



## Computing at Bomere Heath

The children are given opportunities to use technology to enhance learning in all areas. They are used for word processing, storing and retrieving information, for classifying and handling data and graphics as well as programming and keeping up with technology in the modern world. Pupils have access to a brilliant laptop trolley – housing 15 laptops – which is timetabled for use across the school each week. Apple i-pads supplement these and there are also two to three desktop computers in each classroom. Children are also taught how to use other electronic devices. IT capability is developed through all areas of the curriculum, and used in meaningful contexts to promote and further their learning. The curriculum provides a wide range of opportunities to engage pupils in the world of technology and new, upcoming programming tools.

For example, a large part of our curriculum is coding, taught through Discovery Espresso Coding and Scratch. We also build in 'e-safety' each academic year, using quality, up-to-date resources from 'Thinuknow.co.uk' and the NSPC. In addition, many pupils with SEND across the school use computing skills and devices to access the curriculum (e.g. via word processing or photography) as well as to follow recovery programmes such as Nessie.

During the nationwide school closures seen during the pandemic, pupils accessed learning via Microsoft Teams, whilst teachers also used online resources (such as Fiction Express, Times Tables Rockstars and BBC Bitesize) which we continue to weave into teaching, whether it be for pupils self-isolating or for homework.

<b>Curriculum Objectives:</b>	<b>Key stage 1</b>  Pupils should be taught to: <ul style="list-style-type: none"><li>• understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions</li><li>• create and debug simple programs</li><li>• use logical reasoning to predict the behaviour of simple programs</li><li>• use technology purposefully to create, organise, store, manipulate and retrieve digital content</li><li>• recognise common uses of information technology beyond school</li><li>• 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</li></ul>	<b>Key stage 2</b>  Pupils should be taught to: <ul style="list-style-type: none"><li>• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</li><li>• use sequence, selection, and repetition in programs; work with variables and various forms of input and output</li><li>• use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</li><li>• 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</li><li>• use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</li><li>• 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</li><li>• use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact</li></ul>
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Cycle A

Class	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Pimhill	Computer Skills – The mouse and keyboard	E-Safety	Coding – On the Move	Programming Beebots/toys	Programming with Scratch	Programming with Scratch
Haughmond	Computer Skills (Word Processing & Saving)	E-Safety	Coding – Different sorts of Inputs	Painting	Programming with Scratch Jr	Computer Art
Grinshill	E- Safety	Word processing skills	Internet research and communication	Drawing and desktop publishing	Programming with turtle logo and scratch	Coding with Espresso
Stiperstones	Computer Skills Word Processing	E-safety	Animation	Coding (Espresso Unit 4a)	Scratch – Questions and Quizzes	Coding (Espresso Unit 4b)
Wrekin	E-Safety	Computer Skills - files	Coding – Espresso Coding Unit 6a More Complex Variables	Internet Research	Coding – Espresso Coding HTML Formatting	Flowol

Cycle B

Class	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Pimhill	E-safety	Computer Skills – The Mouse and Keyboard	Coding – Simple Inputs	Coding – Simple Inputs	Using and Applying – Typing, Editing, Pictures, Paint, Present	Using and Applying – Typing, Editing, Pictures, Paint, Present
Haughmond	Computer Skills – Word Processing and Saving.	E-Safety	Coding – Buttons and Instructions	Preparing for Turtle Logo	Programming using Turtle Logo	Presentation Skills
Grinshill	E- Safety	Word processing skills	Internet research and communication	Drawing and desktop publishing	Programming with turtle logo and scratch	Coding with Espresso
Stiperstones	E-Safety	Computer skills (advanced word processing)	Espresso Coding (Unit 5a) - Speed, direction and co ordinates	Espresso Coding (HTML Unit) - Introduction to HTML	Programming – Turtle Logo	Espresso Coding (Unit 5b Random Numbers and Simulations)
Wrekin	E-Safety	Computer Skills	Coding – Espresso Unit 6b – Object Prpoerties	Coding – Scratch 3.0	Coding – Espresso Python	Coding – Espresso HTML Unit 3 Links

Progression of skills: Computing – I can statements							
	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computer Science	<ul style="list-style-type: none"> <li>• I can show an interest in technological toys with knobs or pulleys, or real objects.</li> <li>• I can show skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images.</li> <li>• I know that information can be retrieved from computers.</li> <li>• I can operate simple equipment, e.g. turns on CD player and uses remote control</li> <li>• I can make toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images.</li> </ul>	<ul style="list-style-type: none"> <li>• I follow instructions to make something happen so it works.</li> <li>• I can control the movement of a floor turtle (eg BeeBot) using single commands (eg FD or RT)</li> <li>• I can control the movement of a floor turtle (eg BeeBot) using MORE THAN ONE command (FD then RT) to make it work well.</li> </ul>	<p>I understand that an algorithm is a list of instructions that must be done in the right order.</p> <ul style="list-style-type: none"> <li>• I can create a list of instructions to make things happen really well (eg on a device or App).</li> <li>• I can control and debug commands for a BeeBot or Screen Sprite to move it to a given position.</li> <li>• I can predict where the BeeBot or Screen Sprite will finish after a list of commands take place</li> <li>• I can explain to others how to</li> </ul>	<ul style="list-style-type: none"> <li>• I understand that usually a problem can be broken up into smaller parts.</li> <li>• I can create an algorithm to make something happen successfully. I can talk about it.</li> <li>• I know when to test a program and when to debug it if it doesn't work.</li> <li>• I understand that repeating instructions can save time and make a program simpler.</li> <li>• I can explain how a simple program works (you may like to use the words input and output).</li> <li>• I can predict some of the things that may happen BEFORE I run my program.</li> </ul>	<ul style="list-style-type: none"> <li>• I can recognise an error in a program and debug it so that it works.</li> <li>• I understand that algorithms (step by step instructions) will help the user to solve problems.</li> <li>• I recognise the need to test and retest whilst a program is being developed (using my prediction skills of what MIGHT work).</li> <li>• I understand that a program is built up of sequences of instructions that are in order.</li> <li>• I understand that many programs can follow more than one route (more than one thing can happen) (eg IF THEN statements).</li> <li>• I understand that repeating instructions can save time and make a program more efficient.</li> </ul>	<ul style="list-style-type: none"> <li>• I can use a range of sensing tools (eg within programs such as Scratch) to control what happens (eg based on the positions of the sprite, mouse position or inputs such as sound level).</li> <li>• I can recognise an error in a program, debug the program and explain the changes I have made.</li> <li>• I recognise the need to test and retest whilst a program is being developed.</li> <li>• I understand that repeating instructions can save time and make a program simpler (eg create a loop).</li> <li>• I understand that any system requires input devices (eg keyboard) and output devices (eg 3D printer).</li> <li>• I understand that computers can be linked together to create a network and that this can help me working with others online (collaboration).</li> </ul>	<ul style="list-style-type: none"> <li>• I can write programs to do what I want them to do. I can test and debug these</li> <li>• I can use IF, THEN, ELSE commands to control what happens (eg in Scratch).</li> <li>• I can BROADCAST information to trigger another event (eg in Scratch).</li> <li>• I understand that variables can be used to make a game more realistic (eg a timer or a score).</li> <li>• I can create or use a simulation of a real (physical) system (such as a robot, spacecraft, machine or production line).</li> <li>• I can control a physical system using a range of commands (eg robot, LEGO Wedo robot, 3D printer, CAD output device).</li> <li>• I understand that any system requires input devices (eg keyboards) and output devices (3D printer) and that the system processes the data.</li> <li>• I understand some of the ways that results are selected and put in order (ranked) when search for on the World Wide Web.</li> </ul>

<p><b>Information Technology</b></p>	<ul style="list-style-type: none"> <li>• I can complete a simple program on a computer.</li> <li>• I can interact with age-appropriate computer software.</li> <li>• I can select and use technology for particular purposes</li> </ul>	<ul style="list-style-type: none"> <li>• I can complete a simple task on a computer or tablet by following instructions.</li> <li>• I know I need to save my work.</li> <li>• I can load my digital work (with some help).</li> <li>• I can enter text in to my work.</li> <li>• I understand that you can enter numbers in to a computer (eg to create a pictogram).</li> </ul>	<ul style="list-style-type: none"> <li>• I can use technology to create a range of content (ie text based, image based, number based).</li> <li>• I can save and load (retrieve) my work on a range of devices (eg laptops and tablets).</li> <li>• I can change what is in my work and the look of my work (ie change the format).</li> <li>• I can start to organise my work (eg using file names and folders).</li> </ul>	<ul style="list-style-type: none"> <li>• I can communicate my ideas well using the right software and formats.</li> <li>• I understand that appropriate messages can be sent digitally (eg email).</li> <li>• I can use an appropriate search engine effectively (eg Kidrex to search for London landmarks).</li> <li>• I can use software to collect and present data in a way that is easy to understand.</li> <li>• I can create a presentation that is easy to understand and that is interesting.</li> </ul>	<ul style="list-style-type: none"> <li>• I can use some of the more advanced features of applications (not just change font) to present my ideas and work clearly.</li> <li>• I can combine more than one sources of information (eg text, picture, video, animation, sound) in my work.</li> <li>• I can evaluate my digital work to see if it has met the target or goal set for me.</li> <li>• I can use an appropriate search engine effectively (eg Kidrex) and judge if the information is useful to me.</li> <li>• I can use software to collect, present and analyse data appropriately (eg to make a chart).</li> <li>• I can create a presentation to convey meaning and edit it if necessary (eg on PowerPoint).</li> </ul>	<ul style="list-style-type: none"> <li>• I am aware of several different search engines and can explain some of their difference (eg Kidrex, Google, Bing)</li> <li>• I understand that my work can be saved in a range of places (the device itself, USB stick or 'in the cloud').</li> <li>• I can combine more than one source of information (eg text, picture, video, animation, sound) in my work and can present this well to other people.</li> <li>• I can use software to collect, present and analyse data appropriately. I can explain what I have done to other people.</li> <li>• I can create and edit a presentation to provide information clearly and can include hyperlinks in it (eg using PowerPoint or Keynote).</li> </ul>	<ul style="list-style-type: none"> <li>• I am aware of several different search engines and can explain some of their features.</li> <li>• I understand that my work can be saved in a range of places (the device itself, USB stick or 'in the cloud') and can talk about this.</li> <li>• I can select, use and combine a variety of software effectively (including internet services) to meet the goals I have been set.</li> <li>• I can combine several sources of information (eg text, picture, video, animation, sound) in my work to meet the goal I have been set.</li> <li>• I can use software to collect, present, analyse and evaluate data appropriately (eg using a spreadsheet and/or a database).</li> <li>• I can create and edit a presentation to convey meaning and include nonlinear hyperlinks in it (eg PowerPoint or Keynote).</li> <li>• I can present data and information in a way that is easy to understand.</li> </ul>
<p><b>Digital Literacy and e-Safety</b></p>	<ul style="list-style-type: none"> <li>• I can recognise that a range of technology is used in places such as homes and schools. To select and use technology for particular purposes.</li> </ul>	<p>I can start to understand that some work is online (internet based) and some offline.</p> <ul style="list-style-type: none"> <li>• I understand that some information is private (eg passwords) and I mustn't share it.</li> <li>• I know that I can tell a trusted adult if something worries me online.</li> </ul>	<ul style="list-style-type: none"> <li>• I can identify some common uses of technology outside of the school.</li> <li>• I understand some basic rules about how to communicate safely with other people online.</li> </ul>	<ul style="list-style-type: none"> <li>• I understand how to save and get back (retrieve) data on the school network and a hand held device such a tablet computer.</li> <li>• I understand some simple rules about how to communicate safely with other people online.</li> </ul>	<ul style="list-style-type: none"> <li>• I can identify some common uses of technology outside of school.</li> <li>• I use technology safely and respectfully considering other people's feelings.</li> </ul>	<ul style="list-style-type: none"> <li>• I can name a range of useful ways in which technology can be used outside school.</li> <li>• I understand that the World Wide Web is one way in which the internet can be used.</li> <li>• I can find some websites that are both useful and</li> </ul>	<ul style="list-style-type: none"> <li>• I understand that computer networks (including the internet) provide people with a range of services (including the World Wide Web).</li> <li>• I can name some of the ways that networks allow you to cooperate and</li> </ul>

			<ul style="list-style-type: none"> <li>• I can identify personal information that should be kept private.</li> <li>• I am beginning to understand that not all the content on web sites is true (eg spoof websites).</li> </ul>	<ul style="list-style-type: none"> <li>• I understand that the World Wide Web contains lots of web pages about different subjects.</li> <li>• I am beginning to understand that not all information on web sites is true (eg spoof websites).</li> <li>• I can identify personal information that should be kept private and not shared online.</li> <li>• I can recognise age appropriate symbols (eg for games and films) to keep me safe.</li> </ul>	<ul style="list-style-type: none"> <li>• I can identify personal information that should be kept private.</li> <li>• I know how I can get help and support if I am worried when using a computer.</li> </ul>	<p>reliable (based on the author of the site).</p> <ul style="list-style-type: none"> <li>• I can describe some of the risks of sharing too much information online.</li> <li>• I understand how I can report worries I have when using the internet.</li> </ul>	<p>collaborate with other people.</p> <ul style="list-style-type: none"> <li>• I can name some of the dangers of communicating and collaborating with others online.</li> <li>• I can describe why some World Wide Web pages are more useful and reliable than others.</li> <li>• I can describe some ways in which technology should be used safely, respectfully and responsibly.</li> <li>• I understand that it is illegal to download or copy material (without the written permission of the owner) and know about 'creative commons'.</li> <li>• I understand how I can report worries I have when using the internet. I know how to help other people if I need to.</li> </ul>
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## Vocabulary and Glossary

EYFS/KS1	Lower KS2	Upper KS2
<p><b>debug</b> – to detect and correct the errors in a computer program.</p> <p><b>digital content</b> – any media created, edited or viewed on a computer, such as text (including the hypertext of a web page), images, sound, video (including animation), or virtual environments, and combinations of these (i.e. multimedia)</p> <p><b>information</b> – the meaning or interpretation given to a set of data by its users, or which results from data being processed.</p> <p><b>internet</b> – the global collection of computer networks and their connections, all using shared protocols (TCP/IP) to communicate.</p> <p><b>logical reasoning</b> – a systematic approach to solving problems or deducing information using a set of universally applicable and totally reliable rules.</p> <p><b>program</b> – a stored set of instructions encoded in a language understood by the computer that does some form of computation, processing input and/ or stored data to generate output.</p>	<p><i>EYFS/KS1 vocabulary and...</i></p> <p><b>computer networks</b> – the computers and the connecting hardware (wifi access points, cables, fibres, switches and routers) that make it possible to transfer data using an agreed method ('protocol').</p> <p><b>control</b> – using computers to move or otherwise change 'physical' systems. The computer can be hidden inside the system or connected to it.</p> <p><b>data</b> – a structured set of numbers, representing digitised text, images, sound or video, which can be processed or transmitted by a computer</p> <p><b>input</b> – data provided to a computer system, such as via a keyboard, mouse, microphone, camera or physical sensors.</p> <p><b>output</b> – the information produced by a computer system for its user, typically on a screen, through speakers or on a printer, but possibly through the control of motors in physical systems.</p> <p><b>repetition</b> – a programming construct in which one or more instructions are repeated, perhaps a certain number of times, until a condition is satisfied or until the program is stopped.</p> <p><b>search</b> – to identify data that satisfies one or more conditions, such as web pages containing supplied keywords, or files on a computer with certain properties.</p> <p><b>selection</b> – a programming construct in which the instructions that are executed are determined by whether a particular condition is met.</p> <p><b>sequence</b> – to place programming instructions in order, with each executed one after the other.</p> <p><b>software</b> – computer programs, including both application software (such as office programs, web browsers, media editors and games) and the computer operating system. The term also applies to 'apps' running on mobile devices and to web-based services.</p> <p><b>World Wide Web</b> – a service provided by computers connected to the internet (web servers), in which pages of hypertext (web pages) are transmitted to users; the pages typically include links to other web pages and may be generated by programs automatically.</p>	<p><i>EYFS/KS1, Lower KS2 vocabulary and...</i></p> <p><b>algorithm</b> – an unambiguous procedure or precise step-by-step guide to solve a problem or achieve a particular objective.</p> <p><b>services</b> – programs running on computers, typically those connected to the internet, which provide functionality in response to requests; for example, to transmit a web page, deliver an email or allow a text, voice or video conversation.</p> <p><b>simulation</b> – using a computer to model the state and behaviour of real-world (or imaginary) systems, including physical and social systems; an integral part of most computer games.</p> <p><b>variables</b> – a way in which computer programs can store, retrieve or change simple data, such as a score, the time left, or the user's name.</p>