Computing Curriculum overview

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

- Digital Literacy
- Computer Science
- Information Technology

Please note: this document is updated regularly to reflect changes in our content. This version was last updated on 15.09.21. For the most recent version, please visit this link.

How does Kapow Primary's scheme of work align with the National Curriculum?

Our scheme of work fulfils the statutory requirements outlined in the **National Curriculum (2014)**. The National Curriculum Programme of Study for Computing aims to ensure that all pupils:

We have identified these three strands which run throughout our scheme of work:

- ★ Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation.
- ★ Can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems.

→ Computer Science

- ★ Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems are responsible, competent, confident and creative users of information and communication technology.

→ Information Technology

- ★ Are responsible, competent, confident and creative users of information and communication technology.

→ Digital Literacy

Early Years Foundation Stage Kapow Primary's units	Early years outcomes: Prime Areas **Development Matters 2021 statements** Early Learning Goals	Early years outcomes: Specific Areas **Development Matters 2021 statements** Early Learning Goals
Computing systems and networks 1: Using a computer	**Physical Development** -Develop their small motor skills so that they can use a range of tools competently, safely and confidently.	**Literacy** -Spell words by identifying the sounds and then writing the sounds with letter/s. -Re-read what they have written to check that it makes sense. **Mathematics** -Link the number symbol (numeral) with its cardinal number value.
Programming 1: All about instructions	**Communication and Language** -Understand how to listen carefully and why listening is important. -Describe events in some detail. -Use talk to help work our problems and organise thinking and activities, and to explain how things work and why they might happen. **Personal, Social and Emotional Development** -**ELG**: Self-Regulation> Give focused attention to what the teacher says, responding appropriately even when engaged in activity, and show an ability to follow instructions involving several ideas or actions. -**ELG**: Managing Self> Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. -**ELG**: Building Relationships> Work and play cooperatively and take turns with others. **Physical Development** -Know and talk about the different factors that support their overall health and wellbeing. -Further develop the skills they need to manage the school day successfully.	

Early Years Foundation Stage Kapow Primary's units	Early years outcomes: Prime Areas **Development Matters 2021 statements** Early Learning Goals	Early years outcomes: Specific Areas **Development Matters 2021 statements** Early Learning Goals
Computing systems and networks 2: Exploring hardware	**Communication and Language** -Learn new vocabulary. -Use new vocabulary throughout the day. -Ask questions to find out more and to check they understand what has been said to them. -Articulate their thoughts and ideas in well-formed sentences. -Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. **Personal, Social and Emotional Development** -See themselves as a valuable individual **Physical Development** -Develop their small motor skills so that they can use a range of tools competently, safely and confidently. -Confidently and safely use a range of large and small apparatus indoors and outside, alone and in a group.	**Literacy** -Spell words by identifying the sounds and then writing the sounds with letter/s. -Write short sentences with known letter-sound correspondences using a capital and full stop. **Understanding the World** -Describe what they see, hear and feel whilst outside.
Programming 2: Programming Bee-Bots	**Personal, Social and Emotional Development** **-ELG**: Managing Self> Be confident to try new activities and show independence, resilience and perseverance in the face of challenge.	**Mathematics** -Count objects, actions and sounds. -Link the number symbol (numeral) with its cardinal number value. -Count beyond 10.
Data handling: Introduction to data	**Communication and Language** -Articulate their thoughts and ideas in well-formed sentences. -Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. **-ELG**: Listening, Attention and Understanding> Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions. **-ELG**: Listening, Attention and Understanding> Make comments about what they have heard and ask questions to clarify their understanding. **-ELG**:Speaking> Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary.	**Mathematics** **-ELG**:Numerical Patterns> Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. -Count objects, actions and sounds. -Subitise. -Count beyond 10. -Compare numbers. -Understand the 'one more than/ one less than' relationship between consecutive numbers. -Continue, copy and create repeating patterns. -Compare length, weight and capacity.

Please refer to our other guidance for Computing provision in EYFS: Supporting a child-led project using technology, Computing through continuous provision

Key stage 1 - National Curriculum computing subject content: You may observe that a child:	Kapow Primary's computing strands	Kapow Primary's units
Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions	Computer Science	Y1 > Programming 2: Bee-Bot (alternative unit - Programming 2: Virtual Bee-Bot), Programming 1: Algorithms unplugged Y2 > Computing systems and networks 1: What is a computer?, Programming 2: ScratchJr, Programming 1: Algorithms and debugging, Data handling: International Space Station
Create and debug simple programs	Computer Science	Y1 > Programming 2: Bee-Bot (alternative unit - Programming 2: Virtual Bee-Bot), Programming 1: Algorithms unplugged Y2 > Programming 2: ScratchJr, Programming 1: Algorithms and debugging
Use logical reasoning to predict the behaviour of simple programs	Computer Science	Y1 > Programming 2: Bee-Bot (alternative unit - Programming 2: Virtual Bee-Bot), Creating media: Digital imagery Y2 > Programming 2: ScratchJr, Programming 1: Algorithms and debugging
Use technology purposefully to create, organise, store, manipulate and retrieve digital content	Digital Literacy	Y1 > Computing systems and networks: Improving mouse skills, Creating media: Digital imagery - Google school version, Creating media: Digital imagery - Microsoft Office 365 version, Data handling: Introduction to data, Skills showcase: Rocket to the moon Y2 > Online Safety: Year 2, Computing systems and networks 2: Word processing - Google school version, Computing systems and networks 2: Word processing - Microsoft Office 365 version, Programming 2: ScratchJr, Data handling: International Space Station, Creating media: Stop motion using tablet devices (alternative units - Creating media: Stop motion with cameras and Creating media: Stop motion devices without cameras)
Recognise common uses of information technology beyond school	Information Technology	Y1 > Computing systems and networks: Improving mouse skills, Digital imagery - Google school version, Creating media: Digital imagery - Microsoft Office 365 version, Data handling: Introduction to data, Online safety: Year 1 Y2 > Computing systems and networks 1: What is a computer?, Creating media: Stop motion using tablet devices (alternative units - Creating media: Stop motion with cameras and Creating media: Stop motion devices without cameras), Online Safety: Year 2
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	Digital Literacy	Y1 > Computing systems and networks: Improving mouse skills, Digital imagery - Google school version, Creating media: Digital imagery - Microsoft Office 365 version, Online safety: Year 1 Y2 > Online Safety: Year 2, Computing systems and networks 2: Word processing - Google school version, Computing systems and networks 2: Word processing - Microsoft Office 365 version

Key stage 2 - National Curriculum computing subject content: You may observe that a child:	Kapow Primary's computing strands	Kapow Primary's units
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	Computer Science	Y3 > Computing systems and networks 3: Journey inside a computer, Programming: Scratch Y4 > Skills showcase: HTML, Programming 2: Computational thinking, Programming 1: Further coding with Scratch - Google schools version, Programming 1: Further coding with Scratch - Microsoft Office 365 version Y5 > Programming 2: Micro:bit, Programming 1: Music - Sonic Pi (Alternative unit - Programming 1: Music - Scratch), Creating media: Stop motion animation - Stop Motion Studio (Alternative unit - Creating media: Stop motion animation - with cameras) Y6 > Programming: Intro to Python, Skills showcase: Inventing a product
Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	Computer Science	Y3 > Programming: Scratch Y4 > Skills showcase: HTML, Data handling: Investigating weather - Google schools version, Data handling: Investigating weather - Microsoft Office 365 version, Programming 2: Computational thinking, Programming 1: Further coding with Scratch - Google schools version, Programming 1: Further coding with Scratch - Microsoft Office 365 version Y5 > Programming: Micro:bit, Programming 1: Music - Sonic Pi (Alternative unit - Programming 1: Music - Scratch), Creating media: Stop motion animation - Stop Motion Studio (Alternative unit - Creating media: Stop motion animation - with cameras) Y6 > Programming: Intro to Python, Skills showcase: Inventing a product
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Computer Science	Y3 >Computing systems and networks 3: Journey inside a computer, Programming: Scratch Y4 > Skills showcase: HTML, Programming 2: Computational thinking,Programming 1: Further coding with Scratch - Google schools version, Programming 1: Further coding with Scratch - Microsoft Office 365 version Y5 > Programming: Micro:bit, Programming 1: Music - Sonic Pi (Alternative unit - Programming 1: Music - Scratch) Y6 > Programming: Intro to Python, Skills showcase: Inventing a product
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	Digital Literacy Information Technology	Y3 > Computing systems and networks 3: Journey inside a computer, Computing systems and networks 2: Emailing, Computing systems and networks 1: Networks and the internet - Google schools version, Computing systems and networks 1: Networks and the internet - Microsoft Office 365 version, Online safety: Year 3 Y4 > Computing systems and networks: Collaborative learning, Y5 > Programming 2: Micro:bit, Computing systems and networks: Search engines, Data handling: Mars Rover 1 Y6 > Computing systems and networks: Bletchley Park, Skills showcase: Inventing a product, Data handling: Big Data 1, Online safety: Year 6, Creating media: History of computers

Key stage 2 - National Curriculum computing subject content: You may observe that a child:	Kapow Primary's computing strands	Kapow Primary's units
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	Digital Literacy Information Technology	Y3 > Computing systems and networks 1: Networks and the internet - Google schools version, Computing systems and networks 1: Networks and the internet - Microsoft Office 365 version, Programming: Scratch, Online safety: Year 3, Creating media: Video trailers using devices other than iPads (Alternative unit - Creating media: Video trailers using iPads) Y4 > Creating media: Website design - Microsoft schools version, Creating media: Website design - Microsoft Office 365 version, Online safety: Year 4 Y5 > Computing systems and networks: Search engines, Online safety 5 Y6 > Computing systems and networks: Bletchley Park, Skills showcase: Inventing a product, Online safety: Year 6
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	Computer Science Information Technology	Y3 > Computing systems and networks 2: Emailing - Google schools version, Computing systems and networks 2: Emailing - Microsoft Office 365 version, Data handling: Comparison cards databases - Google schools version, Data handling: Comparison cards databases - Microsoft Office 365 version, Creating media: Video trailers using devices other than iPads (Alternative unit - Creating media: Video trailers using iPads), Computing systems and networks 1: Networks and the internet - Google schools version, Computing systems and networks 1: Networks and the internet - Microsoft Office 365 version, Programming: Scratch Y4 > Computing systems and networks: Collaborative learning, Creating media: Website design, Data handling: Investigating weather - Google schools version, Data handling: Investigating weather - Microsoft Office 365 version, Programming 1: Further coding with Scratch - Google schools version, Programming 1: Further coding with Scratch - Microsoft Office 365 version, Skills showcase: HTML, Programming 2: Computational thinking Y5 > Online Safety, Micro:bit, Programming: music - Sonic Pi (Alternative unit - Programming: music - Scratch), Data handling: Mars Rover 1, Skills showcase: Mars Rover 2 Y6 > Computing systems and networks: Bletchley Park, Skills showcase: Inventing a product, Data handling: Big Data 1, Creating media: History of computers, Programming: Intro to Python
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	Digital Literacy	Y3 > Computing systems and networks 2: Emailing - Google schools version, Computing systems and networks 2: Emailing - Microsoft Office 365 version, Online safety: Year 3 Y4 > Online Safety: Year 4, Creating media: Website design, Skills showcase: HTML, Data handling: Investigating weather - Google schools version, Data handling: Investigating weather - Microsoft Office 365 version Y5 > Online Safety: Year 5, Computing systems and networks: Search engines Y6 > Computing systems and networks: Bletchley Park, Skills showcase: Inventing a product, Data handling: Big Data 1, Online safety: Year 6

EYFS	Description	Overview	Characteristics of effective learning
Teacher guidance: Computing through continuous provision Go to guidance	Resourcing your continuous and enhanced provision, and observing computing skills through play.	Information Technology Computer Science 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. Guidance on undertaking observations of the children at play to ensure computing outcomes are met and developed.	
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.	Digital Literacy 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. Information Technology Using a camera and/or iPad to take photos. Recognising that a range of technology is used in places such as homes and school.	
Computing systems and networks 1: 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.	Digital Literacy Learning to log in and log out. Using a simple online paint tool to create digital art. Computer Science 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.	✓ Playing and Exploring ✓ Active Learning
Programming 1: 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.	Computer Science Following instructions as part of practical activities and games and learning to debug when things go wrong. Learning to give simple instructions. 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.	✓ Active Learning ✓ Creating and Thinking Critically
Computing systems and networks 2: 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.	Information Technology Learning how to explore and tinker with hardware to develop familiarity and introduce relevant vocabulary. 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.	✓ Playing and Exploring ✓ Active Learning

EYFS	Description	Overview	Text text
Programming 2: 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.	Information Technology Experimenting with programming a Bee-bot/Blue-bot and learning how to give simple commands. Computer Science Learning to debug instructions, with the help of an adult, when things go wrong.	✓ Playing and Exploring ✓ Active Learning ✓ Creating and Thinking Critically
Data handling: Introduction to data (5 lessons) Go to unit	Learning to sort and categorise data and an introduction to branching databases and pictograms.	Digital Literacy Using technology purposefully to create, organise, store, manipulate and retrieve digital content. Selecting software appropriately. Information Technology Recognising uses of technology beyond school.	✓ Playing and Exploring ✓ Active Learning ✓ Creating and Thinking Critically

Year 1	Overview	Knowledge	Vocabulary	Cross-curricular links
Computing systems and networks: Improving mouse skills **(5 lessons)** Introducing children to logging in and using technology for a purpose, including creating art Go to unit	Digital Literacy 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. Information Technology Learning to locate where keys are on the keyboard. Developing basic mouse skills.	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	• account • clipart • computer • log on/off • password • resize • screen (monitor) • software • tools • username	Art and design Maths
Programming 1: Algorithms unplugged **(5 lessons)** Learning how computers handle information by exploring 'unplugged' algorithms- completing tasks away from the computer Go to unit	Computer Science Understanding how to create algorithms. Learning that computers need information to be presented in a simple and clear way. Understanding how to break a computational thinking problem into smaller parts in order to solve it.	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	• algorithm • bug • computer • debug • decompose • device • input • instructions • output • solution	
Skills showcase: Rocket to the moon **(5 lessons)** Appreciating the value of computers, understanding that they helped us get to the moon Go to unit	Digital Literacy Using technology purposefully to create, organise, store, manipulate and retrieve digital content. Selecting software appropriately.	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	• computer • program • create • data • digital content • e-document • folder • list • save • sequence • share • spreadsheet	Science D&T Maths History

Year 1 *continued.*	Overview	Knowledge	Vocabulary	Cross-curricular links
Programming 2: 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: • Option 1 • Option 2	Computer Science Learning how to explore and tinker with hardware to find out how it works. Constructing a series of instructions into a simple algorithm. Applying computing concepts to real world situation in an unplugged activity.	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	• algorithm • Bee-Bot • computing code • computer program • explain • explore • instructions • predict • tinker • video	
Creating media: Digital imagery **(5 lessons)** Taking and manipulating digital photographs, including adding images found via a search engine Go to unit	Digital Literacy Using technology purposefully to create, organise, store, manipulate and retrieve digital content. Knowing what to do if they have concerns about content or contact online. Information Technology Using cameras or tablets to take photos. Computer Science Using logical reasoning to predict the behaviour of simple programs.	How sequences work Camera types and basic photography techniques Tell a trusted adult about any online safety concerns	• crop • delete • download • drag and drop • editing software • image • import • resize • save as • search engine • sequence • smart device • storage space • visual effects	English: reading
Data handling: 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	Digital Literacy Using technology purposefully to create, organise, store, manipulate and retrieve digital content. Selecting software appropriately. Information Technology Recognising uses of technology beyond school.	How branching databases work Other ways of collecting data – tally chart, bar graph, line graph, pictogram	• categorise • chart • computer • data • information • label • pictogram • record • sort • table • text	Maths Science

Year 1 *continued.*	Overview	Knowledge	Vocabulary	Cross-curricular links
Online safety: Year 1 **(4 lessons)** An introduction to online safety: children learn what it means to be 'online' and how to stay safe whilst treating others with respect. Go to unit	Digital Literacy Understanding that they need to be kind on the internet, as they would in real life Discovering which devices connect to the internet Understanding some tips for staying safe and why this is important	Know the meaning of 'sharing' and 'posting' in an online context Know the 4 top tips for staying safe online 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	• communicate • connect • devices • digital footprint • emotion • feelings • internet • internet safety • online • personal information • posting • respect • sharing • smart device • strangers • trust • wired • wireless	RSE

Year 2	Overview	Knowledge	Vocabulary	Cross-curricular links
Computing systems and networks 1: 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	Computer Science Learning about inputs and outputs and how they are used in algorithms. Information Technology Understanding what a computer is and the role of individual components.	Different types of technology – cameras, phones, torches, microwave, alarm clock, remote control Inputs e.g. keyboard, mouse Outputs e.g. monitor, speakers, printers	• battery • buttons • computer • desktop • device • electricity • invention • laptop • technology • wire	D&T Science
Programming 1: 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	Computer Science 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	• artificial intelligence (AI) • bug • correct • data • debug • decompose • error • key features • loop • predict • unnecessary	
Computing systems and networks 2: 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	Digital Literacy Using word processing software to type and reformat text. Understanding the importance of staying safe online.	Word processing – fonts, bold, italics, underline, highlight Keyboard skills – delete, enter, spacebar E-books and e-documents	• backspace • copyright • image • import • keyboard character • paste • undo/redo • touch typing	PSHE

Year 2 *continued.*	Overview	Knowledge	Vocabulary	Cross-curricular links
Programming 2: 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	Computer Science 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. Digital Literacy Using technology purposefully to create, organise, store, manipulate and retrieve digital content.	Coding – Scratch Jr, code blocks, algorithms, sprites/speeds, repeat and loop control blocks, start/finish, direction Blocks – triggering, motion, looks, sound, end, control	• animation • bug • code • debug • icon • imitate • instructions • sequence	
Creating media: Stop motion **(5 lessons)** Pupils create simple animations, plan a storyboard, then decompose it into small chunks of action to be captured. Go to unit: • Option 1 • Option 2 • Option 3	Digital Literacy Using technology purposefully to create, organise, store, manipulate and retrieve digital content. Information Technology Understanding how to use tablets or computers to take photos.	Animations – how still images become moving images Use of animation software Sketching and planning	• animator • contraption • decompose • design • download • film review • filming • import • image • plan • sketch • software • stop-motion • storyboard • upload	English
Data handling: International Space Station **(5 lessons)** Learn how data is collected and used to keep astronauts safe on the I.S.S Go to unit	Digital Literacy Using technology to create and label images and to put data into a spreadsheet. Computer Science 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	• approximate • astronaut • data • digital content • experiment • interactive map • laboratory • monitor (verb) • satellite • sensor • space • survival • thermometer	Science

Year 2 *continued.*	Overview	Knowledge	Vocabulary	Cross-curricular links
Online safety: Year 2 **(4 lessons)** Pupils learn about how to keep personal information safe online, including their right to give or deny permission for information to be shared online Go to unit	Digital Literacy Identifying how to keep personal information private. Using technology respectfully by asking for permission before sharing about others online.	The difference between 'online' and 'offline.' How to create a strong password. Tell a trusted adult about any online safety concerns	• accept • consent • content • offline • online • password • permission • personal information • terms and conditions • trusted adult	RSE

Year 3	Overview	Knowledge	Vocabulary	Cross-curricular links
Computing systems and networks 1: 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	Computers and Hardware Identifying network components and understand how they are used to connect to the internet and how data is transferred. Digital Literacy 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	• device • file • internet • network • network map • network switch • router • server • submarine cables • the cloud • wi-fi/wired/wireless • wireless access point	
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	Computer Science 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	• animation • application • code • code block • debug • decompose • interface • loop • predict • program • remixing code • repetition code • review • sprite • tinker	
Computing systems and networks 2: Emailing **(5 lessons)** Pupils learn how to send emails, including attachments and how to be responsible digital citizens Go to unit	Digital Literacy Learn about cyberbullying and fake emails. Understanding the purpose of emails.	Keyboard skills - @ symbol Email compose windows – addresses, subjects Be careful with unexpected emails	• account • attachment • BCC • CC • computer • cyberbullying • domain • email • email account • emoji • information • log off/ log on • password • username • spam	English

Year 3 *continued.*	Overview	Knowledge	Vocabulary	Cross-curricular links
Computing systems and networks 3: 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	Information Technology Understanding what different components of a computer do. Computer Science 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	• algorithm • computer • computer program • data • desktop • instructions • ROM • tablet device • trackpad	
Creating media: Video trailers **(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; • Option 1 • Option 2	Digital Literacy 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	• application • desktop • digital device • edit • film • film editing software • graphics • import • key events • laptop • plan • recording • sound effects • time code • voice • voiceover	English

Year 3 *continued.*	Overview	Knowledge	Vocabulary	Cross-curricular links
Data handling: Comparison cards databases **(5 lessons)** Developing their understanding of data and databases, children play with and create their own comparison cards, learning how to interpret information by ordering and filtering Go to unit	Digital Literacy Using technology purposefully to create, organise, store, manipulate and retrieve data.	Identifying and reading databases Understanding bar graphs and pie charts	• categorise • data • database • fields • filter • graphs and charts • information • record • sort • spreadsheet	Maths
Online safety: Year 3 **(4 lessons)** Understanding that you can't trust everything you read on the internet. Learning about social media platforms including their age-restrictions and privacy settings. Go to unit	Digital Literacy Learn to distinguish between facts, opinions and beliefs on the internet Learn how to deal with upsetting online content Learn about how to protect our personal information using privacy settings and how to be discerning about what information we share and who with	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	• accurate, • age restricted, • autocomplete, • beliefs, • block, • content, • digital devices, • fact, • fake news, • opinion, • privacy settings, • reliable, • report, • requests, • search engine, • security questions, • smart devices, • social media platforms, • social networking	RSE

Year 4	Overview	Knowledge	Vocabulary	Cross-curricular links
Computing systems and networks: Collaborative learning **(5 lessons)** Learning to work collaboratively in a responsible way using tools including Google Docs and Sheets Go to unit	Digital Literacy 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	• collaborate • comment • e-Document • edit • email • icon • insert (file) • link • presentation software • presentation • reply • reviewing comments • share • spreadsheet • transition	
Programming 1: Further coding with Scratch **(5 lessons)** The coding program Scratch is explored further by revisiting key features and introducing the children to the concept and execution of using 'variables' in code. Go to unit	Computer Science 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	• code • code block • conditional statement • decompose • direction • feature • icon • orientation • position • program • project • stage • tinker • variable	
Creating media: 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	Digital Literacy 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	• collaboration • content • create • design • edit • embed • feature • header • hyperlink • insert (file) • online • plan • tab • website • WWW	

Year 4 *continued.*	Overview	Knowledge	Vocabulary	Cross-curricular links
Skills showcase: 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	Digital Literacy 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. Computer Science 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.	HTML code CSS code HTML tags – head, body, ordered lists, list items, image, line break	• code • content • copyright • CSS • hacker • hex code • internet browser • permission • script • URL • web page	
Programming 2: 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	Computer Science Understand what decomposition is and how it facilitates problem solving. Designing, writing and debugging programs that accomplish specific goals. Understand abstraction and patterns recognition.	Decomposition - data without any identification, order or sequence Sequencing and pattern recognition	• abstraction • algorithm • design • code • code blocks • computer • decompose • problem	
Data handling: 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	Digital Literacy Understanding why some sources are more trustworthy than others. Computer Science Understanding the role of inputs and outputs in computerised devices.	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)	• algorithm • temperature • automated machine • calculate • weather • climate • device • forecast • log data • predict • record • sensor • source • spreadsheet	Science Geography

Year 4 *continued*	Overview	Knowledge	Vocabulary	Cross-curricular links
Online safety: Year 4 **(6 lessons)** Pupils develop their understanding of how to identify trustworthy information online and consider the implications of technology. Go to unit	Digital Literacy Be discerning in evaluating content by learning about the techniques that companies use to advertise online. Use technology safely and responsibly by considering the risks of screen-time and technology. Using search technologies effectively, appreciating how results are selected and ranked.	Chat bots Advertising- snippets, pop-ups, influencers The difference between facts, opinions and beliefs online	• ad/ advertisement • accuracy • alter • belief • bot • chatbot • fact • fake • gaming • in-app purchases • influencer • implication • judgement • live streaming • opinion • pop ups • reliable • respectful • search engine • social media • snippet • sponsored	RSE

Year 5	Overview	Knowledge	Vocabulary	Cross-curricular links
Computing systems and networks: Search engines **(5 lessons)** Enable children to quickly and accurately find information and become independent learners, develop their searching skills and learn how to identify trustworthy sources. Go to unit	Digital Literacy Recognising that information on the internet might not be true or correct. Know how to use keywords to quickly find accurate information.	Search Engines – search bar, company logo, hyperlink, keywords, fake news	• algorithm • company logo • data leak • data privacy • inaccurate information • index • keywords • network • online • page rank • TASK • web crawler • website • WWW	
Programming: Music **(5 lessons)** Composing music using code through Sonic Pi or Scratch pupils can compose simple tunes culminating in a 'battle of the bands' using loops of music Go to unit: • Option 1 - Sonic Pi • Option 2 - Scratch	Digital Literacy Selecting using and combining a variety of software to design and create a range of programs, systems and content that accomplish given goals. Computer Science Using programming language to create music, including use of loops.	Sonic Pi interface – play controls, editor controls, information and help controls, code editor, scope, log viewer Live loop, simple melody, selecting sounds	• basic commands • tinker • bug/debug • code (computer and verb) • error • live loop • loop • pitch • program language • rhythm • soundtrack • tempo • timbre	Music
Data handling: 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. Go to unit	Digital Literacy 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. Information Technology 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.	Mars Rover – distance and time travelled Binary numbers and equivalent decimal values	• binary code • data • sequence • data transmission • discovery • signal • distance • simulation • input • space (astronomy) • moon • numerical data • output • planet • radio signal • scientist	

Year 5 *continued.*	Overview	Knowledge	Vocabulary	Cross-curricular links
Programming: 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	Computer Science Using block coding to program a device. To explore variables and different forms of input. Information Technology 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)	• .hex file • variable • .zip file • bluetooth • code blocks • decompose • emulator • feature • loop • pedometer • predict • systematic • tinker	
Creating media: Stop motion animation **(5 lessons)** Collaboratively creating a stop-motion animation by sharing and then decomposing their ideas . Pupils will develop their ability to edit and improve their creations. Go to unit: • Option 1 • Option 2	Digital Literacy Using technology purposefully to create, organise, store, manipulate and retrieve digital content. Information Technology Understanding how to use tablets or computers to take photos. Computer Science Consider sequence and selection of frames when editing work.	How animations developed over time. How still images become animations. Option 1: Use of animation software. Option 2: Use of editing software. How to take a good photo.	• animation • animator • background • decompose • design • digital device • duplicate • editing • frame • illusion • onion skinning • stop-motion • storyboard • upload	Art
Skills showcase: 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 unit	Digital Literacy Developing their CAD skills. Information Technology Understanding how image data is transferred.	Digital Images – a series of programmed pixels RGB colour mode – produces a spectrum of colours	• algorithm • binary image • bit • bit pattern • CAD • data • encode • image • JPEG • memory computer • operating system • pixels	

Year 5 *continued.*	Overview	Knowledge	Vocabulary	Cross-curricular links
Online safety: Year 5 **(5 lessons)** Considering online communication and the effects on mental health and wellbeing. Go to unit	Information Technology Understanding permissions required by apps to access personal information. Digital Literacy Considering online judgements that people make and how they treat others online.	Forms of online communication- memes, gifs, emojis The importance of creating strong passwords Online bullying- what it is and what to do about it.	• application 'app' • anonymity • bullying • emoji • gif • hacked • interpreted • judgement • meme • mental health • misinterpreted • permissions • reliable • reputation	RSE

Year 6	Overview	Knowledge	Vocabulary	Cross-curricular links
Computing systems and networks: Bletchley Park **(5 lessons)** Investigate secret codes and how they are created, exploring 'brute force' hacking and learn how to make passwords more secure Go to unit	Digital Literacy Understanding the importance of secure passwords and using searching and word processing skills to create a presentation. Computer Science 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	• acrostic code • brute force hacking • Caesar cipher • cipher • encrypt • invention • Nth letter cipher • password • pigpen cipher • technological advancement • trial and error	History Maths
Programming: Intro to Python **(5 lessons)** Introduction to the text-based programming language Python, which is the language behind many apps and programs, such as Dropbox Go to unit	Computer Science 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	• algorithm • code (computer) • computer command • decompose • import • loop • nested loop • random numbers • remix • script libraries • variable	Art and design Maths
Data handling 1: 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	Digital Literacy 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. Information Technology Understanding that computer networks provide multiple services Understanding how barcodes and QR codes work.	Infrared light, barcodes – how they work and their uses	• barcode • boolean • brand • commuter • contactless • data • data privacy • encrypt • infrared waves • NFC • QR code • radio waves • RFID • signal • systems *or* data • analyst • transmission	Science

Year 6	Overview	Knowledge	Vocabulary	Cross-curricular links
Creating media: History of computers **(5 lessons)** Learn about Bletchley Park, including: key historical figures, how the first modern computers were created and how computers have evolved over time. Go to unit	Digital Literacy Editing sound recordings for specific purpose. Information Technology 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	• background noise • byte • computer • CPU • memory storage • mouse • OS • radio play • RAM • ROM • sound effects • touch screen • trackpad	English
Data handling 1: 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	Digital Literacy 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.	Wireless data transfer – barcodes, QR codes, NFC, Bluetooth, RFID What 100MB looks like – real life examples (e.g. one 30 minute TV show)	• big data • bluetooth • corrupt data • digital revolution • GPS • infrared waves • IoT • QR code • SIM • computer simulation • smart school/city	
Skills showcase: Inventing a product **(5 lessons)** Reflecting on and showcasing their computing skills, pupils create an entire project around a specific theme. Go to unit	Digital Literacy Showcasing their digital literacy skills. Computer Science Demonstrating their computational thinking skills by designing and debugging programs, using different inputs and outputs. Information Technology Understanding how search engines work and knowing how to use them safely and effectively.	Extended vocabulary for this unit: • adapt • advertisement • algorithm • bug • CAD • computer code • code (verb) • design • edit • electronic components • image rights • image	• input • information • invention • loop • output • photo • program • repetition • screenshot • selection (programming) • sequence • variable • WWW	

Year 6 .continued	Overview	Knowledge	Vocabulary	Cross-curricular links
Online safety: Year 6 **(6 lessons)** Learning about the impact and consequences of sharing information online; exploring how to develop a positive online reputation that will benefit the children in the long term; capturing evidence techniques and methods to combat online bullying Go to unit	Digital Literacy Learning about online reputations and how to go about creating a positive one Being aware of the threats that face us online such as scammers and phishing emails and how to identify them	Know the steps to take if you witness online bullying How to capture a screen grab on various devices	• anonymity • anti-virus software • digital footprint • digital personality • malware • online reputation • peer-pressure • permission • phishing • privacy settings • report • scammers • screengrab • selfie • software update • two-factor authentications	RSE