

Year Group and Subject Content Focus Area	Computing Content	Recurring ideas/themes...what is the point of the content?	Rationale (Why here? What is it preparing them for?)	The disciplinary training
Reception	Computing Content	Recurring ideas/themes...what is the point of the content?	Rationale (Why here? What is it preparing them for?)	The disciplinary training
Year 1	Computing Content	Recurring ideas/themes...what is the point of the content?	Rationale (Why here? What is it preparing them for?)	The disciplinary training
Getting started	<p>Keyboard skills – locating the letters of individual names Computer menus - file, open, save, close Using a mouse – click and drag, drag and drop, left/right click, mouse mat</p> <p>1 – Logging in; Learning about computers and their role in the modern world. Pupils log in to school computers and tinker with the website Sketchpad.</p> <p>2 – Click & drag skills; After exploring different styles of art; including digital art with the use of Sketchpad to create digital prints, while developing mouse skills in the process.</p> <p>3 – Drawing shapes; Further development of mouse skills with the introduction of the drag and drop technique to create paintings in the style of Kandinsky, using layered concentric shapes</p> <p>4 – Drawing a story; Mouse skills learnt so far are put to the test through the development of digital painting techniques to create pictures that retell a scene from a well-known story</p>	<p>Digital Literacy and online safety</p> <p>Computers and hardware</p>		

	<p>5 – Self-portrait; A variety of different painting skills learnt to far are used in the creation of a digital self-portrait, where the introduction of decomposition skills are required to breakdown facial features into simple shapes.</p>			
Programming	<p>Bee-Bot – locating the buttons, battery compartment, on/off switch, wheels and speaker Understanding Bee-Bot instructions and button functions – move forwards/backwards, turn left/right, clear, pause, go</p> <p>1 – Getting to know a bee-bot; Exploring a bee-bot device and making predictions about what it might do, building up to trying out the buttons, then explaining the outcomes witnessed</p> <p>2 – Making a bee-bot video; Creating an explanatory video describing how to use a Bee-bot, considering its different functions and operations. Planning the video will involve a structured sequencing process to capture all the visual information intended for the video</p> <p>3 – Precise instructions; The roles of the programmer (giving instructions) and Bee-bot (carrying out the instructions) are explored through role-playing in this “unplugged” lesson, which requires no technology</p> <p>4 – Bee-bot world; Programming Bee-bots with instructions to reach an exact destination with the use of a Bee-bot world mat created using a specifically designed mat template</p> <p>5 – Story mat; Directing a Bee-bot from its previous destination to alternate images on a themed Bee-bot mat, with the use of a well-known story.</p>	Computational thinking Computers and hardware		

<p>Algorithms unplugged</p>	<p>Planning and execution of an algorithm/set of instructions for a simple activity Basic debugging concepts Decomposition – how to breakdown objects into separate parts and categorise them</p> <p>1 – What is an algorithm? The word algorithm is introduced and defined through an interactive activity in the form of a set of instructions on how to dress a doll</p> <p>2 – Algorithm pictures; Follow algorithms to draw a creature that leads to developing personal unique and specific algorithms, while building an understanding of how instructions must be very specific.</p> <p>3 – Virtual assistants; Becoming virtual assistants such as Alexa or Siri leads to a heightened understanding of inputs and outputs in this unplugged role-play orientated lesson</p> <p>4 – Step-by-step; After drawing an image made from simple shapes, decomposition skills are required to break down the process into steps to enable someone else to replicate the drawing.</p> <p>5 – Debugging directions; The process of debugging is explored through maps and a set of directions with mistakes or “bugs” in the, which must be debugged so that a destination is reached</p>	<p>Computational thinking</p>		
<p>Digital imagery</p>	<p>How sequences work Camera types and basic photography techniques Tell a trusted adult about any online safety concerns</p> <p>1 – Planning a photo story; Design an individual story by taking inspiration from picture books, created by the use of photos and sequencing skills, helping lay the foundations of computational thinking.</p> <p>2 – Go on a miniature adventure to take photos of small figures to tell the stories planned in lesson 1, implementing everything learnt so far to create a good, clear photograph.</p>	<p>Digital Literacy and online safety</p> <p>Computers and hardware</p> <p>Computational thinking</p>		

	<p>3 – Editing photos; Creativity is let loose regarding the exploration of different effects, filters and editing tools used in transforming the look of photographic images captured.</p> <p>4 – Searching for images; Understand the vast range of images that are available when using search engines and adding these images to an existing photo library to create something unique and creative</p> <p>5 – Photo collage – Putting finishing touches to a digital imagery project by using a creative layout, adding text and decorative effects to produce a high-quality photo collage.</p>			
Introduction to data	<p>How branching databases work Other ways of collecting data – tally chart, bar graph, line graph, pictogram</p> <p>1 – Zoo data; The term “data” in introduced through an animal-themed activity that involves identifying the number of animals at a zoo and developing visual ways to represent the numbers.</p> <p>2- Picture data; Use of online software to represent visually the zoo animals data from the previous lesson to develop and create a pictogram or chart.</p> <p>3 – Minibeasts hunt; Using an area of the academy, go on a minibeasts hunt and use the data collected to create a visual representation of the data, such as a chart or pictogram, with the use of a computer</p> <p>4 – Animal guess who; Experiment with creating a branching database of animals that will then be used to enable the popular game of “Guess Who” to be played.</p> <p>5 – Inventions; Understanding of how data is collected and used in the planning and designing of a computerised invention to gather and record data.</p>	Digital Literacy and online safety Computers and hardware		
Rocket to the moon	<p>Computer files and formats – .jpegs, .txt, folders Using a computer to make a list/drawing and saving the document to a folder How to make a bottle rocket</p>	Digital Literacy and online safety		

	<p>1 – Rocket materials; Learn about different types of digital content before identifying the different parts of a rocket and making a digital list of materials needed to build one.</p> <p>2 – Rocket design; Using online drawing software to design and label a rocket that will be made using mouse and keyboard skills learnt previously.</p> <p>3 – Rocket building instructions; Use the computational thinking skill of sequencing to work out how to order and adapt a set of instructions to build a rocket, understanding the need for them to be in the right order</p> <p>4 – Making a rocket; Following instructions carefully in the right order to build rockets designed from the previous lesson where debugging of instructions may be needed and necessary.</p> <p>5 – Rocket launching; The homemade rockets are launched and provides the opportunity to measure how far they travel, the data in recorded in a spreadsheet or table to analyse.</p>			
<p>Online safety</p>	<p>Know the meaning of 'sharing' and 'posting' in an online context Know the 4 top tips for staying safe online</p> <ol style="list-style-type: none"> 1) People you do not know are strangers 2) Be nice to people like you would be in the real world 3) Keep your personal information private 4) If you are unsure about anything, then tell an adult you trust <p>1 – Using the internet safely; Learning what the internet is and how to use its safely and knowing what to do when someone says something unkind online. Children create their own "Online Safety Top Tips booklet" for keeping children safe online.</p> <p>2 – Online emotions; Discovering which devices connect to the internet, finding out top tips for staying safe online and how using the internet can affect our emotions. Designing an animal mask with top tips for using the internet safely.</p> <p>3 – Always be kind and considerate; Recapping the top four tips for staying safe on the internet, learning about the responsibility we each have as an online user and what to do if something upsets us online</p>	<p>Digital Literacy and online safety</p>		

	4 – Posting and sharing online; Exploring what is meant by the term “digital footprint”, knowing how we can ensure that the things we share and post online do not negatively impact us.			
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Year 2	Computing Content	Recurring ideas/themes...what is the point of the content?	Rationale (Why here? What is it preparing them for?)	The disciplinary training
What is a computer?	<p>Different types of technology – cameras, phones, torches, microwave, alarm clock, remote control Inputs e.g. keyboard, mouse Outputs e.g. monitor, speakers, printers</p> <p>1 – Computer parts; Learn to name the different parts of a computer before creating an online drawing of a laptop, labelling the mouse, keyboard and screen and discussing the purpose of each.</p> <p>2 – Inputs; Learning how technology is controlled by labelling a robot that been programmed for a specific purpose, focusing on which forms of input it requires.</p> <p>3 – Technology safari; Development in the understanding of what a computer is by conducting a tour of the school, photographing the different examples of technology spotted and identified</p> <p>4 – Invention; Designing new inventions, which must include inputs and outputs, explaining how an idea works and how it is controlled using all the knowledge learnt so far.</p> <p>5 – Real world role-play; Explore and understand the different types of computers that are used in the real world and the roles that they play.</p>	<p>Computational thinking</p> <p>Computers and hardware</p>		
Word processing	<p>Word processing – fonts, bold, italics, underline, highlight Keyboard skills – delete, enter, spacebar E-books and e-documents</p> <p>1 – Getting to know the keyboard; Learn about the setup and layout of a keyboard and exploring the basics of touch typing and understanding its importance when using computers of all types.</p> <p>2 –Getting started with word processing; Following on from the introduction to touch typing, learn about word processing and storing information in a text document as well as keyboard shortcuts.</p>	<p>Digital Literacy and online safety</p>		

	<p>3 – Newspaper writer; Building upon basic word processing skills, he editing and formatting of images, in a text document are explored with the context of newspaper writing.</p> <p>4 – Poetry book; Searching the internet to find text that can be copied and pasted into a poetry book that will be created and understanding the importance of referencing copied work.</p> <p>5 – What happens when I post online? Learning how information put online about someone can last for a long time and find out about who to talk to if something has been put online without consent or if it is incorrect using differentiated scenarios.</p>			
Programming: ScratchJr	<p>Coding – Scratch Jr, code blocks, algorithms, sprites/speeds, repeat and loop control blocks, start/finish, direction Blocks – triggering, motion, looks, sound, end, control</p> <p>1 – Tinkering with ScratchJr; Independently, build a program by dragging “blocks” then running code, learning that each block has a different attribute, predicting, exploring and explaining throughout.</p> <p>2 – Creating an animation; Using the blue “movement” blocks, work collectively to realistically mimic the movement of a fly, learning that giving the computer two instructions makes for a more natural movement before going in to programming animals.</p> <p>3 – Making a musical instrument; Use the green “sound” blocks to create a musical instrument, selecting the microphone option to record sounds and design an instrument outline and the buttons to make it play.</p> <p>4 – Programming a joke; Following an algorithm to program as joke by designing a background, adding one or two relevant characters and using the green sound blocks to record voices.</p> <p>5 – “The three little pigs” algorithm; Put into practice everything learnt so far, using a mixture of blocks to program the story of the “Three Little Pigs”.</p>	Computational thinking Digital Literacy and online safety		
Algorithms and	Zooming in and out of maps on Planet Earth	Computational thinking		

<p>debugging</p>	<p>Unplugged algorithms and instructional writing Abstraction/key information Decomposition/smaller chunks</p> <p>1 – Dinosaur algorithm; Play an unplugged version of a dinosaur-themed game where following instructions carefully will lead to successful programming outcomes.</p> <p>2 – Machine learning; Learn that computers can use algorithms, which are instructions, to make informed and calculated predictions and help teach a computer program how to interpret different drawings.</p> <p>3 – Through the maze; Building an understanding of algorithms, explore activities on a programming piece of software: Google - Coding for Carrots, directing a rabbit through a maze.</p> <p>4 – Making maps; Develop an understanding of the idea of “abstraction” by creating a simplified map and view of part of the school.</p> <p>5 – Unplugged debugging; Using their knowledge of debugging, robots are physically constructed via an unplugged algorithm activity</p>			
<p>International Space Station</p>	<p>International Space Station – Node 1,2,3, Zvezda, Zarya, Destiny, Columbus, Kibo, survival items, growing plants in space</p> <p>1 – Homes in space; Learn that the International Space Centre (ISS) is a “home” I space for astronauts who travel there and that computers are used to collect data to make sure that human needs are met on the ISS</p> <p>2 – Space bug; Develop mouse and keyboard skills by creating digital drawings of basic items that astronauts would need in space, learning about the basic survival needs of humans.</p> <p>3 – Warmer, colder; Learning that sensor monitors are used on-board the ISS to collect data and ensure the astronauts are safe and healthy, discover how to read thermometers and design a display to show data.</p>	<p>Computational thinking</p> <p>Digital Literacy and online safety</p>		

	<p>4 – Experiments in space; Learn what plants need to grow that will help to create an algorithm for growing a plant in space, including the use of sensors to collect vital data.</p> <p>5 – Goldilocks planet; Using an understanding of what is required to support human life by exploring a range of both real and fictitious planets, interpreting data to decide whether they might be habitable.</p>			
Stop motion	<p>Animations – how still images become moving images Use of animation software Sketching and planning</p> <p>1 – What is animation? Explore what is meant by the word “animation” to then design and create a simple animation with the use of a flip book template.</p> <p>2 – What is stop motion? Explore what is meant by the term “stop motion animation” and create a space themed animation using stop motion piece of software.</p> <p>3- My first animation; Using knowledge of the stop motion process, create a space-themed stop motion animation, using print out background and object templates.</p> <p>4 –Planning my project; using a variety of different backgrounds and objects, plan a space-themed animation focussing on the stop motion skills acquired so far.</p> <p>5- Creating my project; Work in pairs to produce a space-themed stop motion animation, with Partner A in charge of filming the animation and Partner B in charge of moving the objects in the frame</p>	<p>Digital Literacy and online safety</p> <p>Computers and hardware</p>		
Online safety	<p>The difference between ‘online’ and ‘offline.’ How to create a strong password. Tell a trusted adult about any online safety concerns</p> <p>1 – What happens when I post online? Learning how information put online about someone can last for a long time and find out about who to talk to if something has been put online without consent or if it is incorrect using differentiated scenarios.</p>	<p>Digital Literacy and online safety</p>		

	<p>2- How do I keep my things safe online? Learning how passwords can be used to protect information, accounts and devices; giving examples of what is meant by “private” and “keeping things private”; explaining rules for keeping personal information private (e.g. creating and protecting passwords).</p> <p>3 – Who should I ask? Children learn that they should speak to a responsible adult before sharing things about themselves or others online.</p> <p>4 – It’s my choice; Pupils learn that we have the right to say “no” or “I will have to ask someone” if someone wants to share something about us online.</p>			
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Year 3	Computing Content	Recurring ideas/themes...what is the point of the content?	Rationale (Why here? What is it preparing them for?)	The disciplinary training
Emailing	<p>Keyboard skills - @ symbol Email compose windows – addresses, subjects Be careful with unexpected emails</p> <p>1 – Sending an email; In this lesson, children learn about what email can be used for before writing and sending their first email.</p> <p>2 – Adding attachments; In this lesson, children will send an email and they learn how to make them more interesting by using editing features and adding attachments.</p> <p>3 – Be kind online; In this lesson, children learn to use positive language within an email and how to recognise when digital behaviour is unkind</p> <p>4 – Cyberbullying; In this lesson, children learn to use positive language within an email and how to recognise when digital behaviour is unkind.</p> <p>5 – Fake emails; In this lesson, we look at spa, junk and phishing emails and how to avoid being tricked by fake emails as not all emails are honest and trustworthy.</p>	Digital Literacy and online safety		
Journey inside a computer	<p>Computer parts – CPU, GPU, RAM, HDD QR Codes and how to use them Other portable electronic devices</p> <p>1 – Inputs & outputs; In this lesson, children learn about different forms of inputs and outputs and their functions, pupils develop their understanding that computers follow instructions</p> <p>2- Building a paper laptop; In this lesson, children consolidate their understanding of the different components of a computer and build a paper version of a laptop, describing the various parts.</p>	Computational thinking Computers and hardware		

	<p>3 – Following instructions; In this lesson, children mimic the CPU and GPU by working in groups to create a giant piece of artwork by closely following an algorithm</p> <p>4 –Computer memory; In this lesson, children take part in a number of different games to develop their understanding of the purpose of the various parts of a computer, including the ROM, RAM and hard drive.</p> <p>5 – Dismantling a laptop; In this lesson children build on their understanding of computer parts from Lesson 2 and compare the similarities and differences between different types of computers before drawing a diagram of a tablet with all its components.</p>			
Top trumps databases	<p>Identifying and reading databases Understanding bar graphs and pie charts</p> <p>1 – Records, fields and data; In this lesson children use Top Trump cards and learn the meanings of records, fields and data when working with databases.</p> <p>2 – Race the computer; In this lesson, children learnt that there are digital and non-digital databases, and compare the advantages and disadvantages of both.</p> <p>3 – Sorting and filtering; In this lesson, children input data into a database and then sort and filter the data by different values and create questions that can be answered using information from their database</p> <p>4 – Representing data; In this lesson, children learn how to represent data from a database in visual ways, including graphs and charts</p> <p>5 – Planning a holiday; In this lesson children put into practice the skills that they have learnt and sort and filter data to plan a holiday</p>	Digital Literacy and online safety		
Digital literacy	<p>Digital media – transitions, morph, cross zoom, peel off, dip to black, directional wipe Digital sound waves – viewing and editing</p> <p>1 – Planning a book trailer; Children create a storyboard to plan their book trailers, identifying the key events in their chosen story.</p>	Digital Literacy and online safety		

	<p>2 – Filming; Children use digital devices to take photos and videos, framing their shots to achieve desired effects</p> <p>3 – Editing the trailer; Children import their footage from the previous lesson into the iMovie application on iPad tablets</p> <p>4 – Transitions & text; Children learn about different transition styles and add transitions between the different shots in their videos as well as text on screen</p> <p>5 – Video reviews; Children evaluate their trailers against agreed class criteria, articulating what makes a successful book trailer and discussing ideas for sharing book recommendations.</p>			
Programming: Scratch	<p>Scratch – building games and animations Choosing sprites, painting sprites, surprise sprites, uploading sprites Key for Scratch colour coding blocks</p> <p>1 - Tinkering with Scratch; Children familiarise themselves with 'Scratch': predicting, exploring and explaining as they go, then learn how to create 'sprites' and 'tinker' to explore the functionality of the different blocks available.</p> <p>2 – Using loops; Using Scratch, children create musical instruments using either the 'sound' blocks, real musical notes or by selecting sounds from the library, using 'loops' to create the repetition found in most music pieces.</p> <p>3 – Making an animation; Children 'remix' an animation and make it their own by altering the program's code, following a set of challenges or suggested alterations to the animations.</p> <p>4 – Storytelling; After practicing how to debug code independently, pupils consider the plot in the animation 'Storytelling', then remix it to complete the story by creating a middle and an end and adding speech</p> <p>5 – Programming a game; After playing the game 'Robot Bop' children explain the action and algorithm behind it, then represent the code on paper before programming it into Scratch to replicate the original.</p>	Computational thinking		
Networks and the internet	<p>Network maps – house, router, ISP, smart phones, web server, cables Internet uses – communication, file sharing, websites,</p>	Computers and hardware		

	<p>uploading/downloading, streaming media, games</p> <p>1 – What's a network? Pupils learn what is meant by the terms "network", "device" and "wireless", which are essential to their understanding of computer networks</p> <p>2 – A file's journey; Children create an animation to show their understanding of how a file is shared between two devices on a network</p> <p>3 – A website's journey; Learning about what the internet is through role play, pupils then draw a map of how we are able to share information and images from a website</p> <p>4 – Routers; Pupils learn about how many different routers are involved when they view a website</p> <p>5 – Understanding packets; In a practical activity, pupils learn how packet data is transferred and how it can become corrupted or lost</p>	Digital Literacy and online safety		
Online safety	<p>Know the steps to take when faced with upsetting online content Know the difference between fact, opinion and belief Know age restrictions for popular online platforms</p> <p>1 – Beliefs, opinions and facts on the internet; Learning about 'fake news' and not believing everything that we come across on the internet and identifying the difference between fact, opinion and belief</p> <p>2 – When being online makes me upset; Learning that sometimes online content can cause us to feel upset and that there are ways to deal with upsetting online content, including showing it to a trusted adult and speaking to an organisation</p> <p>3 – Sharing information; Learning that sometimes upsetting incidents online occur because people's 'privacy settings' are not secure enough. Discovering which devices share our personal information. Children create a visual mini-guide booklet of devices that can connect to one another and share personal information.</p> <p>4 – Rules of social media platforms; Learning that we should try to avoid sharing very personal information with people we do not know, or have this information accessible to strangers. Discovering</p>	Digital Literacy and online safety		

	how to protect ourselves and our personal information on social media platforms			
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Year 4	Computing Content	Recurring ideas/themes...what is the point of the content?	Rationale (Why here? What is it preparing them for?)	The disciplinary training
Collaborative learning	<p>Collaborative online documents Presentation skills</p> <p>1 – Teamwork; Children are shown what collaborative work means and create a set of class rules to ensure that working together runs smoothly</p> <p>2 – Sharing a document; Once children are familiar with Google Docs, they learn a little about some of the features that can be used while working as part of a team</p> <p>3 – Slide presentations; Children learn about some of the features of a slide presentation program and how to create fun and interesting presentations</p> <p>4 – Google forms; Pupils are introduced to Google Forms, learning how to create and share surveys and questionnaires</p> <p>5 – Shared spreadsheets; Having collected their data, pupils using a shared spreadsheet program to explore spreadsheets and learn how to extract information from the data</p>	Digital Literacy and online safety		
Further coding with Scratch	<p>Scratch coding blocks – motion, sound, looks, events, control, operators, sensing, variables, my blocks Scratch sprites</p> <p>1 – Scratch reminder; Children, whilst building upon their prior knowledge to Scratch, develop an understanding of sprite positioning and orientation and look at the features they already know</p> <p>2 – Identifying what code does; While rediscovering the features of the Scratch interface and tools, pupils use their decomposition skills to decipher what has been included in the script for a quiz</p> <p>3 – Introduction to variables; Through tinkering with some specifically Scratch projects, pupils learn the importance and use of variables</p>	Computational thinking		

	<p>4 – Making a variable; Children expand their knowledge further of why variables are so useful when coding, again using their tinkering skills to see how these variables work within specially created Scratch projects.</p> <p>5 – Times table project; Children review and develop their times tables Scratch project using all the skills acquired in this unit so far</p>			
Website design	<p>Websites – making a new site, building a new page, add text boxes, inserting files, changing themes, embedding</p> <p>1 – Google sites skills; Children are introduced to Google Sites and challenged to explore and 'tinker' with it to create a simple web page</p> <p>2 – Book review web page; Children create a web page for a class website, planning the content of their page and using various features within Google Sites</p> <p>3 – Creating a webpage; Using the skills that they have developed, children create their book review web page, showcasing what they have learned</p> <p>4 – Planning my website; Developing their understanding of how different web pages within a site link, children plan their own website</p> <p>5 – Creating my website; Children create their own website in accordance with their designs developed in the previous lesson and evaluate its success</p>	Digital Literacy and online safety		
HTML	<p>HTML code CSS code HTML tags – head, body, ordered lists, list items, image, line break</p> <p>1 – Introduction to HTML; Children learn that html is a markup language which defines how a website is displayed, they go on a HTML treasure hunt; investigating the code used to create different elements of the page</p> <p>2 – Remixing HTML; Children learn to edit HTML, changing the text size and content to create their own posters</p> <p>3 – Changing HTML and CSS; Pupils learn how HTML is used to</p>	Digital Literacy and online safety Computational thinking		

	<p>determine the layout of a web page and CSS the look and style of it and then use this knowledge to create their own storyboards</p> <p>4 – Website hacking; Applying their learning from the previous three lessons, pupils adapt a live website and learn about the issue of fake news and the reliability of information on the internet and create their own 'fake' stories by hacking the code of a website</p> <p>5 – Replacing images; Building upon their learning from the previous lesson, pupils learn how to change an image within a web page and create their own news story, replacing the text and images of a webpage</p>			
Investigating weather	<p>Weather station – sensors, anemometer, probes, data recording, solar panel, rain gauge Weather satellites – altimeter, GPS, solar array, data transmission Green screen – how a subject can placed in a different background (chroma key)</p> <p>1 – What's the weather? Pupils explore the weather around the world, recording the data into a spreadsheet and sorting it</p> <p>2 – Weather stations; Pupils design a weather station which gathers and records sensor data, explaining how it works and the units of measurement it would use</p> <p>3 – Extreme weather; Lesson 3: Extreme weather; Pupils design an automated machine which uses selection to respond to sensor data</p> <p>4 – Satellites and forecasts; Learning how weather forecasts are made, pupils use search engines to find data and then record the information in a spreadsheet</p> <p>5 – Presenting forecasts; Using green screen technology, pupils present a weather forecast video</p>	Digital Literacy and online safety Computational thinking		
Computational thinking	<p>Decomposition - data without any identification, order or sequence Sequencing and pattern recognition</p> <p>1 – What is computational thinking? Pupils learn that computational thinking is made up of four pillars (abstraction, algorithm design, decomposition and pattern recognition) and apply these skills in a carousel of unplugged activities</p>	Computational thinking		

	<p>2 – Decomposition; Pupils apply their understanding of decomposition to a real world task before analysing Code from Scratch to figure out what it might do</p> <p>3 – Abstraction and pattern recognition; Pupils explore both abstraction and pattern recognition and look at how they can help us to solve problems using Scratch</p> <p>4 – Algorithm design; Pupils create a game in Scratch using the remaining pillar of computational thinking - algorithm design</p> <p>5 – Applying computational thinking; Pupils apply their computational thinking skills to solve plugged and unplugged challenges, identifying which skills they're using in each</p>			
<p>Online safety</p>	<p>Chat bots Advertising- snippets, pop-ups, influencers The difference between facts, opinions and beliefs online</p> <p>1 - What happens when I search online? Children learn how to search for information within a wide group of technologies and make a judgement about the probable accuracy of the results (for example, social media, image sites, video sites)</p> <p>2 – How do companies encourage us to buy online? Pupils look at some of the methods used to encourage people to buy things online (e.g. advertising offers, in-app purchases, pop-ups) and learn to recognise some of these when they appear online.</p> <p>3 – Fact, opinion or belief? Children learn that just because we see or read something online does not mean that it has to be true, and it is important that they create their own judgements about what they have read.</p> <p>4 – What is a bot? Children discover that technology can be designed to act like or impersonate living things (e.g. bots) and describe what the benefits and the risks might be of this.</p> <p>5 – What is my #TechTimetable like? Children learn about the positive and negative distractions of technology, explore their own use of technology and whether they may need to reduce the amount of time spent on technology</p>	<p>Digital Literacy and online safety</p>		

	6 – How can I be safe and respectful online? Children learn a range of strategies for being safe and respectful online, including how to respect the thoughts and beliefs of others and recognising healthy and unhealthy online behaviours.			
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Year 5	Computing Content	Recurring ideas/themes...what is the point of the content?	Rational (Why here? What is it preparing them for?)	The disciplinary training
Online safety	<p>Forms of online communication- memes, gifs, emojis The importance of creating strong passwords Online bullying- what it is and what to do about it.</p> <p>1 – Online protection; Children learn how applications (apps) can access our personal information and how to alter application permissions to limit the sharing of our information with others online</p> <p>2 – Online communication; Children learn about the positive and negative aspects of online communication, and how to use technology safely, respectfully and responsibly</p> <p>3 – Online reputation; Children research a famous figure, and learn that online information about someone is often somebody's opinion or judgement and not always factually true.</p> <p>4 – Online bullying; Children learn the differences between online and offline bullying, and what to do if they ever experience bullying online</p> <p>5 – Online health; Children learn how technology can affect our health and wellbeing, and come up with ways to replace bad online habits with good online habits</p>	<p>Digital literacy and online safety</p> <p>Computers and hardware</p>		
Micro:bit	<p>BBC Micro:bit – front and back features that can be included as part of an algorithm Code blocks key – basic, input, music, LED, radio, loops, logic, variables, math(s)</p> <p>1 – Tinkering with BBC micro:bit; Once children are introduced to the BBC micro:bit device, they investigate what it does and how it works</p> <p>2 – Programming an animation; Using the BBC micro:bit, pupils work out how an animation is created before programming their own</p>	<p>Computers and hardware</p> <p>Computational thinking</p>		

	<p>3 – Polling program; children learn that the BBC micro:bit can be used as a polling program, recording how many people feel happy, neutral or sad about a topic</p> <p>4 – Programming a pedometer; Children investigate how to turn the BBC micro:bit into a pedometer and work on developing their debugging skills further</p> <p>5 – Programming a scoreboard; Children get to see their coding come to life when using the BBC micro:bit as a scoreboard for a rock, paper, scissors tournament</p>			
Search engines	<p>Search Engines – search bar, company logo, hyperlink, keywords, fake news</p> <p>1 – Searching basics; Children recap search engines and are challenged to find specific websites or information as fast as they can to test their searching skills</p> <p>2 – Inaccurate information; Learning that not everything they read online is necessarily true, children learn how to check that information that they find is accurate</p> <p>3 – Web quest; By focusing on key words, children develop their research skills, learning how to quickly find relevant information on a specific topic</p> <p>4 – Information poster; Using the information they found in the previous lesson, pupils create an informative poster using the software Canva, ensuring that they appropriately credit the images and videos that they use</p> <p>5 – Web crawlers; Pupils learn how search engines work, specifically; the role of a web index, what can affect pagerank and the role of web crawlers</p>	Digital literacy and online safety		
Programming Music	<p>Sonic Pi interface – play controls, editor controls, information and help controls, code editor, scope, log viewer Live loop, simple melody, selecting sounds</p> <p>1 – Tinkering with Scratch music elements; Pupils explore the programming software Scratch, exploring its capabilities and practise their debugging skills</p>	Digital literacy and online safety Computational thinking		

	<p>2 – Scratch soundtracks; Using their developing programming skills, the children create a piece of music based upon a given theme, including the use of loops</p> <p>3 – Planning a soundtracks; After observing how music can affect the mood of a film scene, pupils compose their own soundtrack to a story, considering the pitch, tempo, timbre and rhythm of their piece</p> <p>4 – Programming a soundtrack; Children are introduced to a greater range of musical instruments via the Music extension add-on in Scratch and learn how to include loops in their programming</p> <p>5 – Battle of the bands; The unit culminates in a Battle of the Bands which sees pupils playing their music live and adapting their code as they perform</p>			
Mars Rover 1	<p>Mars Rover – distance and time travelled Binary numbers and equivalent decimal values</p> <p>1 – Mars Rover; Pupils research and calculate the distance from Earth to Mars, using familiar objects, to help them visualise the journey that information has to travel to be sent and received.</p> <p>2 – Binary code; Pupils learn that, due to the vast distance from Mars to Earth, information collected by Mars Rover has to travel as 'data' and is translated into binary code</p> <p>3 – Computer architecture; Learning that the more Random Access Memory (RAM) the robot has, the more instructions it can carry out in a row, pupils play a game that simulates programming a Mars Rover</p> <p>4 – Using binary – numbers; Learning that computers use binary to carry out calculations, children perform their own addition and subtraction binary calculations</p> <p>5 – Using binary – text; Pupils learn that as well as being used mathematically, binary can use the computer language 'ASCII', to represent characters, and use this conversion of the alphabet from binary to create their own messages</p>	<p>Digital literacy and online safety</p> <p>Computers and hardware</p>		
Mars Rover 2	<p>Digital Images – a series of programmed pixels RGB colour mode – produces a spectrum of colours</p>	<p>Digital literacy and online safety</p>		

	<p>1 – Pixels; Pupils learn that a pixel is the smallest element of a digital image and that binary is used to code and transfer this data, as well as creating their own pixel art</p> <p>2 – Compressing images; Pupils discover different image formats and learn why some are more appropriate for images sent from Mars, learning how compression works at a basic level</p> <p>3 – Fetch, decode, execute; Children learn about how the Mars rover follows instructions while developing their understanding of how computers work, including their RAM and ROM</p> <p>4 – Tinkering with CAD; Pupils design a new tyre for the Mars rover using online 3D design software</p> <p>5 – TinkerCAD tutorials; Children take greater responsibility for developing their skills, independently taking 3D design tutorials and then applying what they have learnt to further improve their Mars rover tyre designs</p>	Computers and hardware		
Stop motion animation	<p>How animations developed over time. How still images become animations. Use of animation software.</p> <p>1 – Animation explored; Children discover the original forms of animation, including the flip book, zoetrope and thaumatope, before having a go at making one of these toys themselves</p> <p>2 – Exploring stop motion; Taking inspiration from the Wallace and Gromit animations, pupils create their own stop motion animations</p> <p>3 – Planning my stop motion project; Children think of a simple story idea for their animation then decompose it into smaller parts to create a storyboard with simple characters</p> <p>4 – Stop motion creation; Children learn about 'decomposition' and decompose their animation using a storyboard, making it easier to film</p> <p>5 – Editing my stop motion project; Children edit their animation films using a range of features, explaining how their group achieved particular effects and evaluating the project as a whole</p>	<p>Digital literacy and online safety</p> <p>Computers and hardware</p> <p>Computational thinking</p>		

Year 6	Computing Content <i>Best that has been said and thought</i>	Recurring ideas/themes...what is the point of the content?	Rational (Why here? What is it preparing them for?)	The disciplinary training
Bletchley Park 1	<p>Demographic and amount of workers, The Colossus, encrypted messages, date shift cypher, first electronic programmable computer</p> <p>1 – Secret codes; In the first lesson of this unit, pupils explore a variety of different codes from simple Caesar ciphers to the Enigma code</p> <p>2 – Brute force hacking; How easy is it to steal someone's password? Children learn what brute force hacking is and the importance of secure passwords</p> <p>3 – Bletchly Park; Children find out about Bletchley during WWII and how the first computer cracked the Enigma code</p> <p>4 – Computing heroes; Children learn about important historical figures in the field of computing, including Alan Turing, Margaret Hamilton and Steve Jobs</p> <p>5 – Computing heroes Pt2; Using their digital literacy skills, pupils research and present information about a historical computing figure, explaining the impact of their significance</p>	<p>Digital literacy and online safety</p> <p>Computational thinking</p>		
Bletchley Park 2	<p>Y Service locations – British wireless intercept stations. Operators tuning in to enemy messages. Memory sizes – KB, MB, GB, TB</p> <p>6 – Playing with sound; In this lesson of the unit, pupils learn the key features of a radio play before then creating and editing a radio play set at Bletchley Park during the war</p> <p>7 – Radio plays; Once children have written their radio play, they record and edit it to include sound effects and music</p>	<p>Digital literacy and online safety</p> <p>Computers and hardware</p>		

	<p>8 – First computers; Children will learn about the ways that computers have changed and the impact this has had on the modern world</p> <p>9 – Computers that changed the world; After learning about the evolution of computers in the previous lesson, this lesson will involve children selecting one historical computer to research and present information about.</p> <p>10 – Future computers; Following on from Lessons 8 and 9 which focused on computers past and present, the class are required to design a computer for the future, taking into account all that they have learnt about computers so far</p>			
Intro to Python	<p>Python code – indentation, variable, loop Teaches computers to think for themselves - AI Algorithm – making a cup of tea</p> <p>1 – Tinkering with lego; Children are introduced to text-based programming, exploring the capabilities and commands of the programme Logo and creating basic designs</p> <p>2 – Nested loops; Still using Logo, pupils explore how having loops-within-loops changes the look of their designs</p> <p>3 – Using Python; Children develop their computational thinking skills of decomposition to help them to alter a picture using text-based programming language, Python</p> <p>4 – Using loops in Python; Children use loops in Python to create their own pieces of Islamic art, tinkering with different values to create different shapes</p> <p>5 – Coding Mondrian; Pupils learn about the use of random numbers, decompose a program and write an algorithm to create original pieces of artwork</p>	Computational thinking		
Big data 1	<p>Infrared light, barcodes – how they work and their uses</p> <p>1 – Barcodes; Children will learn to identify how barcodes and QR codes work</p> <p>2 – Transmitting data; This lesson which is all about data transmission will teach pupils about the different types of infrared</p>	<p>Digital literacy and online safety</p> <p>Computers and hardware</p>		

	<p>devices and how infrared signals are sent. They will compare infrared with QR codes that were covered in the last lesson and discover the pros and cons of both methods of data transmission.</p> <p>3 – RFID; This lesson covers the topic of RFID (Radio Frequency Identification) and offers children the opportunity to recognise the uses of RFID, in which circumstances it might be used and to discuss how encoding keeps data safe.</p> <p>4 – Using RFID; Following on from the previous RFID lesson, this lesson will use Disney's 'MagicBand' as a case study for pupils to gain a more in depth understanding of RFID as well as how to gather and analyse RDID data in real time.</p> <p>5 – Mobile data; Building on their knowledge of RFID, children analyse data published by Transport for London to solve given commuter scenarios and consider how they could turn the service they have provided into a profitable App</p>			
Big data 2	<p>Wireless data transfer – barcodes, QR codes, NFC, Bluetooth, RFID What 100MB looks like – real life examples (e.g. one 30 minute TV show)</p> <p>6 – Transferring data; Pupils learn how data can be safely transferred</p> <p>7 – Data usage; Pupils will investigate the data usage of online activities</p> <p>8 – The internet of things; Children will learn to identify how data analysis can improve city life</p> <p>9 – Designing a smart school; Using their knowledge of Big Data and the Internet of Things, children design a system for a smart school Free</p> <p>10 – Smart School presentation; Children present their ideas for a turning a school into a smart school and consider whether using this data could create any privacy issues</p>	Digital literacy and online safety		
Skills showcase	<p>Extended vocabulary for this unit:</p> <ul style="list-style-type: none"> • adapt • algorithm • CAD • advertisement • bug • computer code 	Digital literacy and online safety		

	<ul style="list-style-type: none"> • code (verb) • edit • image rights • design • electronic components • image, <p>1 – Invention design; Pupils choose an electronic product to design and then use and adapt existing code to achieve a desired result</p> <p>2 – Coding and debugging; Following on from the previous lesson, pupils continue coding their programs, making them more efficient and incorporating structures such as sequencing, selection, repetition, variables, inputs and outputs</p> <p>3 – Computer Aided Design (CAD); Pupils use the software TinkerCAD to design the housing of their product, giving consideration to the inputs and outputs their product requires</p> <p>4 – Mt product’s website; Pupils create a website for their product aimed at their target audience, using persuasive language to describe what their product is and does</p> <p>5 – Video advert; Pupils create video adverts for their products which can be linked into their websites</p>	<p>Computers and hardware</p> <p>Computational thinking</p>		
<p>Online safety</p>	<p>Know the steps to take if you witness online bullying How to capture a screen grab on various devices</p> <p>1 – Life online; Understanding the positive and negative effects of the internet and exploring the different ways to overcome negative feelings which can occur as a result of being online.</p> <p>2 – Sharing online; Children learn about the impact and consequences of sharing online, before creating their own online sharing scenarios with both positive and negative effects</p> <p>3 – Creating a positive online reputation; Learning how to create a positive online reputation, knowing that a ‘digital personality’ is developed by online activity and behaviour and that we could use anonymity and frequently update privacy settings to prevent people from accessing information about us.</p> <p>4 – Capturing evidence; Learning what online bullying is, the different ways it can be reported and why we should capture online bullying content as evidence</p>	<p>Digital literacy and online safety</p>		

	<p>5 – Password protection; Learning how to manage passwords safely, knowing what to do if someone hacks an account or finds a password and understanding what makes a strong password.</p> <p>6 Think before you click; Learning how to: identify potential scams and reduce the risk of falling for one; identify phishing emails and malware and update computer software to keep devices safer.</p>			
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