

# Sheffield Primary Computing Progression Framework



Sheffield ILS eLearning Service

Improving outcomes . Embracing technology



The statements are loosely based on two documents, with additional elements relating directly to the content of the [Sheffield Scheme of Work](#):

- The [Revised P Scales for Computing](#) by Elliott, Galloway, Medhurst & Paveley – an attempt by educators across the country to create a set of P Scales statements that better reflect the Computing programs of study. This is reflected in the Foundation statements.
- The [Computing Progression Pathways](#) document by Mark Dorling & Matthew Walker © 2014, showing progress for pupils working at KS1 and above.

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Sheffield eLearning Service 2020 [with reference to the [Computing Progression Pathways](#) doc. by Mark Dorling & Matthew Walker © 2014]

## Foundation (NB above and beyond Early Learning Goals – can be used to assess pupils working below age expectations in KS1)

What is a Computer? Key Skills	Presenting Information & Multimedia	Data	Programming & Algorithms
<ul style="list-style-type: none"> <li>- Use different digital devices.</li> <li>- Recognise that you can access content on a digital device.</li> <li>- 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 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> </ul>	<ul style="list-style-type: none"> <li>- Use technology to explore and access digital content.</li> <li>- Operate a digital device with support to fulfil a task.</li> <li>- Create simple digital content, e.g. digital art.</li> <li>- Choose media to convey information, e.g. image for a poster.</li> </ul>	<ul style="list-style-type: none"> <li>- Access content in a range of formats, e.g. image, video, audio.</li> <li>- Answer basic questions about information displayed in images e.g. more or less.</li> </ul>	<ul style="list-style-type: none"> <li>- Explore technology.</li> <li>- Repeat an action with technology to trigger a specific outcome.</li> <li>- Recognise the success or failure of an action.</li> <li>- Follow simple instructions to control a digital device.</li> <li>- Recognise that we control computers.</li> <li>- Input a short sequence of instructions to control a device.</li> </ul>

Digital Literacy	
<ul style="list-style-type: none"> <li>- Are aware that some online content is inappropriate.</li> <li>- Are aware that information can be public or private.</li> </ul>	<ul style="list-style-type: none"> <li>- Know to tell an appropriate adult if they see something on the computer that upsets them.</li> </ul>

# Year 1

What is a Computer? Key Skills	Presenting Information & Multimedia	Data	Programming & Algorithms
<ul style="list-style-type: none"> <li>- Recognise a range of digital devices.</li> <li>- Select a digital device to fulfil a specific task, e.g. to take a photo.</li> <li>- Name a range of digital devices, e.g. laptop, phone, games console.</li> <li>- Log on to the school computer / unlock the school tablet with support.</li> <li>- Identify the basic parts of a computer, e.g. mouse, keyboard, screen.</li> <li>- Use a suitable access device (mouse, keyboard, touchscreen, switch) to access and control an activity on a computer.</li> <li>- Open key applications independently.</li> <li>- Save and open files with support.</li> <li>- Add an image to a document from a given folder/source with support.</li> </ul>	<ul style="list-style-type: none"> <li>- Create digital content, e.g. digital art.</li> <li>- Choose media from a selection (e.g. images, video, sound) to present information on a topic.</li> <li>- Recognise that you can find out information from a website.</li> <li>- Recognise that you can edit digital content to change its appearance.</li> <li>- Select basic tools/options to change the appearance of digital content, e.g. filter on an image / font / size of paintbrush.</li> <li>- Combine media with support to present information, e.g. text and images.</li> </ul>	<ul style="list-style-type: none"> <li>- Recognise different forms of digital content, i.e. text, image, video and audio.</li> <li>- Collect simple data (e.g. likes/dislikes) on a topic.</li> <li>- Present simple data using images, e.g. number of animals.</li> <li>- Recognise charts and pictograms and why we use them.</li> <li>- Explain information shown in a simple chart or pictogram.</li> <li>- Modify simple charts/pictograms, e.g. add title, item or labels.</li> <li>- Identify the key features of a chart or pictogram.</li> <li>- Collect data on a topic (eye colour, pets etc.) and present in a pictogram or chart.</li> </ul>	<ul style="list-style-type: none"> <li>- Recognise that computers don't have a brain.</li> <li>- Explain that we control computers by giving them instructions.</li> <li>- Create a simple program e.g. to control a floor robot.</li> <li>- Create a simple algorithm.</li> <li>- Predict the outcome of a simple algorithm or program.</li> <li>- Explain what an algorithm is – a sequence of instructions to make something happen.</li> <li>- Recognise that the order of instructions in an algorithm is important.</li> <li>- Debug an error in a simple algorithm or program e.g. for a floor robot.</li> </ul>

Digital Literacy	
<ul style="list-style-type: none"> <li>- Use a simple password when logging on, where relevant.</li> <li>- Explain why we use passwords.</li> <li>- Recognise examples of personal information e.g. name, image.</li> </ul>	<ul style="list-style-type: none"> <li>- Know who to tell if concerned about content or contact online.</li> <li>- Recognise that digital content belongs to the person who created it.</li> <li>- Talk about their use of technology at home.</li> </ul>



## Year 2

What is a Computer? Key Skills	Presenting Information & Multimedia	Data	Programming & Algorithms
<ul style="list-style-type: none"> <li>- Recognise what a computer is (input &gt; process &gt; output).</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.</li> <li>- Identify and use input devices, e.g. mouse, keyboard; and output devices, e.g. speakers, screen.</li> <li>- Open key applications independently.</li> <li>- Save and open files to/from a given folder.</li> <li>- Add an image to a document from a given folder/source.</li> <li>- Resize an image in a document.</li> <li>- Highlight text and use arrow keys.</li> <li>- Capture media independently (e.g. take photos, record audio).</li> </ul>	<ul style="list-style-type: none"> <li>- Create simple digital content for a purpose, e.g. digital art.</li> <li>- Recognise that we can use technology to record and playback audio or take and view photographs.</li> <li>- Apply edits to digital content to achieve a particular effect, e.g. emphasise part of a text.</li> <li>- Present ideas and information by combining media, e.g. text and images.</li> <li>- Explain that you can search for information on the internet.</li> <li>- Plan out digital content, e.g. a simple sketch or storyboard.</li> <li>- Identify the common features of digital content, e.g. title, images.</li> <li>- Recognise that we can use different types of media to convey information, e.g. text, image, audio, video.</li> </ul>	<ul style="list-style-type: none"> <li>- Identify different forms of digital content, i.e. text, image, video and audio.</li> <li>- Recognise charts, pictograms and branching databases, and why we use them.</li> <li>- Identify an object using a branching database</li> <li>- Recognise an error in a branching database.</li> <li>- Create a branching database using pre-prepared images and questions</li> <li>- Identify the features of a good question in a branching database.</li> <li>- Independently plan out and create a branching database.</li> <li>- Evaluate a given branching database and suggest improvements.</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>- Create a program with multiple steps e.g. to control a floor robot.</li> <li>- Predict the outcome of an algorithm or program with multiple steps.</li> <li>- Recognise that the instructions in an algorithm need to be clear and unambiguous.</li> <li>- Identify and correct errors in a given algorithm or program, and recognise the term debugging.</li> <li>- Explain what an algorithm is, and that when inputted on a computer it is called a program.</li> <li>- Plan out a program by creating an algorithm, and evaluate its success.</li> </ul>

Digital Literacy	
<ul style="list-style-type: none"> <li>- Remember a simple password to log onto the computer or a website.</li> <li>- Identify rules for acceptable use of technology in school.</li> <li>- Recognise what personal information is and the need to keep it private.</li> </ul>	<ul style="list-style-type: none"> <li>- Recognise that spending a lot of time in front of a screen can be unhealthy.</li> <li>- Recognise that some information found online may not be true.</li> </ul>



## Year 3

What is a Computer? Key Skills	Presenting Information & Multimedia	Data	Programming & Algorithms
<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>- Save files with appropriate names.</li> <li>- Use a keyboard effectively to type in text.</li> <li>- Use left-, right- and double-click on the mouse.</li> <li>- Add an image to a document from the internet.</li> <li>- Resize and move an image in a document.</li> <li>- Use a search engine to find simple information.</li> <li>- Recognise that school computers are connected.</li> </ul>	<ul style="list-style-type: none"> <li>- Present ideas and information by combining media independently, e.g. text and images.</li> <li>- Design and create simple digital content for a purpose/audience, e.g. poster.</li> <li>- 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>- Recognise why we use different types of media to convey information, e.g. text, image, audio, video.</li> </ul>	<ul style="list-style-type: none"> <li>- Recognise charts, pictograms and databases, and why we use them.</li> <li>- Present information using a suitable chart</li> <li>- Explore a record card database to find out information.</li> <li>- Use filters in a database to find out specific information.</li> <li>- Name the key parts of a database, e.g. record, field, search.</li> <li>- Answer questions about information in a database.</li> <li>- Name some benefits of using a computer to create charts and databases.</li> <li>- Recognise that search engines store information in databases.</li> </ul>	<ul style="list-style-type: none"> <li>- Predict the outcome of a block or text-based program (Scratch/Logo).</li> <li>- Successfully modify an existing program, e.g. change background, number of times things happen.</li> <li>- Identify repeated steps in a program or algorithm.</li> <li>- Create examples of algorithms containing count-controlled loops.</li> <li>- Use a count-controlled loop (e.g. repeat 3 times) to make a program more efficient.</li> <li>- Recognise that we can create an algorithm to help plan out a program.</li> <li>- Recognise a forever loop in a program or algorithm.</li> <li>- Use a forever loop in a program to keep something happening.</li> <li>- Identify errors in a block or text-based program and correct them.</li> <li>- Recognise that different inputs can be used to control a program.</li> </ul>

### Digital Literacy

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| <ul style="list-style-type: none"> <li>- Explain why we need to keep our password safe.</li> <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> | <ul style="list-style-type: none"> <li>- Recognise when to share personal information and when not to.</li> <li>- Recognise that some people lie about who they are online.</li> <li>- Are aware that games and films have age ratings.</li> </ul> |
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# Year 4

What is a Computer? Key Skills	Presenting Information & Multimedia	Data	Programming & Algorithms
<ul style="list-style-type: none"> <li>- Recognise that you can organise files using folders.</li> <li>- Explain what a good file name would look like.</li> <li>- Delete and move files.</li> <li>- Use key parts of a keyboard effectively, e.g. shift, arrow keys, delete).</li> <li>- Know how to copy and paste text or images in a document.</li> <li>- Crop an image and apply simple filters.</li> <li>- Use a search engine to find specific information.</li> <li>- Recognise that school computers are connected together on a network.</li> </ul>	<ul style="list-style-type: none"> <li>- Collect, organise and present information using a range of media.</li> <li>- Design and create digital content for a specific purpose, e.g. poster, animation.</li> <li>- 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 copyright-free content, e.g. creative commons images.</li> <li>- Collaborate with peers using online tools, e.g. blogs, Google Drive, Office 365, if available.</li> </ul>	<ul style="list-style-type: none"> <li>- Draw conclusions from information stored in a database, chart or table.</li> <li>- Design a questionnaire and collect a range of data on a theme.</li> <li>- Choose appropriate formats to present data to convey information.</li> <li>- Recognise that school computers are connected together on a network.</li> <li>- Recognise that the Internet is made up 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>- Appreciate that you need to use specific software to work with video, images, audio etc.</li> </ul>	<ul style="list-style-type: none"> <li>- Create a program using a range of events/inputs to control what happens.</li> <li>- Recognise that we can decompose a problem into smaller parts to help solve it.</li> <li>- Explain when to use forever loops and count-controlled loops, and use them in programs.</li> <li>- Recognise selection in a program or algorithm.</li> <li>- Use selection in algorithms in programs to alter what happens when a condition changes, e.g. <i>if...then...</i></li> <li>- Design a program for a purpose. Decompose into parts and create an algorithm for each one.</li> <li>- Recognise common mistakes in programs and how to correct them.</li> </ul>

Digital Literacy
<ul style="list-style-type: none"> <li>- Remember and use an individual password.</li> <li>- Recognise what kinds of websites are trustworthy sources of information.</li> <li>- Recognise the benefits and risks of different apps and websites.</li> <li>- Recognise that the media can portray groups of people differently.</li> <li>- Can rate a game or film they have made and explain their rating.</li> </ul>



# Year 5

What is a Computer? Key Skills	Presenting Information & Multimedia	Data	Programming & Algorithms
<ul style="list-style-type: none"> <li>- Type using fingers on both hands.</li> <li>- Use common keyboard shortcuts, e.g. ctrl C (copy), ctrl V (paste).</li> <li>- Explain what makes a strong password.</li> <li>- Use folders to organise files.</li> <li>- Know how to mute and unmute audio on a computer or tablet.</li> <li>- Recognise that there is more than one search engine, and they may produce different results.</li> <li>- Use a search engine effectively to find information and images.</li> <li>- Know how to search for an application on a computer/tablet.</li> </ul>	<ul style="list-style-type: none"> <li>- Identify and use appropriate hardware and software to fulfil a specific task.</li> <li>- Remix and edit a range of existing and their own media to create content.</li> <li>- Consider the audience when designing and creating digital content.</li> <li>- Recognise the benefits of using technology to collaborate with others</li> <li>- Identify success criteria for creating digital content for a given purpose and audience.</li> <li>- Evaluate their own content against success criteria and make improvements accordingly.</li> </ul>	<ul style="list-style-type: none"> <li>- Explain the difference between data and information.</li> <li>- Appreciate that different programs work with different types of data, e.g. text, number, video.</li> <li>- Explain the difference between the Internet and the World Wide Web.</li> <li>- Know the difference between a search engine and a web browser.</li> <li>- Explain the basics of how search engines work, and that different search engines may give different results.</li> <li>- Perform complex searches for information using advanced settings in search engines.</li> <li>- Recognise the benefits and risks of sharing data online.</li> </ul>	<ul style="list-style-type: none"> <li>- Name a range of sensors in physical systems.</li> <li>- Recognise that different solutions may exist for the same problem.</li> <li>- Predict what will happen in a program or algorithm when the input changes (e.g. sensor, data or event).</li> <li>- Use two-way selection in programs and algorithms, i.e. <i>if...then...else...</i></li> <li>- Recognise variables in a program and what they do.</li> <li>- Create programs including <i>repeat until</i> loops.</li> <li>- Create and use simple variables, e.g. to keep score.</li> <li>- Evaluate a program and make improvements to the code or design accordingly.</li> <li>- Create an algorithm for a physical system containing a sensor.</li> </ul>

Digital Literacy	
<ul style="list-style-type: none"> <li>- Know where to find copyright free images and audio, and why this is important.</li> <li>- Critically evaluate websites for reliability of information and authenticity.</li> </ul>	<ul style="list-style-type: none"> <li>- Demonstrate responsible use of a online services, and know a range of ways to report concerns.</li> </ul>





# Year 6

What is a Computer? Key Skills	Presenting Information & Multimedia	Data	Programming & Algorithms
<ul style="list-style-type: none"> <li>- Type efficiently using both hands.</li> <li>- Use a range of keyboard shortcuts.</li> <li>- Recognise that different devices may have different operating systems.</li> <li>- Organise files effectively using folders and files names.</li> <li>- 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 common file types and extensions e.g. jpeg, png, doc, wav</li> <li>- Recognise a range of Internet services, e.g. email, VOIP (e.g. Skype, FaceTime), World Wide Web, and what they do.</li> </ul>	<ul style="list-style-type: none"> <li>- Select, combine and remix a range of media to create original content.</li> <li>- 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 others.</li> <li>- Evaluate existing digital content in terms of effectiveness and design.</li> </ul>	<ul style="list-style-type: none"> <li>- Recognise what a spreadsheet is and what it is used for.</li> <li>- Explain the difference between physical, mobile and wireless networks.</li> <li>- Use simple formulae in a spreadsheet to find out information from a set of data.</li> <li>- Collect data for a purpose and plan out a spreadsheet to present it effectively, using relevant formulae.</li> <li>- Produce graphs from data in a spreadsheet to answer a question.</li> <li>- 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>	<ul style="list-style-type: none"> <li>- Design and program a physical computing system that uses sensors.</li> <li>- Recognise and use procedures (sub-routines) in programs.</li> <li>- Plan out a program in detail, including task, algorithm, code and execution level.</li> <li>- Explain common errors in programs and how to fix them.</li> <li>- Use nested selection statements in a program or algorithm effectively.</li> <li>- Combine a variable with relational operators (&lt; = &gt;) to determine when a program changes, e.g. <i>if score &gt; 5, say "well done"</i>.</li> <li>- Recognise key concepts (sequence, selection, repetition and variables) in a range of languages and contexts.</li> </ul>
Digital Literacy			
<ul style="list-style-type: none"> <li>- Explain what makes a strong password and why this is important at school and in the wider world.</li> <li>- Explain how algorithms are used to track online activities with a view to targeting advertising and information.</li> </ul>		<ul style="list-style-type: none"> <li>- Know that there are laws around the purchase of games; the production, sending and storage of images; what is written online; and around online gambling.</li> </ul>	

