








Computing curriculum overview

Kapow Primary offers full coverage of the KS1 and KS2 Computing curriculum, including EYFS.
We have categorised our content into three areas:

DL Digital Literacy and Online Safety



CT Computational Thinking

CH Computers and Hardware

<p>Early Years Foundation Stage - Early years outcomes: Technology</p> <p>You may observe that a child:</p>	<p>Kapow Primary's computing themes</p>	<p>Kapow Primary's units</p>
<p>Completes a simple program on a computer</p>		<p>Computing through continuous provision Using a computer</p>
<p>Interacts with age-appropriate computer software</p>	 	<p>Computing through continuous provision Exploring hardware All about instructions Programming: Bee Bots Using a computer</p>
<p>ELG: Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes</p>	 	<p>Supporting a child-led project using technology Exploring hardware Programming: Bee Bots Sorting and categorising: Introduction to data Using a computer</p>

Key stage 1 - National Curriculum computing subject content	Kapow Primary's computing themes	Kapow Primary's units
Pupils should be taught to:		
Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions	CT	Y1 > Programming: Bee-Bots, Algorithms unplugged Y2 > What is a computer?, Programming: ScratchJr, Algorithms and debugging, International Space Station
Create and debug simple programs	CT	Y1 > Programming: Bee-Bots, Algorithms unplugged Y2 > Programming: ScratchJr, Algorithms and debugging
Use logical reasoning to predict the behaviour of simple programs	CT	Y1 > Programming: Bee-Bots, Digital imagery Y2 > Programming: ScratchJr, Algorithms and debugging
Use technology purposefully to create, organise, store, manipulate and retrieve digital content	DL	Y1 > Getting started, Digital imagery, Introduction to data, Rocket to the moon Y2 > Word processing, Programming: ScratchJr, International Space Station, Stop motion
Recognise common uses of information technology beyond school	CH	Y1 > Getting started, Digital imagery, Introduction to data Y2 > What is a computer?, Stop motion
Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies	DL	Y1 > Getting started, Digital imagery Y2 > Word processing

Key stage 2 - National Curriculum computing subject content	Kapow Primary's computing themes	Kapow Primary's units
Pupils should be taught to:		
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	CT	Y3 > Journey inside a computer , Programming: Scratch Y4 > HTML , Computational thinking , Further coding with Scratch Y5 > Micro:bit , Sonic Pi Y6 > Intro to Python , Skills showcase
Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	CT	Y3 > Programming: Scratch Y4 > HTML , Investigating weather , Computational thinking , Further coding with Scratch Y5 > Micro:bit , Sonic Pi Y6 > Intro to Python , Skills showcase
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	CT	Y3 > Journey inside a computer , Programming: Scratch Y4 > HTML , Computational thinking , Further coding with Scratch Y5 > Micro:bit , Sonic Pi Y6 > Intro to Python , Skills showcase
Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration	CH DL	Y3 > Journey inside a computer , Emailing , Networks (archived) , Networks and the internet (new) Y4 > Collaborative learning , The internet Y5 > Micro:bit , Search engines , Mars Rover 1 Y6 > Bletchley Park 1 , Skills showcase , Big Data 1
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	CH DL	Y3 > Digital literacy , Networks and the internet (new) Y4 > The internet (archived) Y5 > Search engines Y6 > Bletchley Park 1 , Skills showcase

<p>Key stage 2 - National Curriculum computing subject content</p> <p>Pupils should be taught to:</p>	<p>Kapow Primary's computing themes</p>	<p>Kapow Primary's units</p>
<p>Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information</p>		<p>Y3 > Emailing, Top trumps databases, Digital literacy Y4 > Collaborative learning, Website design, Investigating weather Y5 > Online Safety, Micro:bit, Sonic Pi, Mars Rover 1 Y6 > Bletchley Park 1, Skills showcase, Big Data 1</p>
<p>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact</p>		<p>Y3 > Emailing Y4 > Website design, HTML, Investigating weather Y5 > Online Safety, Search engines Y6 > Bletchley Park 1, Skills showcase, Big Data 1</p>

EYFS	Description	Curriculum coverage	Links to other areas of learning
Teacher guidance: Computing through continuous provision Go to guidance	Resourcing your continuous and enhanced provision, and observing computing skills through play.	<div>CH CT</div> <p>Guidance for teachers on how to audit the classroom environment to ensure opportunities for the exploration of computers, hardware and computational thinking are being provided.</p> <p>Guidance on undertaking observations of the children at play to ensure computing outcomes are met and developed.</p>	
Teacher guidance: Supporting a child-led project using technology Go to guidance	Using technology to support pupils' learning in other areas and introducing digital safety.	<div>DL</div> <p>Modelling how to search for images safely online. When using the internet alongside an adult, or independently, learning what to do if they come across something that worries them or makes them feel uncomfortable.</p> <div>CH</div> <p>Using a camera and/or iPad to take photos. Recognising that a range of technology is used in places such as homes and school.</p>	Communication and language - speaking Physical development - moving and handling CoEL - Playing and exploring
Exploring hardware (5 lessons) Go to unit	Exploring hardware through the use of tinker trays for play and introducing cameras and other technology to record meaningful moments.	<div>CH</div> <p>Learning how to explore and tinker with hardware to develop familiarity and introduce relevant vocabulary.</p> <p>Learning how to operate a camera and/or iPad and use them to take photos Recognising that a range of technology is used in places such as homes and schools.</p>	Communication and language - understanding & speaking Mathematics - numbers & shape, space and measures CoEL - Active learning CoEL - Creating and thinking critically
All about instructions (5 lessons) Go to unit	Learning how to follow and give instructions in 'unplugged' practical games and activities, and learning what to do when things go wrong.	<div>CT</div> <p>Following instructions as part of practical activities and games and learning to debug when things go wrong.</p> <p>Learning to give simple instructions.</p> <p>Learning that an algorithm is a set of instructions to carry out a task, in a specific order. Using logical reasoning to read simple instructions and predict the outcome</p>	
Programming: Bee Bots (5 lessons) Go to unit	Exploring how Bee Bots work and how to give them simple instructions, using them in child-led play. Acquiring the help of an adult to learn to debug and problem solve when things go wrong.	<div>CH</div> <p>Experimenting with programming a Bee-bot/Blue-bot and learning how to give simple commands.</p> <div>CT</div> <p>Learning to debug instructions, with the help of an adult, when things go wrong.</p>	PSED - self-confidence and self-awareness Mathematics - shape, space and measures CoEL - Playing and exploring CoEL - Creating and thinking critically

EYFS	Description	Curriculum coverage	Links to other areas of learning
Introduction to data: Sorting and categorising (5 lessons) Go to unit	Understanding how to sort and categorise objects and give reasons why, including a play-based exploration of branch databases. Learning to represent data in practical ways and through pictograms.	<div>DL CT</div> <p>Representing data through sorting and categorising objects in unplugged scenarios.</p> <p>Representing data through pictograms.</p> <p>Exploring branch databases through physical games.</p>	Mathematics -numbers & shape, space and measures CoEL - Active learning CoEL - Creating and thinking critically
Using a Computer (5 lessons) Go to unit	Learning the basic skills needed to use a computer, including keyboard and mouse exploration, and using these skills for a purpose.	<div>DL</div> <p>Learning to log in and log out. Using a simple online paint tool to create digital art.</p> <div>CH</div> <p>Learning what a keyboard is and how to locate relevant keys. Learning what a mouse is and developing basic mouse skills such as moving and clicking.</p>	Physical development - moving and handling CoEL - Playing and exploring CoEL - Active learning

Year 1	Summary	Knowledge	Vocabulary	Cross-curricular links
Getting started (5 lessons) Introducing children to logging in and using technology for a purpose, including creating art Go to unit	<p>DL</p> <p>Recognising common uses of information technology. Logging in and saving work on their own account. Knowing what to do if they have concerns about content or contact online. Understanding of how to create digital art using an online paint tool.</p> <p>CH</p> <p>Learning to locate where keys are on the keyboard. Developing basic mouse skills.</p>	<p>Keyboard skills – locating the letters of individual names</p> <p>Computer menus - file, open, save, close</p> <p>Using a mouse – click and drag, drag and drop, left/right click, mouse mat</p>	<ul style="list-style-type: none"> • account • clipart • computer • log on/off • password • resize • screen (monitor) • software • tools • username 	Art & Design Maths
Programming: Bee-Bots (5 lessons) Using Bee-Bots to navigate an area and constructing simple algorithms, through the story of The Three Little Pigs Go to unit	<p>CT</p> <p>Learning how to explore and tinker with hardware to find out how it works.</p> <p>Constructing a series of instructions into a simple algorithm.</p> <p>Applying computing concepts to real world situation in an unplugged activity.</p>	<p>Bee-Bot – locating the buttons, battery compartment, on/off switch, wheels and speaker</p> <p>Understanding Bee-Bot instructions and button functions – move forwards/backwards, turn left/right, clear, pause, go</p>	<ul style="list-style-type: none"> • algorithm • Bee-Bot • computing code • computer program • explain • explore • instructions • predict • tinker • video 	
Algorithms unplugged (5 lessons) Learning how computers handle information by exploring 'unplugged' algorithms- completing tasks away from the computer Go to unit	<p>CT</p> <p>Understanding how to create algorithms.</p> <p>Learning that computers need information to be presented in a simple and clear way.</p> <p>Understanding how to break a computational thinking problem into smaller parts in order to solve it.</p>	<p>Planning and execution of an algorithm/set of instructions for a simple activity</p> <p>Basic debugging concepts</p> <p>Decomposition – how to break-down objects into separate parts and categorise them</p>	<ul style="list-style-type: none"> • algorithm • bug • computer • debug • decompose • device • input • instructions • output • solution 	

Year 1 <i>continued.</i>	Summary	Knowledge	Vocabulary	Cross-curricular links
Digital imagery (5 lessons) Taking and manipulating digital photographs, including adding images found via a search engine Go to unit	<p>DL</p> <p>Using technology purposefully to create, organise, store, manipulate and retrieve digital content.</p> <p>Knowing what to do if they have concerns about content or contact online.</p> <p>CT</p> <p>Using logical reasoning to predict the behaviour of simple programs.</p> <p>CH</p> <p>Using cameras or tablets to take photos.</p>	<p>How sequences work</p> <p>Camera types and basic photography techniques</p> <p>Tell a trusted adult about any online safety concerns</p>	<ul style="list-style-type: none"> • crop • delete • download • drag and drop • editing software • image • import • resize • save as • search engine • sequence • smart device • storage space • visual effects 	English: Reading
Introduction to data (5 lessons) Learning about what data is and how it can be represented and using these skills to show the findings of a mini beast hunt Go to unit	<p>DL</p> <p>Using technology purposefully to create, organise, store, manipulate and retrieve digital content.</p> <p>Selecting software appropriately.</p> <p>CH</p> <p>Recognising uses of technology beyond school.</p>	<p>How branching databases work</p> <p>Other ways of collecting data – tally chart, bar graph, line graph, pictogram</p>	<ul style="list-style-type: none"> • categorise • chart • computer • data • information • label • pictogram • record • sort • table • text 	Maths Science
Rocket to the moon (5 lessons) Appreciating the value of computers, understanding that they helped us get to the moon Go to unit	<p>DL</p> <p>Using technology purposefully to create, organise, store, manipulate and retrieve digital content.</p> <p>Selecting software appropriately.</p>	<p>Computer files and formats – .jpgs, .txt, folders</p> <p>Using a computer to make a list/ drawing and saving the document to a folder</p> <p>How to make a bottle rocket</p>	<ul style="list-style-type: none"> • computer • program • create • data • digital content • e-document • folder • list • save • sequence • share • spreadsheet 	Science D&T Maths History

Year 2	Summary	Knowledge	Vocabulary	Cross-curricular links
What is a computer? (5 lessons) Children explore what a computer is, learning about inputs and outputs, how computers are used in the wider world and designing an invention Go to unit	<p>CT Learning about inputs and outputs and how they are used in algorithms.</p> <p>CH Understanding what a computer is and the role of individual components.</p>	<p>Different types of technology – cameras, phones, torches, microwave, alarm clock, remote control</p> <p>Inputs e.g. keyboard, mouse Outputs e.g. monitor, speakers, printers</p>	<ul style="list-style-type: none"> • battery • buttons • computer • desktop • device • electricity • invention • laptop • technology • wire 	D&T Science
Word processing (5 lessons) Using their developing word processing skills, pupils write simple messages to friends and learn why we must be careful about who we talk to online Go to unit	<p>DL Using word processing software to type and reformat text.</p> <p>Understanding the importance of staying safe online.</p>	<p>Word processing – fonts, bold, italics, underline, highlight</p> <p>Keyboard skills – delete, enter, spacebar</p> <p>E-books and e-documents</p>	<ul style="list-style-type: none"> • backspace • copyright • image • import • keyboard character • paste • undo/redo • touch typing 	PSHE
Programming: ScratchJr (5 lessons) Using 'ScratchJr', pupils programme a familiar story and an animation, make their own musical instruments and follow an algorithm to record a joke Go to unit	<p>CT Creating and debugging simple programs. Using logical reasoning to predict the behaviour of simple programs. Understanding what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.</p> <p>DL Using technology purposefully to create, organise, store, manipulate and retrieve digital content.</p>	<p>Coding – Scratch Jr, code blocks, algorithms, sprites/speeds, repeat and loop control blocks, start/finish, direction</p> <p>Blocks – triggering, motion, looks, sound, end, control</p>	<ul style="list-style-type: none"> • animation • bug • code • debug • icon • imiate • instructions • sequence 	

Year 2 <i>continued.</i>	Summary	Knowledge	Vocabulary	Cross-curricular links
Algorithms and debugging (5 lessons) Identifying problems with code using both 'unplugged' and 'plugged' systems to debug (identify and correct) errors in an algorithm Go to unit	CT Creating and debugging simple programs. Using logical reasoning to predict the behaviour of simple programs. Understanding what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.	Zooming in and out of maps on Planet Earth Unplugged algorithms and instructional writing Abstraction/key information Decomposition/smaller chunks	<ul style="list-style-type: none"> artificial intelligence (AI) bug correct data debug decompose error key features loop predict unnecessary 	
International Space Station (5 lessons) Building on their understanding of how computers sense the world around us, pupils learn how data is collected and used to keep astronauts safe on the I.S.S Go to unit	DL Using technology to create and label images and to put data into a spreadsheet. CT Consider inputs and outputs to understand how sensors work.	International Space Station – Node 1,2,3, Zvezda, Zarya, Destiny, Columbus, Kibo, survival items, growing plants in space	<ul style="list-style-type: none"> approximate astronaut data digital content experiment interactive map laboratory monitor (verb) satellite sensor space survival thermometer 	Science
Stop motion (5 lessons) Pupils create simple animations, storyboarding their ideas then decomposing it into small parts of action to be captured using Stop Motion animation software Go to unit	DL Using technology purposefully to create, organise, store, manipulate and retrieve digital content. CH Understanding how to use tablets or computers to take photos.	Animations – how still images become moving images Use of animation software Sketching and planning	<ul style="list-style-type: none"> animator contraption decompose design download film review filming import image plan sketch software stop-motion storyboard upload 	English

Year 3	Summary	Knowledge	Vocabulary	Cross-curricular links
Emailing (5 lessons) Pupils learn how to send emails, including attachments and how to be responsible digital citizens Go to unit	DL Learn about cyberbullying and fake emails. Understanding the purpose of emails.	Keyboard skills - @ symbol Email compose windows – addresses, subjects Be careful with unexpected emails	<ul style="list-style-type: none"> • account • attachment • BCC • CC • computer • cyberbullying • domain • email • email account • emoji • information • log off/ log on • password • spam • username 	English
Journey inside a computer (5 lessons) Children learn about the different parts of a computer through role-play and develop their understanding of how they follow instructions Go to unit	CH Understanding what different components of a computer do. CT Understanding that programs execute by following precise and unambiguous instructions.	Computer parts – CPU, GPU, RAM, HDD QR Codes and how to use them Other portable electronic devices	<ul style="list-style-type: none"> • algorithm • computer • computer program • data • desktop • instructions • ROM • tablet device • trackpad 	
Top trumps databases (5 lessons) Developing their understanding of data and databases, children play with and create their own Top Trumps cards, learning how to interpret information by ordering and filtering Go to unit	DL Using technology purposefully to create, organise, store, manipulate and retrieve data.	Identifying and reading databases Understanding bar graphs and pie charts	<ul style="list-style-type: none"> • categorise • data • database • fields • filter • graphs and charts • information • record • sort • spreadsheet 	Maths

Year 3 <i>continued.</i>	Summary	Knowledge	Vocabulary	Cross-curricular links
Digital literacy (5 lessons) Developing their video skills, pupils create a book trailer, storyboarding their trailers before then filming and editing their videos, adding effects such as transitions, music, voice and text Go to unit	DL Using technology purposefully to create, organise, store, manipulate and retrieve digital content, including searching for relevant information.	Digital media – transitions, morph, cross zoom, peel off, dip to black, directional wipe Digital sound waves – viewing and editing	<ul style="list-style-type: none"> • application • desktop • digital device • edit • film • film editing software • graphics • import • key events • laptop • voice • plan • voiceover • recording • sound effects • time code 	English
Programming: Scratch (5 lessons) Using Scratch, with its block-based approach to coding, pupils learn to tell stories and create simple games Go to unit	CT Using logical reasoning to explain how simple algorithms work. Designing, writing and debugging programs that accomplish specific goals, including controlling or simulating physical systems. Solving problems by decomposing them into smaller parts. Using sequence, selection, and repetition in programs. Working with variables and various forms of input and output.	Scratch – building games and animations Choosing sprites, painting sprites, surprise sprites, uploading sprites Key for Scratch colour coding blocks	<ul style="list-style-type: none"> • animation • application • code • code block • debug • decompose • interface • loop • predict • sprite • program • tinker • remixing code • repetition code • review 	
Networks and the internet (5 lessons) To understand how computers communicate, children learn about networks and the internet, and how they are used to share information. Go to unit	CH Identifying network components and understand how they are used to connect to the internet and how data is transferred. DL Understanding computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration.	Network maps – house, router, ISP, smart phones, web server, cables Internet uses – communication, file sharing, websites, uploading/downloading, streaming media, games	<ul style="list-style-type: none"> • device • file • internet • network • network map • network switch • router • server • submarine cables • the cloud • wi-fi/wired/wireless • wireless access point 	

Year 4	Summary	Knowledge	Vocabulary	Cross-curricular links
Collaborative learning (5 lessons) Learning to work collaboratively in a responsible way using tools including Google Docs and Sheets Go to unit	DL Selecting using and combining a variety of software to design and create a range of programs, systems and content that accomplish given goals. Understanding opportunities offered by the World Wide Web for communication and collaboration.	Collaborative online documents Presentation skills	<ul style="list-style-type: none"> collaborate comment e-Document edit email icon insert (file) link presentation software presentation reply reviewing comments share spreadsheet transition 	
Further coding with Scratch (5 lessons) The coding program Scratch is explored further by revisiting key features and introducing the children to the crucial concept and execution of using 'variables' in code scripts. Go to unit	CT Using logical reasoning to explain how simple algorithms work. Designing, writing and debugging programs that accomplish specific goals, including controlling or simulating physical systems. Solving problems by decomposing them into smaller parts. Using sequence, selection and repetition in programs. Working with variables and various forms of input and output.	Scratch coding blocks – motion, sound, looks, events, control, operators, sensing, variables, my blocks Scratch sprites	<ul style="list-style-type: none"> code code block conditional statement decompose direction feature icon orientation position program verb project stage tinker variable 	
Website design (5 lessons) Pupils design and create their own websites, considering content and style, as well as understanding the importance of working collaboratively Go to unit	DL Selecting using and combining a variety of software to design and create a range of programs, systems and content that accomplish given goals. Understanding opportunities offered by the World Wide Web for communication and collaboration.	Websites – making a new site, building a new page, add text boxes, inserting files, changing themes, embedding links	<ul style="list-style-type: none"> collaboration content create design edit embed feature header hyperlink insert (file) online plan tab website WWW 	

Year 4 <i>continued.</i>	Summary	Knowledge	Vocabulary	Cross-curricular links
HTML (5 lessons) Pupils explore the language behind well-known websites, while developing their understanding of how to change the core characteristics of a website using HTML and CSS Go to unit	<p>DL</p> <p>Recognising that information on the internet might not be true or correct. Using technology safely, by recognising acceptable/unacceptable behaviour. Knowing what to do when they have concerns about content or contact online.</p> <p>CT</p> <p>Understanding that websites can be altered by exploring the code beneath the site. Designing, writing and debugging programs that accomplish specific goals. Solving problems by decomposing them into smaller parts.</p>	HTML code CSS code HTML tags – head, body, ordered lists, list items, image, line break	<ul style="list-style-type: none"> code content copyright CSS hacker hex code internet browser permission script URL web page 	
Investigating weather (5 lessons) Children investigate the role of computers in forecasting and recording weather as well as how technology is used to present forecasts Go to unit	<p>DL</p> <p>Understanding why some sources are more trustworthy than others.</p> <p>CT</p> <p>Understanding the role of inputs and outputs in computerised devices.</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)	<ul style="list-style-type: none"> algorithm automated machine calculate climate device forecast log data predict • weather record sensor source spreadsheet temperature 	Science Geography
Computational thinking (5 lessons) Through developing their understanding of the four pillars of computational thinking, children learn to identify them in different contexts Go to unit	<p>CT</p> <p>Understand what decomposition is and how it facilitates problem solving.</p> <p>Designing, writing and debugging programs that accomplish specific goals.</p> <p>Understand abstraction and patterns recognition.</p>	Decomposition - data without any identification, order or sequence Sequencing and pattern recognition	<ul style="list-style-type: none"> abstraction algorithm design code code blocks computer decompose problem 	

Year 5	Summary	Knowledge	Vocabulary	Cross-curricular links
Online safety (5 lessons) Pupils create an online safety resource for younger children using tools such as presentation software, video tools or a simple stop-motion animation Go to unit	DL Recognising that information on the internet might not be true or correct. Using technology safely, by recognising acceptable/unacceptable behaviour and knowing what to do when they have concerns about content or contact online.	Six key online safety rules – personal information, pictures, passwords, not everyone is who they appear to be, don't meet, stop – think - tell a trusted adult	<ul style="list-style-type: none"> catfishing cyberbully exclusion fake profile information online phishing trickery trolling 	
Micro:bit (5 lessons) Programming a small device called a micro:bit to display animations or messages on its simple LED display using block coding Go to unit	CT Using block coding to program a device. To explore variables and different forms of input. CH Understand how external devices can be programmed by a separate computer.	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)	<ul style="list-style-type: none"> .hex file .zip file bluetooth code blocks decompose emulator feature loop pedometer predict systematic tinker variable 	
Search engines (5 lessons) To enable children to quickly and accurately find information and become independent learners, they need to develop their searching skills and learn how to identify trustworthy sources Go to unit	DL Recognising that information on the internet might not be true or correct. Know how to use key words to quickly find accurate information.	Search Engines – search bar, company logo, hyperlink, keywords, fake news	<ul style="list-style-type: none"> algorithm company logo data leak data privacy inaccurate information index keywords network online page rank TASK web crawler website WWW 	

Year 5 <i>continued.</i>	Summary	Knowledge	Vocabulary	Cross-curricular links
Sonic Pi (5 lessons) Composing music using code through Sonic Pi, pupils can import samples, add drum beats and compose simple tunes culminating in a 'battle of the bands' using live loops of music Go to topic	<p>DL Selecting using and combining a variety of software to design and create a range of programs, systems and content that accomplish given goals.</p> <p>CT Using programming language to create music, including use of loops.</p>	Sonic Pi interface – play controls, editor controls, information and help controls, code editor, scope, log viewer Live loop, simple melody, selecting sounds	<ul style="list-style-type: none"> • basic commands • bug/debug • code (computer and verb) • error • live loop • loop • pitch • program language • rhythm • soundtrack • tempo • timbre • tinker 	English reading Music
Mars Rover 1 (5 lessons) Pupils explore inputs and outputs as well as Binary numbers to understand how the Mars Rover transmits and receives data and how scientists are able to control it to explore another planet! Go to topic	<p>DL Understanding computer networks including the internet; how they can provide multiple services, such as the world-wide web; and the opportunities they offer for communication and collaboration.</p> <p>CH Using search technologies effectively, appreciating how results are selected and ranked, and be discerning in evaluating digital content. Recognising that computers transfer data in binary and understand simple binary addition.</p>	Mars Rover – distance and time travelled Binary numbers and equivalent decimal values	<ul style="list-style-type: none"> • binary code • data • data transmission • discovery • distance • input • moon • numerical data • output • planet • radio signal • scientist • sequence • signal • computer simulation • space (astronomy) 	
Mars Rover 2 (5 lessons) Children learn how the Mars Rover is able to send images all the way back to Earth and experiment with online CAD software to design new tyres for it Go to topic	<p>DL Developing their CAD skills.</p> <p>CH Understanding how image data is transferred.</p>	Digital Images – a series of programmed pixels RGB colour mode – produces a spectrum of colours	<ul style="list-style-type: none"> • algorithm • binary image • bit • bit pattern • CAD • data • encode • image • JPEG • memory computer • operating system • pixels 	

Year 6	Summary	Knowledge	Vocabulary	Cross-curricular links
Bletchley Park 1 & 2 (10 lessons) Children learn about the history of Bletchley Park, including: key historical figures, how the first modern computers were created as part of a WWII code breaking team and consider how computers have evolved over time. They then go on to investigate secret codes and how they are created, exploring 'brute force' hacking and learn how to make passwords more secure Go to unit	DL Understanding the importance of secure passwords and using searching and word processing skills to create a presentation. CT Using programming software to understand hacking, relating this to computer cracking codes in WWII.	Demographic and amount of workers, The Colossus, encrypted messages, date shift cypher, first electronic programmable computer	<ul style="list-style-type: none"> acrostic code brute force hacking Caesar cipher cipher encrypt invention Nth letter cipher password pigpen cipher technological advancement trial and error 	History Maths
	DL Editing sound recordings for specific purpose. CH Learning about the history of computers and how they evolved over time.	Y Service locations – British wireless intercept stations. Operators tuning in to enemy messages. Memory sizes – KB, MB, GB, TB	<ul style="list-style-type: none"> background noise byte computer CPU memory storage mouse OS radio play RAM ROM sound effects touch screen trackpad 	English
Intro to Python (5 lessons) Building on their knowledge of coding from previous years, children are introduced to the text-based programming language Python, which is the language behind many apps and programs, such as Dropbox Go to unit	CT Understanding that websites can be altered by exploring the code beneath the site. Designing, writing and debugging programs that accomplish specific goals Solving problems by decomposing them into smaller parts.	Python code – indentation, variable, loop Teaches computers to think for themselves - AI Algorithm – making a cup of tea	<ul style="list-style-type: none"> algorithm code (computer) computer command decompose import loop nested loop random numbers remix script libraries variable 	Art & Design Maths

Year 6 <i>continued.</i>	Summary	Knowledge	Vocabulary	Cross-curricular links
Big Data 1 (5 lessons) Children learn how data is collected and stored by exploring barcodes, QR codes and RFID chips, and investigate how collecting big data can be used to help people in a variety of different scenarios Go to unit	<p>DL</p> <p>Understanding how learning can be applied to a real world context. Selecting, using and combining a variety of software to design and create a range of programs, systems and content to collect, analyse, evaluate and present data.</p> <p>CH</p> <p>Understanding that computer networks provide multiple services Understanding how barcodes and QR codes work.</p>	Infrared light, barcodes – how they work and their uses	<ul style="list-style-type: none"> barcode boolean brand commuter contactless data data privacy encrypt infrared waves NFC QR code radio waves RFID signal systems or data analyst transmission 	Science
Big Data 2 (5 lessons) Children learn the difference between mobile data and WiFi and how data is transferred and use their understanding of big data to design their own smart school Go to unit	<p>DL</p> <p>Selecting, using and combining a variety of software to design and create a range of programs, systems and content to collect, analyse, evaluate and present data.</p>	Wireless data transfer – barcodes, QR codes, NFC, Bluetooth, RFID What 100MB looks like – real life examples (e.g. one 30 minute TV show)	<ul style="list-style-type: none"> big data bluetooth corrupt data digital revolution GPS infrared waves IoT QR code SIM computer simulation smart school/city 	
Skills Showcase (5 lessons) Reflecting on and showcasing their computing skills, pupils create an entire project around a specific theme Go to unit	<p>DL</p> <p>Showcasing their digital literacy skills.</p> <p>CT</p> <p>Demonstrating their computational thinking skills by designing and debugging programs, using different inputs and outputs.</p> <p>CH</p> <p>Understanding how search engines work and knowing how to use them safely and effectively.</p>	<p>Vocabulary</p> <ul style="list-style-type: none"> adapt advertisement algorithm bug CAD computer code code (verb) design edit electronic components image rights image, 	<ul style="list-style-type: none"> input information invention loop output photo program repetition screenshot selection (programming) sequence variable WWW 	