



## Computing

*“The computer was born to solve problems that did not exist before.”* — Bill Gates

### Intent

Computing is a unique subject that is engaging, creative and practical, which is an integral part of modern life. Technology around us is ever changing and that is why it is essential that children develop the skills to make a successful contribution to the wider world. The intent of our Computing curriculum is to provide a structured programme of study which is accessible to all students and that is rich with opportunities for a broad, deep understanding of computing and how it links to their everyday lives. At Blewbury we ensure that children have the opportunity to explore a range of quality hardware and software through a progressive computing curriculum in order to become competent, innovative and safe users of technology.

### Implementation

Our curriculum is based on the Teach Computing Curriculum, created by subject experts from the National Centre for Computing Education, using the latest pedagogical research. The computing content is organised into interconnected networks, ensuring that skills and knowledge are built on year by year and sequenced appropriately to maximise learning for all students, as well as providing opportunities for cross-curricular links.

The Teach Computing Curriculum uses the National Centre for Computing Education’s computing taxonomy to ensure comprehensive coverage of the subject. This is summarised in the following ten strands:

- Algorithms — Be able to comprehend, design, create, and evaluate algorithms
- Computer networks — Understand how networks can be used to retrieve and share information, and how they come with associated risks
- Computer systems — Understand what a computer is, and how its constituent parts function together as a whole
- Creating media — Select and create a range of media including text, images, sounds, and video
- Data and information — Understand how data is stored, organised, and used to represent real-world artefacts and scenarios
  - Design and development — Understand the activities involved in planning, creating, and evaluating computing artefacts
- Effective use of tools — Use software tools to support computing work
- Impact of technology — Understand how individuals, systems, and society as a whole interact with computer systems
- Programming — Create software to allow computers to solve problems
- Safety and security — Understand risks when using technology, and how to protect individuals and systems

Our pupils become confident in using a variety of hardware and software which leads to high-quality outcomes with a purpose. They learn how to be responsible, kind internet users and how to navigate the online world safely. This content is also reinforced through our PSHE curriculum.





## Progression across year groups and key stages




All learning objectives have been mapped to the National Centre for Computing Education's taxonomy of ten strands, which ensures that units build on each other from one key stage to the next. Within the Teach Computing Curriculum, every year group learns through units within the same four themes, combining the ten strands above. This approach allows us to use the spiral curriculum approach to progress skills and concepts from one year group to the next. The 4 themes are:

- Creating Media
- Data and Information
- Programming
- Computing Systems and Networks

## Pedagogy

Our computing lessons include a range of strategies to deliver effective lessons to our pupils. There are 12 key principles underlined by research, which have each been shown to contribute to effective teaching and learning in computing:

 <b>Lead with concepts</b> Support pupils in the acquisition of knowledge, through the use of key concepts, terms, and vocabulary, providing opportunities to build a shared and consistent understanding. Glossaries, concept maps, and displays, along with regular recall and revision, can support this approach.	 <b>Work together</b> Encourage collaboration, specifically using pair programming and peer instruction, and also structured group tasks. Working together stimulates classroom dialogue, articulation of concepts, and development of shared understanding.	 <b>Get hands-on</b> Use physical computing and making activities that offer tactile and sensory experiences to enhance learning. Combining electronics and programming with arts and crafts (especially through exploratory projects) provides pupils with a creative, engaging context to explore and apply computing concepts.
 <b>Unplug, unpack, repack</b> Teach new concepts by first unpacking complex terms and ideas, exploring these ideas in unplugged and familiar contexts, then repacking this new understanding into the original concept. This approach, called 'semantic waves', can help pupils develop a secure understanding of complex concepts.	 <b>Model everything</b> Model processes or practices – everything from debugging code to binary number conversions – using techniques such as worked examples and live coding. Modelling is particularly beneficial to novices, providing scaffolding that can be gradually taken away.	 <b>Foster program comprehension</b> Use a variety of activities to consolidate knowledge and understanding of the function and structure of programs, including debugging, tracing, and Parson's Problems. Regular comprehension activities will help secure understanding and build connections with new knowledge.
 <b>Add variety</b> Provide activities with different levels of direction, scaffolding, and support that promote learning, ranging from highly structured to more exploratory tasks. Adapting your instruction to suit different objectives will help keep all pupils engaged and encourage greater independence.	 <b>Create projects</b> Use project-based learning activities to provide pupils with the opportunity to apply and consolidate their knowledge and understanding. Design is an important, often overlooked aspect of computing. Pupils can consider how to develop an artefact for a particular user or function, and evaluate it against a set of criteria.	 <b>Make concrete</b> Bring abstract concepts to life with real-world, contextual examples, and a focus on interdependencies with other curriculum subjects. This can be achieved through the use of unplugged activities, proposing analogies, storytelling around concepts, and finding examples of the concepts in pupils' lives.

 <p><b>Challenge misconceptions</b></p> <p>Use formative questioning to uncover misconceptions and adapt teaching to address them as they occur. Awareness of common misconceptions alongside discussion, concept mapping, peer instruction, or simple quizzes can help identify areas of confusion.</p>	 <p><b>Structure lessons</b></p> <p>Use supportive frameworks when planning lessons, such as PRIMM (Predict, Run, Investigate, Modify, Make) and (Use-Modify-Create). These frameworks are based on research and ensure that differentiation can be built in at various stages of the lesson.</p>	 <p><b>Read and explore code first</b></p> <p>When teaching programming, focus first on code 'reading' activities, before code writing. With both block-based and text-based programming, encourage pupils to review and interpret blocks of code. Research has shown that being able to read, trace, and explain code augments pupils' ability to write code.</p>
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### Enhancements

We make use of computing tools to enhance our curriculum offer, as well as encourage our children to engage with the wider world and increase their cultural capital. We may make use of “virtual visits” e.g. online exhibitions produced by museums, watching a play or interactive sessions with authors. Children enjoy creating and recording performances using digital tools, using online programmes to support learning in core subjects, and may use data handling tools in science investigations.

### SEND

Computing and Information Technology tools are used at Blewbury in a range of purposeful ways to make the wider curriculum accessible to all students. This may include empowering those with communication difficulties to engage with others, using “text-to-speech” for dyslexic children to be able to access the same texts for research in history, science or geography, or making use of motivating and well-sequenced overlearning of phonics or maths facts through games and interactive programs.

### Impact

By the time our pupils leave us in Year 6, they will:

- Understand what a computer is, and how to use one effectively.
- Understand how networks can be used to retrieve and share information.
- Comprehend, analyse and evaluate algorithms.
- Analyse a problem and design algorithms in order to solve it.
- Select, adapt and create a range of media including text, images, sounds, and video.
- Understand risks when using technology, and how to protect themselves in their everyday life.
- Be responsible, competent, confident and creative users of digital technology.

### Formative assessment

Every lesson includes formative assessment opportunities for teachers to use and to ensure that misconceptions are recognised and addressed if they occur. The learning objective and success criteria are introduced in the slides at the beginning of every lesson. At the end of every lesson, pupils are invited to assess how well they feel they have met the learning objective which gives pupils a reminder of the content that has been covered, as well as a chance to reflect. It is also a chance for teachers to see how confident the class is feeling so that they can make changes to subsequent lessons accordingly.

## Summative Assessment

In KS1, teachers will observe whether pupils are able to meet the success criteria for each lesson by the end of the unit and if so, they will be judged to be working at age-related expectations. In KS2, each unit ends with either a multiple choice quiz or a rubric which highlights to teachers whether the pupil is approaching (emerging), achieving (expected), or exceeding the expectations for their age group.

## Progression of skills

### EYFS

In Early Years children are taught computing through play-based activities that are often child-led and focus on building children's listening skills, curiosity, creativity and problem solving. Children are taught how technology is used at home and school and for what purposes. Computational thinking is taught through a range of 'un-plugged' activities. Physical computing in Early Years can include; taking a photograph with a camera or tablet, playing games on the interactive whiteboard and using a Beebot. Allowing children to develop a familiarity with computing equipment and vocabulary will provide a strong foundation for Key Stage 1 computing.

Knowledge	Skills	Resources	Vocabulary	Related Barefoot unit

Wider EYFS curriculum links:

#### **Personal, Social, Emotional Development –**

- Know and talk about the different factors that support their overall health and well-being e.g., sensible amounts of 'screen time'.
- Explain the reasons for rules, know right from wrong and try to behave accordingly.
- Show perseverance and resilience in the face of a challenge.
- Be confident to try new activities and show independence, resilience, and perseverance in the face of a challenge.

#### **Physical development –**

- Develop their small motor skills so that they can use a range of tools competently, safely, and confidently.

#### **Expressive arts and design –**

- Explore, use and refine a variety of artistic effects to express their ideas and feelings.
- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

KS	Knowledge	Skills	Vocabulary	Related Teach Computing unit	Local enrichment/Significant people
1	<p><b>Computing Systems and Networks</b>  Identify technology.  Identify a computer and its main parts  Recognise the uses and features of information technology.  Explain how information technology helps  Explain how to use information technology safely.  Recognise that choices are made when using information technology</p>	<ul style="list-style-type: none"> <li>• Use a mouse in different ways</li> <li>• Use a keyboard to type on a computer</li> <li>• Use the keyboard to edit text</li> <li>• Create rules for using technology responsibly</li> <li>• Identify the uses of information technology in the school</li> <li>• Identify information technology beyond school</li> </ul>	computer information technology mouse keyboard text	Technology Around Us Information technology around us	<a href="#">Hedy Lamarr</a> <a href="#">Tim Berners-Lee</a> <a href="#">Jack Kilby</a> and <a href="#">Robert Noyce</a> <a href="#">Bill Gates</a> <a href="#">Steve Jobs</a> <a href="#">Sir Clive Sinclair</a> <a href="#">Charles Babbage</a> <a href="#">Ada Lovelace</a>  History of Science Museum, Oxford  Department of Computer Science, University of Oxford
	<p><b>Creating media</b>  Describe what different freehand tools do.  Explain choice of tools used  Compare painting a picture on a computer and on paper   Identify that the look of text can be changed on a computer  Compare typing on a computer to writing on paper   Describe what makes a good photograph  Decide how photographs can be improved  Recognise that photos can be changed  Identify that there are patterns in music  Show how music is made from a series of notes</p>	<ul style="list-style-type: none"> <li>• Use the shape tool and the line tools</li> <li>• Make careful choices when painting a digital picture</li> <li>• Use a computer on my own to paint a picture</li>  <li>• Use a computer to write</li> <li>• Add and remove text on a computer</li> <li>• Make careful choices when changing text</li>  <li>• Use a digital device to take a photograph</li> <li>• Make choices when taking a photograph</li> <li>• Use tools to change an image</li> <li>• Say how music can make us feel</li> <li>• Create music for a purpose</li> <li>• Review and refine our computer work</li> </ul>	program tool digital mouse choice type select delete upper/ lower case photograph effect music adjective rhythm pattern pitch notes Sequence	Digital painting Digital writing Digital photography Digital music	Take photographs on a local walk.  Steve Jobs  Well-known film directors and music producers e.g. Steven Spielberg, Quincy Jones, Ava DuVernay

	<p><b>Programming</b>          Explain what a given command will do.          Choose a command for a given purpose          Explain that each sprite has its own instructions          Describe a series of instructions as a sequence          Explain what happens when we change the order of instructions          Explain that programming projects can have code and artwork          Explain that a sequence of commands has a start          Explain that a sequence of commands has an outcome</p>	<ul style="list-style-type: none"> <li>Combine forwards and backwards commands to make a sequence</li> <li>Combine four direction commands to make sequences</li> <li>Plan a simple program</li> <li>Find more than one solution to a problem</li> <li>Join a series of commands together</li> <li>Identify the effect of changing a value</li> <li>Design the parts of a project</li> <li>Use my algorithm to create a program in Scratch Jr</li> <li>Use logical reasoning to predict the outcome of a program (series of commands)</li> <li>Design an algorithm for a BeeBot</li> <li>Create and debug a program that I have written</li> <li>Create a program in Scratch Jr using a given design</li> <li>Change a given design</li> <li>Create a program using my own design</li> <li>Decide how my project can be improved</li> </ul>	<p>algorithm          instruction          code          command          debug          direction          forwards          backwards          turn          left / right          program          run</p>	<p>Moving a Robot          Programming          animations          Robot algorithms          Programming quizzes</p>	<p>Alan Turing          Grace Hopper            Bletchley Park          History of Science          Museum, Oxford</p>
	<p><b>Data and information</b>          Identify that objects can be counted          Describe objects in different ways            Recognise that we can count and compare objects using tally charts          Recognise that objects can be represented as pictures          Recognise that people can be described by attributes            Explain that we can present information using a computer</p>	<ul style="list-style-type: none"> <li>Label objects</li> <li>Count objects with the same properties</li> <li>Compare groups of objects</li> <li>Answer questions about groups of objects</li> <li>Create a pictogram</li> <li>Select objects by attribute and make comparisons</li> </ul>	<p>data          information          object          count          compare          group          property          represent          tally          pictogram</p>	<p>Grouping Data          Pictograms</p>	
	<p><b>E-Safety</b>          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.</p>	<ul style="list-style-type: none"> <li>Understand they need to follow certain rules to remain safe when visiting places online.</li> <li>Begin to understand that if you create something you own it.</li> <li>Learn that many websites ask for information that is private &amp; discuss how to responsibly handle such requests.</li> <li>Explore how email can be used to communicate with real people within their schools, families &amp; communities.</li> <li>Learn that directory sites with alphabetical listings offer one way to find things on the Internet</li> <li>Stay safe online by choosing websites that are good for them to visit and not inappropriate sites.</li> <li>Explore what cyberbullying means and what to do when they encounter it.</li> <li>Know that if they put information online it leaves a digital footprint or trail and they need to manage it so it's not hurtful.</li> </ul>	<p>Rules          Safe          Online          Website          Private          Email          Appropriate          Inappropriate          Cyber-bullying          Digital footprint</p>	<p><a href="#">E-safety for schools   NSPCC Learning</a></p>	

		<ul style="list-style-type: none"> <li>• Understand that keyword searching is an effective way to locate online information and how to select online information and how to select keywords to produce the best search results.</li> <li>• Discuss criteria for rating information websites online.</li> <li>• Realise that not all websites are equally good sources of information.</li> </ul>		
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KS	Knowledge	Skills	Vocabulary	Related Teach Computing unit	Local enrichment/Significant people
LKS2	<p><b><u>Computing Systems and Networks:</u></b></p> <p>Identify input and output devices            Recognise how digital devices can change the way we work            Explain how a computer network can be used to share information            Recognise the physical components of a network            Describe how networks physically connect to other networks            Recognise how networked devices make up the internet            Recognise how the content of the WWW is created by people</p>	<ul style="list-style-type: none"> <li>• Explore how digital devices can be connected</li> <li>• Explain how digital devices function</li> <li>• Outline how websites can be shared via the World Wide Web (WWW)</li> <li>• Describe how content can be added and accessed on the World Wide Web (WWW)</li> <li>• Evaluate the consequences of unreliable content</li> </ul>	input output device digital network server switch hardware router network server switch	Connecting Computers The Internet	<p><a href="#">Hedy Lamarr</a>  <a href="#">Tim Berners-Lee</a>  <a href="#">Jack Kilby and Robert Noyce</a>  <a href="#">Bill Gates</a>  <a href="#">Steve Jobs</a>  <a href="#">Sir Clive Sinclair</a>  <a href="#">Charles Babbage</a>  <a href="#">Ada Lovelace</a></p> <p>History of Science Museum, Oxford</p> <p>Department of Computer Science, University of Oxford</p>

	<p><b>Creating media</b></p> <p>Recognise how text and images convey information</p> <p>Recognise that text and layout can be edited</p> <p>Consider the benefits of desktop publishing</p> <p>Explain that animation is a sequence of drawings or photographs</p> <p>Relate animated movement with a sequence of images</p> <p>Identify that sound can be digitally recorded</p> <p>Explain that a digital recording is stored as a file</p> <p>Explain that audio can be changed through editing</p> <p>Explain that digital images can be changed</p> <p>Describe how images can be changed for different uses</p> <p>Recognise that not all images are real</p>	<ul style="list-style-type: none"> <li>Choose appropriate page settings</li> <li>Add content to a desktop publishing publication (Microsoft Word and PowerPoint)</li> <li>Consider how different layouts can suit different purposes</li> <li>Plan an animation</li> <li>Identify the need to work consistently and carefully</li> <li>Review and improve an animation</li> <li>Evaluate the impact of adding other media to an animation</li> <li>Use a digital device to record sound</li> <li>Show that different types of audio can be combined and played together</li> <li>Evaluate editing choices made</li> <li>Change the composition of an image</li> <li>Make good choices when selecting different tools</li> <li>Evaluate how changes can improve an image</li> </ul>	<p>animate/animation sequence frame audio combine track edit recording podcast background tool composition</p>	<p>Stop-frame animation Desktop publishing Audio production Photo editing</p>	<p>Take photographs on a local walk.</p> <p>Steve Jobs</p> <p>Well-known film directors and music producers e.g. Steven Spielberg, Quincy Jones, Ava DuVernay</p>
	<p><b>Data and information</b></p> <p>Identify the object attributes needed to collect relevant data</p> <p>Explain why it is helpful for a database to be well structured</p> <p>Explain that data gathered over time can be used to answer questions</p> <p>Explain that a data logger collects 'data points' from sensors over time</p>	<ul style="list-style-type: none"> <li>Create questions with yes/no answers</li> <li>Create a branching database</li> <li>Identify objects using a branching database</li> <li>Compare the information shown in a pictogram with a branching database</li> <li>Use a digital device (data logger) to collect data automatically</li> <li>Use data collected over a long duration to find information</li> <li>Identify the data needed to answer questions</li> <li>Use collected data to answer questions</li> </ul>	<p>database object compare group property attribute classify data sensor data point log graph duration</p>	<p>Branching databases Data logging</p>	

	<p><b>Programming</b>  Identify that commands have an outcome  Explain that a program has a start  Recognise that a sequence of commands can have an order  Explain how a sprite moves in different directions  Identify that accuracy in programming is important  Explain what 'repeat' means  Explain that in programming there are infinite loops and count controlled loops</p>	<ul style="list-style-type: none"> <li>• Explore a new programming environment (Scratch)</li> <li>• Change the appearance of my project</li> <li>• Create a project from a task description</li> <li>• Create a program in Scratch to move a sprite in four directions</li> <li>• Adapt a program to a new context</li> <li>• Develop my program by adding features</li> <li>• Identify and fix bugs in a program</li> <li>• Design and create a maze-based challenge</li> <li>• Create a program in a text-based language (LOGO)</li> <li>• Modify a count-controlled loop to produce a given outcome</li> <li>• Decompose a task into small steps</li> <li>• Create a program that uses count-controlled loops to produce a given outcome</li> <li>• Develop the use of count-controlled loops in a different programming environment</li> <li>• Develop a design that includes two or more loops which run at the same time</li> <li>• Modify an infinite loop in a given program</li> <li>• Design and create a project that includes repetition</li> </ul>	command control sequence note algorithm code debug program run loop count repeat sequence count-controlled infinite decomposition	Sequencing sounds Events and actions in programming. Repetition in shapes Repetition in games	Alan Turing Grace Hopper  Bletchley Park History of Science Museum, Oxford
	<p><b>E-Safety</b>  Use technology safely and respectfully, keeping personal information private, identity where to go for help and support when they have concerns about content or contact on the internet or other online technologies.</p>	<ul style="list-style-type: none"> <li>• Agree sensible e-safety rules for the classroom</li> <li>• Choose a secure password for age-appropriate websites</li> <li>• Discuss what actions could be taken if they are uncomfortable or upset online e.g. Report Abuse button</li> <li>• Talk about what games they enjoying playing and what good choices are when playing games e.g. content, screen time</li> <li>• Use a class blog to share information and talk about who can see it, and how to communicate safely and respectfully</li> </ul>	Appropriate Inappropriate Cyber-bullying Digital footprint Website Safe Online Age-appropriate Screen time.	<a href="#">E-safety for schools   NSPCC Learning</a>  These objectives should be taught through the curriculum and not discreetly. There does not need to be evidence collated for them, but by the end of the year, children should be able to talk confidently about their understanding of the different areas of online safety if questioned.	

KS	Knowledge	Skills	Vocabulary	Related Teach Computing unit	Local enrichment/Significant people
UKS2	<p><b>Computer systems and networks</b></p> <p>Explain that computers can be connected together to form systems</p> <p>Recognise the role of computer systems in our lives</p> <p>Recognise how information is transferred over the internet</p> <p>Explain how sharing information online lets people in different places work together</p> <p>Identify how to use a search engine</p> <p>Describe how search engines select results</p> <p>Explain how search results are ranked</p> <p>Recognise why the order of results is important, and to whom</p> <p>Recognise how we communicate using technology</p>	<ul style="list-style-type: none"> <li>• Contribute to a shared project online</li> <li>• Evaluate different ways of working together online</li> <li>• Evaluate different methods of online communication</li> </ul>	<p>device</p> <p>digital</p> <p>network</p> <p>server</p> <p>switch</p> <p>hardware</p> <p>router</p> <p>data</p> <p>packet</p> <p>public/private</p> <p>search engine</p> <p>web crawler</p> <p>index</p> <p>rank</p> <p>relevance</p>	<p>Systems and searching</p> <p>Communication and collaboration</p>	<p><a href="#">Hedy Lamarr</a></p> <p><a href="#">Tim Berners-Lee</a></p> <p><a href="#">Jack Kilby and Robert Noyce</a></p> <p><a href="#">Bill Gates</a></p> <p><a href="#">Steve Jobs</a></p> <p><a href="#">Sir Clive Sinclair</a></p> <p><a href="#">Charles Babbage</a></p> <p><a href="#">Ada Lovelace</a></p> <p>History of Science Museum, Oxford</p> <p>Department of Computer Science, University of Oxford</p>

<p><b>Creating media</b>          Explain what makes a video effective          Identify digital devices that can record video          Identify that video can be improved through reshooting and editing.</p> <p>Identify that drawing tools can be used to produce different outcomes.          Recognise that vector drawings consist of layers.</p> <p>Review an existing website and consider its structure          Recognise the need to preview pages          To outline the need for a navigation path          Recognise the implications of linking to content owned by other people</p> <p>Compare working digitally with 2D and 3D graphics          Identify that physical objects can be broken down into a collection of 3D shapes</p>	<ul style="list-style-type: none"> <li>• Capture video using a range of techniques</li> <li>• Create a storyboard</li> <li>• Consider the impact of the choices made when making and sharing a video</li> <li>• Create a vector drawing by combining shapes</li> <li>• Use tools to achieve a desired effect</li> <li>• Group objects to make them easier to work with</li> <li>• To evaluate my vector drawing</li> <li>• Plan the features of a web page</li> <li>• Consider the ownership and use of images (copyright)</li> <li>• Use a computer to create and manipulate three-dimensional (3D) digital objects</li> <li>• Construct a digital 3D model of a physical object</li> <li>• Design a digital model by combining 3D objects</li> <li>• Develop and improve a digital 3D model</li> </ul>	<p>store          retrieve          export          storyboard          edit          camera angle          vector          duplicate          rotate          alignment          layer          group          media          HTML          feature          layout          copyright          fair-use          preview          navigation path          hyperlink          select          model          resize          position</p>	<p>Video production          Introduction to vector graphics          Webpage creation          3D modelling</p>	<p>Take photographs on a local walk.</p> <p>Steve Jobs</p> <p>Well-known film directors and music producers e.g. Steven Spielberg, Quincy Jones, Ava DuVernay</p>
<p><b>Data information</b>          Compare paper and computer-based databases          Outline how grouping and then sorting data allows us to answer questions          Explain that tools can be used to select specific data          Explain that computer programs can be used to compare data visually          Identify questions which can be answered using data          Explain that objects can be described using data          Explain that formulas can be used to produce calculated data</p>	<ul style="list-style-type: none"> <li>• Use a form to record information</li> <li>• Apply my knowledge of a database to ask and answer real-world questions</li> <li>• Apply formulae to data, including duplicating</li> <li>• Create a spreadsheet to plan an event</li> <li>• Choose suitable ways to present data</li> </ul>	<p>form          field          record          sort          question          value          selection          filter          data          spreadsheet          cell          format          calculation          formula          input/output          duplicate</p>	<p>Flat-file databases          Introduction to spreadsheets</p>	

	<p><b>Programming</b>          Explain that a loop can stop when a condition is met          Explain that a loop can be used to repeatedly check whether a condition has been met          Explain how selection is used in computer programs          Relate that a conditional statement connects a condition to an outcome          Explain how selection directs the flow of a program          Define a 'variable' as something that is changeable          Explain why a variable is used in a program          Explain that selection can control the flow of a program</p>	<ul style="list-style-type: none"> <li>Control a simple circuit connected to a computer</li> <li>Write a program that includes count-controlled loops</li> <li>Design a physical project that includes selection</li> <li>Create a program that controls a physical computing project using a Crumble.</li> <li>Design a program which uses selection</li> <li>Create a program which uses selection</li> <li>To evaluate my program</li> <li>Choose how to improve a game by using variables</li> <li>Design a project that builds on a given example</li> <li>Use my design to create a project</li> <li>To evaluate my project</li> <li>Create a program to run on a controllable device (Micro:Bit)</li> <li>Update a variable with a user input</li> <li>Use a conditional statement to compare a variable to a value</li> <li>Design a project that uses inputs and outputs on a controllable device</li> <li>Develop a program to use inputs and outputs on a controllable device</li> </ul>	<p>circuit          count-controlled loop          input          output          condition          conditional loop          statement          flow          algorithm          debug          infinite loop          setup code          variable          placeholder          memory          value          emulator          selection          physical input          sensor          operand</p>	<p>Selection in physical computing          Selection in quizzes          Variables in games          Sensing</p>	<p>Grace Hopper          Alan Turing            Bletchley Park          History of Science          Museum, Oxford</p>
	<p><b>E-Safety</b>          Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour, identify a range of ways to reports concerns about content and contact.          .</p>	<ul style="list-style-type: none"> <li>Agree sensible e-safety rules for the classroom</li> <li>Discuss their own personal use of the Internet and choices they make              Discuss how to protect devices from virus threats</li> <li>Discuss the importance of keeping an adult informed about what you're doing online, and how to report concerns</li> <li>Explore using the safe and responsible use of online communication tools e.g. blogs, messaging.</li> </ul>	<p>Appropriate          Inappropriate          Cyber-bullying          Digital footprint          Website          Safe          Online          Age-appropriate          Screen time.</p>	<p><a href="#">E-safety for schools   NSPCC Learning</a></p> <p>These objectives should be taught through the curriculum and not discreetly. There does not need to be evidence collated for them, but by the end of the year, children should be able to talk confidently about their understanding of the different areas of online safety if questioned.</p>	