

## Building Computing Skills

### Taken from the Sheffield Primary Computing Progression based on - Teach Computing Curriculum

This framework is mapped to the progression of units in the Teach Computing Curriculum from the National Centre for Computing Education: <https://teachcomputing.org/curriculum>

Statements starting with - indicate declarative knowledge Statements starting with > indicate procedural knowledge

Computing Systems and Networks						
EYFS	Y1	Y2	Y3	Y4	Y5	Y6
<ul style="list-style-type: none"> <li>&gt; Use different digital devices.</li> <li>- Recognise that you can access content on a digital device.</li> <li>&gt; Use a mouse, touchscreen or appropriate access device to target and select options on screen.</li> <li>- Recognise a selection of digital devices.</li> <li>- Recognise and begin to name the basic parts of a computer, e.g. mouse, screen, keyboard</li> <li>- Select a digital device to fulfil a specific task, e.g. to take a photo.</li> <li>- Are aware that some online content is inappropriate.</li> <li>- Are aware that information can be public or private.</li> <li>- Know to tell an appropriate adult if they see something on</li> </ul>	<ul style="list-style-type: none"> <li>- Explain that technology is something that helps us</li> <li>- Recognise a range of digital devices.</li> <li>- Name a range of digital devices, e.g. laptop, phone, games console.</li> <li>&gt; Log on to the school computer / unlock the school tablet with support.</li> <li>- Identify the main parts of a computer, e.g. mouse, keyboard, screen.</li> <li>&gt; Use a suitable access device (mouse, keyboard, touchscreen) to control an activity on a computer.</li> <li>&gt; Open key applications independently.</li> <li>&gt; Save and open files with support.</li> <li>&gt; Use the keyboard to type and edit text.</li> <li>- Explain why we use passwords.</li> <li>- Identify rules to keep</li> </ul>	<ul style="list-style-type: none"> <li>- Recognise examples of information technology.</li> <li>- Recognise that a range of digital devices contain computers, e.g. phone, games console, smart speaker.</li> <li>- Explain what the basic parts of a computer are used for e.g. mouse, keyboard</li> <li>&gt; Open key applications independently.</li> <li>&gt; Save and open files to/from a given folder.</li> <li>&gt; Move and resize an image in a document.</li> <li>- Explain that information technology is a computer or something that works with a computer.</li> <li>- Talk about uses of information technology in the real world.</li> <li>- Remember a simple</li> </ul>	<ul style="list-style-type: none"> <li>- Describe what a computer is (input &gt; process &gt; output).</li> <li>- Explain the difference between input and output devices on a computer.</li> <li>- Know where to save and open files (e.g. in shared folder).</li> <li>&gt; Save files with appropriate names.</li> <li>&gt; Use a keyboard effectively to type in text.</li> <li>&gt; Use left-, right- and double-click on the mouse.</li> <li>&gt; Use a search engine to find simple information.</li> <li>- Recognise that school computers are connected.</li> <li>- Identify the parts of a network, including switch, server and wireless access point.</li> </ul>	<ul style="list-style-type: none"> <li>- Recognise that you can organise files using folders.</li> <li>&gt; Know how to copy and paste text or images in a document.</li> <li>&gt; Use a search engine to find specific information.</li> <li>- Describe the different parts of a network.</li> <li>- Recognise that the Internet is a network of computers and other digital devices connected together all around the world.</li> <li>- Know that you use a web browser to access information stored on the internet.</li> <li>- Recognise that the World Wide Web is the part of the internet that contains websites and web pages.</li> <li>- Recognise that</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Type using fingers on both hands.</li> <li>&gt; Use common keyboard shortcuts, e.g. ctrl C (copy), ctrl V (paste).</li> <li>- Explain what makes a strong password.</li> <li>&gt; Use folders to organise files.</li> <li>- Recognise the elements of a computer system</li> <li>- Recognise that there is more than one search engine, and they may produce different results.</li> <li>&gt; Use a search engine effectively to find information and images.</li> <li>- Recognise how search engines select results.</li> <li>- Explain the factors that affect how webpages are ranked by</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Type efficiently using both hands.</li> <li>&gt; Organise files effectively using folders and files names.</li> <li>&gt; Use the advanced search tools when using a search engine to find specific information and images.</li> <li>- Explain the basic function of an operating system.</li> <li>- Recognise how data is transferred across the Internet in packets.</li> <li>- Identify different ways of communicating and sharing information online.</li> <li>- Explain that devices connected to the Internet have unique addresses called IP addresses.</li> <li>- Explain what makes a strong password and why this is important at school and in the</li> </ul>

the computer that upsets them.	safe and healthy when using technology - Know who to tell if concerned about content or contact online. - Talk about their use of technology at home	password to log onto the computer or a website. - Identify rules for acceptable use of technology in school.	- Explain why we need to keep our password safe	websites are created by people. - Recognise what kinds of websites are trustworthy sources of information. > Remember and use an individual password.	search engines. - Critically evaluate websites for reliability of information. > Demonstrate responsible use of an online services and know a range of ways to report concerns.	wider world. - Explain how algorithms are used to track online activities with a view to targeting advertising and information. - Recognise that communication on the Internet may not be private.
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Creating Media						
EYFS	Y1	Y2	Y3	Y4	Y5	Y6
<ul style="list-style-type: none"> <li>&gt; Use technology to explore and access digital content.</li> <li>&gt; Operate a digital device with support to fulfil a task.</li> <li>&gt; Create simple digital content, e.g. digital art.</li> <li>&gt; Choose media to convey information, e.g. image for a poster.</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Create simple digital content, e.g. digital art.</li> <li>&gt; Select basic tools/options to change the appearance of digital content, e.g. filter on an image / font / size of paintbrush.</li> <li>- Recognise that you can edit digital content to change its appearance.</li> <li>&gt; Choose appropriate tools to change the appearance of digital content for a purpose</li> <li>- Recognise the difference between creating content on a</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Create simple digital content for a purpose, e.g. digital music.</li> <li>- Recognise that we can use technology in different ways, e.g. to make music or take and view photographs.</li> <li>&gt; Apply edits to digital content to achieve a particular effect, e.g. add a filter to a photo.</li> <li>&gt; Present ideas and information by combining media, e.g. text and images.</li> <li>- Explain how content has been improved.</li> <li>- Describe the features of a good</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Present ideas and information by combining media independently, e.g. text and images.</li> <li>&gt; Design and create simple digital content for a purpose/audience, e.g. poster.</li> <li>&gt; Edit digital content to improve it, e.g. resize text.</li> <li>- Identify the features of a good piece of digital content.</li> <li>- Explain why we use technology to create digital content.</li> <li>- Identify use of desktop publishing in the real world.</li> <li>- Recognise why we use different types of media to</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Plan out and create digital content for a specific purpose, e.g. podcast.</li> <li>&gt; Edit digital content to improve it according to feedback.</li> <li>- Identify the features of a good piece of digital content and apply these in own design.</li> <li>- Explain the benefits of using technology to present information.</li> <li>- Know where to find copyrightfree content, e.g. creative commons images.</li> <li>&gt; Combine digital media for a purpose, e.g. layer up recorded</li> </ul>	<ul style="list-style-type: none"> <li>- Identify and use appropriate hardware and software to fulfil a specific task.</li> <li>&gt; Consider the audience when designing and creating digital content.</li> <li>&gt; Combine media and effects effectively to create complex digital artefacts.</li> <li>- Identify success criteria for creating digital content for a given purpose and audience.</li> <li>&gt; Evaluate their own content against success criteria and make improvements accordingly.</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Select, combine and remix a range of media to create original content.</li> <li>- Recognise the benefits of using a computer to create 3D designs.</li> <li>&gt; Consider all steps of the design process when creating content (e.g. identify problem, plan, create, evaluate, share.)</li> <li>- Identify the most effective tools to present information for a specific purpose.</li> <li>- Explain the benefits of using technology to collaborate with</li> </ul>

	<p>computer and on paper.</p> <ul style="list-style-type: none"> <li>- Recognise that digital content belongs to the person who created it.</li> </ul>	<p>piece of content, e.g. a photo.</p> <ul style="list-style-type: none"> <li>- Recognise that we can use different types of media to convey information, e.g. text, image, audio, video.</li> <li>- Recognise what personal information is and the need to keep it private.</li> <li>- Recognise that images can be changed.</li> </ul>	<p>convey information, e.g. text, image, audio, video.</p> <ul style="list-style-type: none"> <li>- Recognise that digital content belongs to the person who first created it, but we can give permission for others to use it.</li> </ul>	<p>audio and music, add text to images.</p> <ul style="list-style-type: none"> <li>- Explain that an image can be altered and what this might mean for the images they see around them.</li> <li>- Recognise that the media can portray groups of people differently.</li> </ul>	<ul style="list-style-type: none"> <li>- Know where to find copyright free images and audio, and why this is important.</li> </ul>	<p>others.</p> <ul style="list-style-type: none"> <li>- Recognise common features of web pages.</li> <li>&gt; Evaluate existing digital content in terms of effectiveness, design and user experience.</li> <li>- Know where to find copyright free images and audio, and how to credit the creator if required.</li> </ul>
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Data and Information						
EYFS	Y1	Y2	Y3	Y4	Y5	Y6
<ul style="list-style-type: none"> <li>&gt; Access content in a range of formats, e.g. image, video, audio.</li> <li>&gt; Answer basic questions about information displayed in images e.g. more or less.</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Identify an appropriate label for a group of objects.</li> <li>- Recognise that we can label and group objects according to their properties.</li> <li>- Recognise that computers require input from humans to perform tasks.</li> <li>&gt; Group similar objects according to a given property.</li> <li>- Make choices about how to group objects.</li> <li>&gt; Answer questions about groups</li> </ul>	<ul style="list-style-type: none"> <li>- Recognise different forms of digital content, i.e. text, image, video and audio.</li> <li>&gt; Collect simple data (e.g. likes/dislikes) on a topic.</li> <li>&gt; Present simple data using images, e.g. number of animals.</li> <li>- Recognise charts and pictograms and why we use them.</li> <li>&gt; Explain information shown in a simple chart or pictogram.</li> <li>&gt; Modify simple charts</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Identify suitable attributes to separate objects into groups.</li> <li>- Recognise charts, pictograms and branching databases, and why we use them.</li> <li>&gt; Identify an object using a branching database</li> <li>&gt; Recognise an error in a branching database.</li> <li>&gt; Create a branching database using pre-prepared images and questions</li> <li>- Identify the features of</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Draw conclusions from information stored in a database, chart or table.</li> <li>- Recognise that we can use computers to collect data over time.</li> <li>- Recognise that sensors are used to capture data from the real world.</li> <li>&gt; Choose a question and collect data to answer it..</li> <li>&gt; Choose appropriate formats to present data in order to</li> </ul>	<ul style="list-style-type: none"> <li>- Recognise charts, pictograms and databases, and why we use them.</li> <li>&gt; Present information using a suitable chart</li> <li>&gt; Explore a record card database to find out information.</li> <li>- Name the key parts of a database, e.g. record, field, search.</li> <li>&gt; Answer questions about information stored in a database.</li> <li>&gt; Use advanced search techniques in a database to find out specific</li> </ul>	<ul style="list-style-type: none"> <li>- Recognise what a spreadsheet is and what it is used for.</li> <li>&gt; Use simple formulae in a spreadsheet to find out information from a set of data.</li> <li>- Recognise different data types (e.g. numbers, words) and why this is important.</li> <li>&gt; Collect data for a purpose and plan out a spreadsheet to present it effectively, using relevant formulae.</li> <li>&gt; Produce graphs from</li> </ul>

	<p>of objects.</p> <ul style="list-style-type: none"> <li>- Recognise examples of personal information e.g. name, image.</li> </ul>	<p>or pictograms, e.g. add title, item or labels.</p> <ul style="list-style-type: none"> <li>- Identify the key features of a chart or pictogram.</li> <li>&gt; Collect data on a topic (eye colour, pets etc.) and present in a pictogram or chart.</li> </ul>	<p>a good question in a branching database.</p> <ul style="list-style-type: none"> <li>&gt; Independently plan out and create a branching database.</li> <li>&gt; Evaluate a given branching database and suggest improvements.</li> <li>- Compare different ways of presenting data.</li> <li>- Recognise when to share personal information and when not to.</li> </ul>	<p>convey information.</p> <ul style="list-style-type: none"> <li>- Explain the benefits of using a data logger.</li> </ul>	<p>information.</p> <ul style="list-style-type: none"> <li>- Name some benefits of using a computer to create charts and databases.</li> <li>&gt; Use a database to find out specific information and present findings.</li> </ul>	<p>data in a spreadsheet to answer a question.</p> <ul style="list-style-type: none"> <li>&gt; Analyse and evaluate data and information in a spreadsheet, chart or database.</li> <li>- Recognise that poor quality data leads to unreliable results.</li> </ul>
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Programming and Progression						
EYFS	Y1	Y2	Y3	Y4	Y5	Y6
<ul style="list-style-type: none"> <li>&gt; Explore technology.</li> <li>&gt; Repeat an action with technology to trigger a specific outcome.</li> <li>- Recognise the success or failure of an action.</li> <li>&gt; Follow simple instructions to control a digital device.</li> <li>- Recognise that we control computers.</li> <li>&gt; Input a short sequence of instructions to control a device.</li> </ul>	<ul style="list-style-type: none"> <li>- Recognise that we control computers by giving them instructions.</li> <li>&gt; Input a simple program e.g. to control a floor robot.</li> <li>&gt; Predict the outcome of a simple algorithm or program.</li> <li>&gt; Plan out a simple program to control a floor robot or sprite on a screen.</li> <li>&gt; Debug an error in a simple</li> </ul>	<ul style="list-style-type: none"> <li>- Explain that computers have no intelligence and we have to program them to do things.</li> <li>&gt; Create a program with multiple steps e.g. to control a floor robot.</li> <li>&gt; Predict the outcome of an algorithm or program with multiple steps.</li> <li>&gt; Identify and correct errors in a given algorithm or program, and</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Predict the outcome of a block or textbased program (Scratch/Logo).</li> <li>&gt; Successfully modify an existing program, e.g. change background, number of times things happen.</li> <li>- Explain what a sequence is.</li> <li>- Recognise that different inputs (events) can be used to start a program.</li> <li>&gt; Create a program using a range of events/inputs to control</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Identify repeated steps in a program or algorithm.</li> <li>&gt; Create examples of algorithms containing count-controlled loops.</li> <li>&gt; Use a count-controlled loop (e.g. repeat 3 times) to make a program more efficient.</li> <li>- Recognise a forever loop in a program or algorithm.</li> <li>&gt; Use a forever loop in a program to keep something</li> </ul>	<ul style="list-style-type: none"> <li>- Recognise a range of input and output devices in a physical system, including sensors.</li> <li>- Recognise selection in a program or algorithm.</li> <li>&gt; Use simple selection in algorithms and programs to change what happens depending on if a condition is met, e.g. if...then...</li> <li>&gt; Design a program for a purpose.</li> <li>Decompose into parts</li> </ul>	<ul style="list-style-type: none"> <li>- Recognise variables in a program and what they do.</li> <li>&gt; Create and use simple variables, e.g. to keep score.</li> <li>- Explain why we use variables in programs.</li> <li>- Recognise that a variable has a name and a value.</li> <li>- Explain common errors in programs and how to fix them.</li> <li>&gt; Design and program a physical</li> </ul>

	<p>algorithm or program.</p> <ul style="list-style-type: none"> <li>&gt; Create a simple algorithm.</li> <li>- Recognise that an algorithm is a precise set of ordered instructions which can be turned into code.</li> <li>- Explain that we can use algorithms to plan out our programs.</li> <li>&gt; Make decisions about the design of a program.</li> </ul>	<p>recognise the term debugging.</p> <ul style="list-style-type: none"> <li>- Recognise that there may be more than one solution to a problem.</li> <li>- Recognise that the order of instructions in a sequence is important.</li> <li>- Explain what an algorithm is, and that when inputted on a computer it is called a program.</li> <li>&gt; Plan out a program by creating an algorithm and evaluate its success.</li> </ul>	<p>what happens</p> <ul style="list-style-type: none"> <li>&gt; Identify errors in a block or text-based program and correct them.</li> <li>- Recognise that we can create an algorithm to help plan out a program.</li> <li>- Recognise that we need to test out programs to check that they work.</li> <li>&gt; Make choices about the design of a program and implement them,</li> </ul>	<p>happening.</p> <ul style="list-style-type: none"> <li>- Recognise that we can decompose projects to make them easier to plan and debug.</li> <li>- Explain when to use forever loops and count-controlled loops, and use them effectively in programs.</li> <li>- Recognise common mistakes in programs and how to correct them.</li> <li>&gt; Design, implement code, test and debug a program.</li> </ul>	<p>and create an algorithm for each part.</p> <ul style="list-style-type: none"> <li>- Explain why we use selection, and use two-way selection in programs and algorithms, i.e. if...then...else...</li> <li>- Recognise that different solutions may exist for the same problem.</li> <li>&gt; Predict what will happen in a program or algorithm when the input changes (e.g. sensor, data or event).</li> <li>&gt; Evaluate a program and make improvements accordingly.</li> </ul>	<p>computing system that uses sensors.</p> <ul style="list-style-type: none"> <li>&gt; Plan out a program in detail, including task, algorithm, code and execution level.</li> <li>- Name a range of sensors in physical systems.</li> <li>- Recognise key concepts (sequence, selection, repetition and variables) in a range of languages and contexts, and how these influence the flow of a program.</li> </ul>
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