerised and paper databases
		Sorting and filtering	3	Sorting, filtering and interpreting, data	Putting values into a spreadsheet, sorting, filtering by a particular value, interpreting that data and creating questions that can be answered by the data	Creating an online set of questions about the data which demonstrates a secure understanding of the data and why it is useful to sort and filter by different values
		Representing data	4	Representing data in different ways	Creating a graph, naming different types of chart and explaining the purpose of visual representations of data	Creating multiple graphs and describing the advantages and disadvantages of each as well as interpreting the information quickly and easily
		Planning a holiday	5	Sorting data for a purpose	Explaining what databases are used for and sorting and filtering data for a specific purpose	Explaining that databases are used for different purposes, sorting and filtering data and conducting a range of different searches independently and comparing the information to reach their own conclusions
Online safety		Beliefs, opinions and facts on	1	Know the difference between an opinion, belief and a fact	Recognising opinions, beliefs and facts	Recognising opinions, beliefs and facts and that there is an
		When being online makes me upset	2	Know to keep upsetting content on the screen in order to show a trusted adult and why this is important	Able to recall some of the 7 tips for dealing with upsetting online content	Able to recall all of the 7 tips for dealing with upsetting content. Knowing some organisations that can provide advice when a trusted adult is not available
		Sharing of information	3	Be able to name some devices and items in their home that connect to the internet	Understanding that digital devices share personal information amongst each other	Recognising how devices communicate with the internet to provide information and data and can name examples of this in action

Year 4	Unit	Lesson name	Lesson no.	Working towards/Learning intention	Secure understanding	Greater depth
Computing systems and networks	Collaborative learning	Teamwork	1	Learning that software can be used collaboratively online to	Understanding the need to be thoughtful when working on a	Suggesting thoughtful and considerate ways to make
		Sharing a document	2	Learning how to share work with others, access shared	Using comments to suggest changes to a document and	Using edits and suggestions as well as showing a clear
		Google Slides	3	Understanding how to create effective presentations using	Using a variety of different slide styles to convey information	Understanding the need for simplified information on each
		Google Forms	4	Learning why a survey might be useful and how to create	Creating a Google Form with a range of question types that	Exploring a variety of question types that provide more in-
		Google Sheets	5	Using a shared spreadsheet to explore data	Exporting data to a spreadsheet, highlighting data using	Exporting data to a spreadsheet, highlighting data using
Programming 1	Further coding with Scratch	Scratch reminder	1	Revisiting and exploring further a programming application	able to change a sprite's appearance and develop an	Developing a complex code script by exploring the array of
		Identifying what code does	2	Decomposing a Scratch game to understand which code	game that make it function	Identifying a majority of the code blocks used with a Scratch
		Introduction to variables	3	make a variable using specific code blocks		response to a question
		Making a variable	4	code blocks		questions
		Times tables project	5	in Scratch	a program	quiz in Scratch
Creating media	Website design	Google Sites Skills	1	Exploring the features of Google Sites to learn how to create	Using a range of features in Google Sites and record	Demonstrating all checklist skills on their website as well as
		Book review	2	Planning content for a web page as a collaborative online	Understanding the features of Google Sites and using these	Starting to create their web page, already showing many of
		Creating a web page	3	Creating a web page as part of a collaborative class website	Creating a professional looking web page with useful information and a clear style, which is easy for the user to read and find information from. Using many of the features of Google Sites	Producing additional content by adding subpages with further information as well as including more advanced features, e.g.: relevant YouTube video content embedded in their page
		Planning my Website	4	Planning and creating a website	Creating a clear plan by referring back to their checklist to include a range of features to build a website	Creating a clear plan as well as making progress on creating a site with a clear style throughout and considering information that the audience would find useful and interesting
		Creating my website	5	Creating a website about a specific Unit and evaluating its	Creating four web pages with a range of features in their	and a consistent style throughout their site
Skills showcase	HTML	Introduction to HTML	1	Learning that web pages are built using different	Adding text between the heading and paragraph tags.	Explaining the general order of the HTML tags and how text
		Remixing HTML	2	Changing the HTML of a web page	Identifying and remixing HTML code to alter the text size and content of a web page	Altering the HTML code to create an object with different elements. Identifying where to find the different elements in the HTML code and explaining how they created their visual outcome
		Changing HTML and CSS	3	Changing the HTML and CSS to alter the appearance of an object on the web, changing the size and colour of elements on a web page	Changing the colours of their object elements. Changing the sizes of some of the elements. Explaining how they created their story.	Creating a fully customised story – potentially having changed it entirely from the first slide. Altering the colours and sizes of the elements.
		Webpage elements exploration	4	To understand and explore more complex components of a	Adapting the basic elements of a story within a web page	Adapting a number of different elements within a live web
		Replacing images	5	Inserting permitted images into a web page to change the content	Finding images that are permitted for reuse and changing at least one image and text in a web page to create a new story.	Changing several examples of images and text using 'copy image address' and ensuring that their images are high quality.
Programming 2	Computational thinking	What is computational thinking?	1	Understanding that computational thinking is made up of four key strands: decomposition, pattern recognition, abstraction and algorithm design	An understanding that problems can be solved more easily using computational thinking	Some understanding of what the core strands of computational thinking are and what they mean
		Decomposition	2	Understanding what decomposition is and how to apply it to solve problems	Understanding what the different code blocks do and creating a simple game using the code looked at in the start of the lesson plus a few further features	Creating a game which uses many of the features in the original game plus a few independently created scripts that add extra features to the game
		Abstraction and pattern	3	Understanding the terms: pattern recognition and	Understanding the terms 'pattern recognition' and	Using past experiences to understand how to solve new
		Algorithm design	4	Understanding how to create an algorithm and what it can	Creating a Scratch program which draws a square and at	Understanding how to alter the existing code to create a
		Applying computational thinking	5	Combining computational thinking (decomposition, pattern	Understanding how computational thinking can help to solve	Applying computational thinking skills to their challenges to
Data handling	Investigating weather	What's the weather?	1	Knowing what weather is and what can affect it. Logging	Searching the web efficiently to find temperatures of	Recording accurate data about temperatures around the
		Weather stations	2	Designing a weather station device to sense and record	Designing a weather station which gathers and records	Explaining how their weather station could measure
		Extreme weather	3	Designing an automated machine to respond to sensor data	Designing an automated machine which uses selection to	Writing an algorithm to explain how their automated device
		Satellites and forecasts	4	Understanding how weather forecasts are predicted and	Searching for and recording weather forecast information in	Explaining in detail how weather is predicted and justifying
		Presenting forecasts	5	Using green screen technology in a video to present a	Creating a video which uses chroma keying and includes	Editing a video using chroma keying and explaining how
Online safety		What happens when I search	1	Being able to search on a search engine	Being able to describe how to search over multiple platforms	Will be able to describe how to search effectively over a
		How do companies encourage us	2	Be able to talk about their experiences of some of the	Describing some of the methods used to persuade people to	Describing a range of methods used to persuade people to
		Fact, opinion or belief?	3	Identify the difference between a fact and an opinion and	Being able to explain the difference between fact, opinion	Using examples to explain the difference between fact,
		What is a bot?	4	Can talk about some bots that they have used in the past	Can explain what a bot is and give examples of different bots	Explain the benefits and risks of bots around the home or
		What is my #techtimetable like?	5	Being able to identify how much time they spend on	Being able to explain some positive and negative distractions	Being able to recognise and explain the positive and
		How can I be safe and respectful	6	Children can work with the teacher to create a list of	Children can describe strategies for being safe online and	Children can describe a range of strategies for being safe

Year 5	Working towards/Learning intention	Secure understanding	Greater depth
Computing systems and networks	Understanding what a search engine is and how to use it to	Explaining what a search engine is, suggesting several	Understanding which words do and don't need to be included
	Recognising that not everything online is true	Suggesting that things online aren't always true and	Skimming pages to identify validity straight away
	Searching effectively and understanding the importance of	Explaining why keywords are important and what the	Using searching skills effectively, explaining why following
	Creating an informative poster with appropriate images,	Recognising the terms 'copyright' and 'fair use' and	Explaining how they have adhered to copyright, e.g.: written
	Understanding how search engines work and the role of a	Making parallels between book searching and internet	Suggesting ways to make a website of their choice rank
Programming 1	Being able to tinker by exploring something independently	Iterating ideas, testing and changing throughout the lesson.	Using nested loops (loops inside of loops) within their code.
	Creating a program that plays themed music with the use of	Explaining how their program linked to the theme. Including	Making links between changing the style of the music and
	Planning a soundtrack program and explaining how my	Explaining their scene in the story. Being able to link the	Discussing which programming structures will allow them to
	Programming a soundtrack using a range of commands	Including a live loop and explaining its function. Using	Using additional commands adding to their program's
	Programming music	The ability to code a piece of music that combined a variety	The ability to amend code in a 'live' scenario. Using various
Programming 1	Exploring freely and able to make sounds	Iterating ideas, testing and changing throughout the lesson.	Using more complex iterations in their tinkering- introducing
	Using the basic functions and linking their music to the	Explaining how their program linked to the theme. Including	Making links between changing the style of the music and
	Able to identify the emotions of a scene with adult support	Explaining their scene in the story. Being able to link the	Discussing which programming structures will allow them to
	Use basic coding commands to change pitch, tempo, rhythm	Including a repeat and explaining its function to enhance	Using additional commands adding to their program's
	Able to edit and improve a music sample	The ability to code a piece of music that combined a variety	The ability to amend code and perfect through iteration
Data handling	Identifying how and why data is collected from space.	Identifying some of the types of data which the Mars Rover	The ability to go beyond obvious data and explain about
	Identifying how messages can be sent using binary code.	Reading any number in binary, up to eight bits. Identifying	Independently identifying that the limitations of binary
	Identifying the computer architecture of the Mars Rovers	Identifying input, processing and output on the Mars Rovers.	The ability to generalise input, processing and output to
	Recognising that computers use binary mathematically and	Reading binary numbers and grasping the concept of binary	Extending themselves to calculate the addition of more than
	Representing binary as text and recalling that binary is the	Reading binary numbers to four bits. Relating binary signals	Grasping how hexadecimal would be a more efficient
Programming 2	Being able to tinker and making predictions about something	Confidence to clip blocks together and predict what will	Can iterate on their predictions, to create more complex
	Programming an animation by decomposing it into a series	Creating their own images to make the animation and	Creating a more complex animation (e.g., more images) and
	Recognising coding structures by identifying some code	Recognising blocks they've used previously, identifying	Explaining the impact of changing the variables within the
	Creating a program by recognising code blocks	Choosing appropriate blocks to complete the program and	Decomposing the program without support, selecting
	Creating a program by writing an algorithm	Breaking a program down into smaller steps, suggesting	Independently adding in additional functionality, e.g.: a
Creating media	Creating a toy with simple movement using a template	Creating a toy with simple images with a single movement	Creating a toy with increased complexity in the movement of
	Creating a short stop motion and identifying mistakes and	Creating a short stop motion with small changes between	Creating an animation which includes two objects which both
	Decomposing a given idea onto a storyboard	Decomposing a story into smaller parts to create a storyboard with simple characters	Including two or more scenes that would be easy to animate using the resources provided
	Making sure that a story is told through the animation by referring back to the storyboard	Making small changes to the models to ensure a smooth animation and deleting unnecessary files	Creating an animation with multiple scenes or characters which all move throughout the film, while the camera and set remain stationary

Creating media	Creating a toy with simple movement using a template	Creating a toy with simple images with a single movement	Creating a toy with increased complexity in the movement of the objects
	Using a camera to take frames with movements between	Using a camera to take 24 frames with small movements	Creating two objects, which both move between individual
	Decomposing a given idea onto a storyboard	Thinking of a simple story idea for their animation then	Including two or more scenes that would be easy to animate
	Making sure that a story is told through the animation by	Making small changes to the models to ensure a smooth	Creating an animation with multiple scenes or characters
	Identifying frames not needed and deleting them as well as	Have a clear animation with added effects such as extending	An increasingly complex animation with a range of features
Skills showcase	Understanding how bit patterns represent images as pixels an	creating a pixel picture, explaining that a pixel is the smallest e	capture, data transfer and digital display as well as recalling
	Explaining how the data for digital images can be compressed	Saving JPEG as a bitmap and recognising the difference in file	the file size of the image and recognising how compression
	Identifying and explaining the 'fetch, decode, execute' cycle. U	Explaining the 'fetch, decode, execute' cycle in relation to real-	architecture terms, such as CPU, RAM and ROM
	Creating a safe online profile and tinker with 3D design softwa	Creating a profile with a safe and suitable username and pass	learn new skills independently
	Modifying the design of a 3D object using CAD software. Und	Independently taking tutorial lessons, applying what they hav	including taking the initiative to self-learn more skills as well
Online safety	Understanding of what 'app permissions' are	Understanding that passwords need to be strong and that	Knowing that strong passwords need to be of certain lengths
	Being able to identify whether online communication is	Recognising two of the types of online communication and	Recognising all forms of online communication. Being able to
	Searching for information about a person with support	Searching for simple information about a person such as	Knowing that information online about people is often
	Knowing organisations that can help victims of bullying	Knowing what bullying is and that it can occur both online	Knowing that online and real-world bullying have their
	Can act out how health and wellbeing may be affected by	Recognising when health and wellbeing are being affected in	Recognising the impact of online use on our health and

Year 6	Unit	Lesson name	Lesson no.	Working towards/Learning intention	Secure understanding	Greater depth
Computing systems and networks	Beltchley Park	Secret codes	1	Understanding that there are lots of different types of	Explaining that codes can be used for a number of	Exploring and using a variety of different codes as well as
		Brute force	2	Understanding the importance of having a secure	Explaining how to ensure a password is secure and how	Showing a clear understanding of how brute force attacks
		Bletchley Park	3	Understanding the importance of Bletchley Park to the	Knowing what the first computer was built for. Presenting	Creating a detailed and informative website including
		Computing heroes Part 1	4	Understanding about some of the historical figures that	Explaining the importance of historical figures and their	Using persuasive text in presentations about historical
		Computing heroes Part 2	5	Identifying why historical figures were influential in	Presenting information about their historical figure in an	Providing detailed and comprehensive feedback on why
Programming	Intro to Python	Tinkering with Logo	1	Predicting what I think something new will do when I	Iterating ideas, testing and changing throughout the	Incorporating nested loops - loops
		Nested loops	2	Understanding and explaining nested loops	Using nested loops in their designs, explaining why they	Adapting and experimenting with a nested loop to change
		Using Python	3	Creating a program with purpose	Beginning to draw the house using Python commands;	Confidently discussing which part of their code does
		Using loops in Python	4	Understanding, explaining and using loops.	Using loops in Python and explaining what the parts of a	Including nested loops in Python; explaining what will
		Coding Mondrian	5	Identifying the need for random numbers and	Recognising that computers can choose random	Making substantial changes to the original program;
Data handling 1	Big Data 1	Barcodes	1	Identifying and explaining how barcodes and QR codes	A firm understanding of why barcodes and QR codes	An ability to create (or follow) a QR code treasure trail. An
		Transmitting Data	2	Knowing how infrared waves transmit data and	Explaining how infrared can be used to transmit a	Comparing infrared data transmission to QR code data
		RFID	3	Recognising the uses of RFID to transmit data and the	The ability to: explain how RFID works, recall a use of RFID	The ability to: compare RFID to other methods of wireless
		Using RFID	4	Gathering and analysing data in real time and recognising	Taking real time data and entering it effectively into a	Taking real time data and comparing it with longer term
		Mobile data	5	Comparing, analysing and evaluating data across columns	Sorting data within an Excel spreadsheet by inserting a	Recognising how RFID can be used to solve some data
Creating media	History of computers	Playing with sound	1	Tinkering with sound by using sound recording software	Explaining how to record sounds and add in sound	Explaining and showing how to cut part of a sound clip
		Radio plays	2	Recording, editing and adding sound effects to a radio	Producing a simple radio play with some special effects	Producing a more complex radio play that uses a variety
		First computers	3	Understanding and identifying how computers have	Creating a document which includes correct date	Presenting information in an interesting way, including
		Computers that changed the	4	Researching about one of the computers that changed	Demonstrating a clear understanding of their device and	Explaining how devices impacted each other and led to a
		Future computer	5	Understanding of historic computers in order to design a	Understanding how computers work by recognising its	Designing a realistic computer of the future by justifying
Data handling 2	Big data 2	Transferring data	1	Explaining how data can be safely transferred.	Recognising that data can become corrupted within a	Explaining some of the methods which cause data
		Data usage	2	Investigating the data usage of online activities.	Recognising differences between mobile data and Wi-Fi	Ranking or ordering online activities according to data use
		The internet of things	3	Identifying the meaning of the term 'Internet of Things'	Recognising how the Internet Of Things has led to Big	Giving a more detailed explanation of how the IOT could
		Designing a smart school	4	Designing a system for turning a school into a smart	Explaining ways that Big Data or IOT principles could be	Choosing a data transfer method which is most suitable
		Smart school presentation	5	Presenting ideas for turning a school into a smart school.	Presenting their ideas about how Big Data/IOT can	Persuading their audience of the possibilities and
Skills showcase	Inventing a product	Invention design	1	Designing an electronic product, knowing that programs	Evaluating code, understanding what it does and using	Predicting code. Using and adapting code to suit their
		Coding and debugging	2	Coding and debugging a program to make them more	Using sequence, selection, repetition or variables within a	Incorporating selection, repetition and variables in their
		TinkerCAD	3	Using CAD to create shapes and design a product	designing appropriate housing for their product using	Using a variety of shapes and holes to create their design
		My product's website	4	Creating a website for a product, clearly describing the	Creating an appealing website for their product, aimed at	Using ideas from other websites with a similar audience
		Video advert	5	Creating and editing a video by recording a video or taking	Creating an edited video of their project, articulating the	Adding multiple elements to their edited video and
Online safety		Life online	1	Can discuss how they would feel in different situations	The ability to discuss a range of issues online that can	The ability to discuss negative feelings associated with
		Sharing online	2	Can discuss whether sharing online has a positive or	Explaining how sharing online can have both negative and	Explaining, with examples, how sharing online can have
		Creating a positive online	3	Discussing what their 'digital footprint' is	Explaining what a 'digital reputation' is and what it can	Explaining strategies in developing a positive online
		Capturing evidence	4	Children understand why to capture evidence of online	Understand the importance of capturing evidence of	Explaining why it is important to capture evidence of
		Password protection	5	Describing ways to manage passwords in order to keep	Describing ways to manage passwords and strategies to	Describing effective ways to manage passwords.
		Think before you click	6	Understanding what 'phishing' is and ways to identify	Describing strategies to identify scams. Explaining ways to	Describing ways in which online content is used to target