

Switched on Computing Overview

|             |                                                                                                     | <b>Strand</b>                                                                                                                     |                                                                                     |                                                                                           |                                                                                                                     |                                                                                                                             |
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| <b>YEAR</b> | <b>Programming</b>                                                                                  | <b>Computational Thinking</b>                                                                                                     | <b>Creativity</b>                                                                   | <b>Computer Networks</b>                                                                  | <b>Communication/ Collaboration</b>                                                                                 | <b>Productivity</b>                                                                                                         |
|             | Planning, writing and testing computer programs for digital devices, from floor turtles to tablets. | Some of the computer science foundations- particularly algorithms, logical reasoning and decomposing problems into smaller parts. | Creating and refining original content using digital tools across a range of media. | Using and understanding the internet, the web and search engines, effectively and safely. | Making the most of computers and the internet for communicating with one or many, and working together on projects. | Collecting and analysing data and information using computers; organising, manipulating and presenting this to an audience. |
| <b>1</b>    | We are treasure hunters                                                                             | We are TV Chefs                                                                                                                   |                                                                                     |                                                                                           | We are Storytellers                                                                                                 |                                                                                                                             |
| <b>2</b>    | We are astronauts                                                                                   |                                                                                                                                   |                                                                                     | We are Researchers                                                                        |                                                                                                                     | We are Zoologists                                                                                                           |
| <b>3</b>    |                                                                                                     | We are Big Fixers                                                                                                                 | We are Presenters                                                                   |                                                                                           |                                                                                                                     | We are Opinion Pollsters                                                                                                    |
| <b>4</b>    | We are Software Developers                                                                          | We are Toy Designers                                                                                                              |                                                                                     |                                                                                           |                                                                                                                     | We are Meteorologists                                                                                                       |
| <b>5</b>    |                                                                                                     | We are Cryptographers                                                                                                             |                                                                                     | We are Web Developers                                                                     | We are Bloggers                                                                                                     |                                                                                                                             |
| <b>6</b>    | We are Mobile App Developers                                                                        |                                                                                                                                   |                                                                                     | We are App Planners                                                                       | We are Interface Designers                                                                                          |                                                                                                                             |

Units linked to Science (Data Logging) and Maths (Statistics) - Computing units can be taught before Science/Maths units to introduce skills or after to consolidate skills.

Year 2 (Spring) - We are Zoologists (Statistics)

Year 3 (Spring) - We are opinion Pollsters (Statistics)

Year 4 (Summer) - We are Meteorologists (Data Logging and Statistics)

## Computing Overview

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| <b>Digital Literacy</b>                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                               | <b>Information Technology<br/>Computer Science</b>                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                 |
| <b>Key Stage One Curriculum Objectives</b><br>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.<br><br>Recognise common uses of information technology beyond school. |                                                                                                                                                                                                                                                                                                               | Use technology purposefully to create, organise, store, manipulate and retrieve digital content.<br>Use logical reasoning to predict the behaviour of simple programs.<br>Create and debug simple programs.<br>Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. |                                                                                                                                                                                                                                                                                 |
| <b>Year One Units,<br/>Outcomes and<br/>Expectations</b>                                                                                                                                                                                                                                                                                   | <b>We are Storytellers</b><br>Producing a Talking Book                                                                                                                                                                                                                                                        | <b>We are TV Chefs</b><br>Filming the steps of a recipe                                                                                                                                                                                                                                                                                                                              | <b>We are Treasure Hunters</b><br>Using programmable toys                                                                                                                                                                                                                       |
|                                                                                                                                                                                                                                                                                                                                            | Break down a process into simple, clear steps, as in an algorithm.<br>Use different features of a video camera.<br>Use a video camera to capture moving images.<br>Develop collaboration skills.<br>Discuss their work and think about how it could be improved.                                              | Use sound recording equipment to record sounds.<br>Develop skills in saving and storing sounds on the computer.<br>Develop collaboration skills as they work together in a group.<br>Understand how a talking book differs from a paper-based book.<br>Talk about and reflect on their use of ICT.<br>Share recordings with an audience.                                             | Understand that a programmable toy can be controlled by inputting a sequence of instructions.<br>Develop and record sequences of instructions as an algorithm.<br>Program the toy to follow their algorithm.<br>Debug their processes.<br>Predict how their programs will work. |
| <b>Year Two Units,<br/>Outcomes and<br/>Expectations</b>                                                                                                                                                                                                                                                                                   | <b>We are researchers</b><br>Researching a topic                                                                                                                                                                                                                                                              | <b>We are zoologists</b><br>Collecting Data about Bugs                                                                                                                                                                                                                                                                                                                               | <b>We are astronauts</b><br>Programming on screen                                                                                                                                                                                                                               |
|                                                                                                                                                                                                                                                                                                                                            | Develop collaboration skills through working as part of a group.<br>Develop research skills through searching for information on the internet.<br>Improve note-taking skills through the use of mind mapping.<br>Develop presentation skills through creating and delivering a short multimedia presentation. | Sort and classify a group of items by answering questions.<br>Collect data using tick charts or tally charts.<br>Use simple charting software to produce pictograms and other basic charts.<br>Take, edit and enhance photographs.<br>Record information on a digital map.                                                                                                           | Have a clear understanding of algorithms as sequences of instructions.<br>Convert simple algorithms to programs.<br>Predict what a simple program will do.<br>Spot and fix (debug) errors in their programs.                                                                    |

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| <p><b>Key Stage Two Curriculum Objectives</b></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>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</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>Design, write and debug programs that accomplish specific goals; solve problems by decomposing them into smaller parts.</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p> <p>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.</p> <p>Use sequence, selection and repetition in programs; work with variables and various forms of input and output.</p> |                                                                                                                                                                                                                                                                                                        |
| <p><b>Year Three Units, Outcomes and Expectations</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p><b>We are presenters</b><br/>Videoing Performance</p>                                                                                                                                                                                                                                                                                 | <p><b>We are opinion pollsters</b><br/>Collecting and analysing data</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p><b>We are bug fixers</b><br/>Finding and correcting Bugs in programs</p>                                                                                                                                                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p>Gain skills in shooting live video, such as framing shots, holding the camera steady and reviewing.</p> <p>Edit video, including adding narration and editing clips by setting in/out points.</p> <p>Understand the qualities of effective video, such as the importance of narrative, consistency, perspective and scene length.</p> | <p>Understand some elements of survey design.</p> <p>Understand some ethical and legal aspects of online data collection.</p> <p>Use the web to facilitate data collection.</p> <p>Gain skills in using charts to analyse data.</p> <p>Gain skills in interpreting data.</p>                                                                                                                                                                                                                                                                                                                     | <p>Develop a number of strategies for finding errors in programs.</p> <p>Build up resilience and strategies for problem solving.</p> <p>Increase their knowledge and understanding of Scratch.</p> <p>Recognise a number of common types of bug in software.</p>                                       |
| <p><b>Year Four Units, Outcomes and Expectations</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p><b>We are software developers</b><br/>Developing a simple educational game</p>                                                                                                                                                                                                                                                        | <p><b>We are toy designers</b><br/>Prototyping an interactive toy</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p><b>We are meteorologists</b><br/>Presenting the weather</p>                                                                                                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p>Develop an educational computer game using selection and repetition.</p> <p>Understand and use variables.</p> <p>Start to debug computer programs.</p> <p>Recognise the importance of user interface design, including consideration of input and output.</p>                                                                         | <p>Design and make an on-screen prototype of a computer controlled toy.</p> <p>Understand different forms of input and output (such as sensors, switches, motors, lights and speakers)</p> <p>Design, write and debug the control and monitoring program for their toy.</p>                                                                                                                                                                                                                                                                                                                      | <p>Understand different measurement techniques for weather, both analogue and digital.</p> <p>Use computer-based data logging to automate the recording of some weather data.</p> <p>Use spreadsheets to create charts.</p> <p>Analyse data, explore inconsistencies in data and make predictions.</p> |

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|                                                   |                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                             | Practise using presentation software and, optionally, video.                                                                                                                                                                                                            |
| <b>Year Five Units, Outcomes and Expectations</b> | <b>We are cryptographers</b><br>Cracking codes                                                                                                                                                                                                                                                        | <b>We are web developers</b><br>Creating a website about cyber safety                                                                                                                                                                                                                                                                                       | <b>We are bloggers</b><br>Sharing experiences and opinions                                                                                                                                                                                                              |
|                                                   | Be familiar with semaphore and Morse code.<br>Understand the need for private information to be encrypted.<br>Encrypt and decrypt messages in simple ciphers.<br>Appreciate the need to use complex passwords and to keep them secure.<br>Have some understanding of how encryption works on the web. | Develop their research skills to decide what information is appropriate.<br>Understand some elements of how search engines select and rank results.<br>Question the plausibility and quality of information.<br>Develop and refine their ideas and text collaboratively.<br>Develop their understanding of online safety and responsible use of technology. | Become familiar with blogs as a medium and a genre of writing.<br>Create a sequence of blog posts on a theme.<br>Incorporate additional media.<br>Comment on the posts of others.<br>Develop a critical, reflective view of a range of media, including text.           |
| <b>Year Six Units, Outcomes and Expectations</b>  | <b>We are app planners</b><br>Planning the creation of a mobile app                                                                                                                                                                                                                                   | <b>We are interface designers</b><br>Designing an interface for an app                                                                                                                                                                                                                                                                                      | <b>We are app developers</b><br>Developing a simple mobile phone app                                                                                                                                                                                                    |
|                                                   | Develop an awareness of the capabilities of smartphones and tablets.<br>Understand geolocation, including GPS.<br>Identify interesting, solvable problems.<br>Evaluate competing products.<br>Pitch a proposal for a smartphone or tablet app.                                                        | Work collaboratively to design the app's interface.<br>Use wire framing tools to create a design prototype of their app.<br>Develop or source the individual interface components they will use.<br>Address accessibility and inclusion issues.<br>Document their design decisions and the process they've followed.                                        | Become familiar with another programming toolkit or development platform.<br>Import existing media assets to their project.<br>Write down the algorithms for their app.<br>Program, debug and refine the code for their app.<br>Thoroughly test and evaluate their app. |