



# Singleton Church of England Primary School

## Progression of Skills and Knowledge

### Computing - Y2



	Year 2 – Unit 2.1 Coding	Year 2 – Unit 2.2 Online Safety	Year 2 Unit 2.3 Spreadsheets	Year 2 Unit 2.4 Questioning
<b>KEY VOCABULARY</b>	Action, algorithm, background, bug, button, click events, Collision detection, command, debugging, event, execute, implement, instructions, interaction, interval, object, output, properties, run	Attachment, digital footprint, email, filter, internet, personal information, private information, search, secure, sharing	Block graph, cell, column, copy, count tool, data, drag, equals, equals tool, label, row, speak tool, table, total	Binary tree, data, database, field, pictogram, question, record, search, sort
<b>SUBSTANTIVE KNOWLEDGE</b>	<ul style="list-style-type: none"> <li>Knows what an algorithm is and can explain that it is a set of instructions and that algorithms follow a sequence.</li> <li>Knows how to create a computer program using an algorithm</li> <li>Knows how to create a computer program from a given design</li> <li>Knows that collision detection is an event type in coding</li> <li>Knows how to design an algorithm that follows a timed sequence</li> <li>Knows that different objects within the coding environment have different properties</li> <li>Knows that there are different events in coding and knows what some of these events are</li> <li>Knows the function of buttons in the coding environment</li> <li>Knows how to interpret and debug simple programs.</li> </ul>	<ul style="list-style-type: none"> <li>Knows how searches can be refined when searching digitally and therefore attempts refining when searching.</li> <li>Knows that digitally created work can be shared with others e.g. Purple Mash Display Boards.</li> <li>Has knowledge and understanding about sharing more globally on the Internet.</li> <li>Knows that email is a type of communication tool.</li> <li>Knows how to open and send simple online communications in the form of email e.g. 2Email (virtual email client).</li> <li>Knows that there is an appropriate way to communicate with others in an online situation.</li> <li>Knows that information put online leaves a digital footprint.</li> <li>Knows some steps that can be taken to keep personal data and hardware secure.</li> </ul>	<ul style="list-style-type: none"> <li>Secures knowledge from prior year when spreadsheets were introduced (See unit 1.8)</li> <li>Knows how to use prior learning to perform composite task of creating a counting machine using software such as 2Calculate (image, lock move cell, speak and count tools)</li> <li>Knows how to copy, cut and paste in spreadsheet software such as 2Calculate</li> <li>Knows what totalling tools are and how to use them</li> <li>Knows how to use a spreadsheet to perform calculations for purpose. For example, adding and totalling money</li> <li>Knows how to use some tools within a spreadsheet to support calculations. For example, using the equals tool in 2Calculate to check calculations.</li> <li>Knows how to create a manual block graph within a spreadsheet from data.</li> </ul>	<ul style="list-style-type: none"> <li>Knows that pictograms provide limited information</li> <li>Knows that there are other data handling tools that can give more information than pictograms</li> <li>Knows how to use yes/no questions to separate information</li> <li>Knows how to construct a binary tree to identify items</li> <li>Knows how to use a binary tree database (such as 2Question), to answer questions</li> <li>Knows how to use a database to answer more complex search questions</li> <li>Knows how to use a search feature at a basic level when trying to locate data within a database such as 2Investigate.</li> </ul>
<b>MAKING CONNECTIONS</b> <b>Key knowledge / key questions</b>	<p><b>Key Learning</b> To understand what an algorithm is.</p> <ul style="list-style-type: none"> <li>To create a computer program using an algorithm.</li> <li>To create a program using a given design.</li> <li>To understand the collision detection event.</li> <li>To understand that algorithms follow a sequence.</li> <li>To design an algorithm that follows a timed sequence.</li> <li>To understand that different objects have different properties.</li> <li>To understand what different events, do in code.</li> <li>To understand the function of buttons in a program.</li> <li>To understand and debug simple programs</li> </ul> <p><b>Key Questions</b> <b>What is an algorithm?</b> Why is it useful in coding? An algorithm is a step-by-step set of instructions used to solve a problem or achieve an objective. A clear algorithm can help you to create code that does what it is supposed to do. <b>Why is it important to know there are different object types?</b> Different object types can do different actions. For example, in 2Code, an animal object can do actions such as up, down and stop. A turtle goes forward, backward, pen down and pen up. <b>If you are good at coding, you don't need to debug. Is this true?</b> All coders need to debug to make sure that their program works correctly, and the code does what they</p>	<p><b>Key Learning</b> To know how to refine searches using the Search tool.</p> <ul style="list-style-type: none"> <li>To use digital technology to share work on Purple Mash to communicate and connect with others locally.</li> <li>To have some knowledge and understanding about sharing more globally on the Internet.</li> <li>To introduce Email as a communication tool using 2Respond simulations.</li> <li>To understand how we should talk to others in an online situation.</li> <li>To open and send simple online communications in the form of email.</li> <li>To understand that information put online leaves a digital footprint or trail.</li> <li>To identify the steps that can be taken to keep personal data and hardware secure.</li> </ul> <p><b>Key Questions</b> <b>Why is a search bar useful?</b> The search bar on Purple Mash or on a website helps the user to quickly find the resources they are looking for. <b>What is an email?</b> An email is a way of sending messages electronically from one device to another. An email can have items such as pictures and videos attached to it. <b>What is meant by my Digital Footprint?</b> A digital footprint is a term used to describe the traces of yourself that you leave online. With every website you visit, you leave a trail or footprint showing that you've been there.</p>	<p><b>Key Learning</b></p> <ul style="list-style-type: none"> <li>To use 2Calculate image, lock, move cell, speak and count tools to make a counting machine.</li> <li>To learn how to copy and paste in 2Calculate.</li> <li>To use the totalling tools.</li> <li>To use a spreadsheet for money calculations.</li> <li>To use the 2Calculate equals tool to check calculations.</li> <li>To use 2Calculate to collect data and produce a graph.</li> </ul> <p><b>Key Questions</b> <b>Why would you copy and paste when using a spreadsheet?</b> You might want to rearrange the information in the spreadsheet. It will save you entering the same information many times if you want to repeat things in different cells. <b>How could a spreadsheet help you when you are planning some shopping?</b> You could use it to store the process and work out how much it would cost to buy the things that you wanted.</p> <p><b>Prior Learning Year 1</b> <b>Unit 1.8 Spreadsheets</b> • Introduce 2Calculate • Spreadsheet navigation • Adding images • Vocab: cell, column, row <b>Unit 1.3 Pictograms</b> • What is data? • Representing data</p> <p><b>Future Learning Year 3</b> <b>Unit 3.3 Spreadsheets</b> • Pie charts and Bar graphs • Boolean comparison tools (&lt;=&gt;) • Spin tool • Advanced mode • Cell references <b>Unit 3.8 Graphing</b></p>	<p><b>Key Learning</b></p> <ul style="list-style-type: none"> <li>To learn about data handling tools that can give more information than pictograms.</li> <li>To use yes/no questions to separate information.</li> <li>To construct a binary tree to identify items.</li> <li>To use 2Question (a binary tree database) to answer questions.</li> <li>To use a database to answer more complex search questions.</li> <li>To use the Search tool to find information.</li> </ul> <p><b>Key Questions</b> <b>How does a Pictogram show information?</b> On a pictogram, data is represented by pictures. Pictograms are set out in the same way as bar charts, but instead of bars they use columns of pictures to show the numbers involved. <b>How is information organised in a binary tree?</b> On a binary tree information is organised through a series of questions that can only be answered 'yes' or 'no'. Eventually only one item is left in the category which forms the end of a branch of the binary tree. <b>How can a database help organise information?</b> A database is a way of storing information in such a way that it can easily be searched. Databases are designed to hold lots of information that would be difficult to search without using a computer.</p> <p><b>Prior Learning Year 1</b> <b>Unit 1.2 Grouping And Sorting</b> • Sorting data according to criteria</p>

	<p>intended. As you get better at coding, your programs will get more complex and debugging gets even more important.</p> <p><b>Prior Learning Year 1</b>  <b>Unit 1.7 Coding</b>          • Introducing block coding • Objects and actions • Events (Click event, sound output) • Executing a program • Design view: planning  <b>Unit 1.4 Lego Builders</b>          Algorithms • Logical decision making • Sequencing instructions • Following instructions  <b>Unit 1.5 Maze Explorers</b>          • Coding a ‘turtle’ • Creating programs using sequencing and repeat • Visual use of the Logo programming language • Program logic and structure</p> <p><b>Future Learning Year 3</b>  <b>Unit 3.1 Coding</b>          • Flowcharts • Timers • Repeat • Code, test, debug process  <b>Unit 3.6 Branching databases</b>          Branching Databases • Logical decision processing • Modelling selection on a binary model</p>	<p><b>Prior Learning Year 1</b>  <b>Unit 1.1 Online Safety</b>          • Safe logins • Concept of privacy • Concept of ownership • The need to logout  <b>Unit 1.9 Technology outside of school</b>          Developing ideas about the concept of technology that we are surrounded by and its purpose</p> <p><b>Future Learning Year 3</b>  <b>Unit 3.2 Online Safety</b>          • Good Passwords and password privacy • Communication methods • Shared blog Email • Evaluating communications • Email safety • Sharing images - safety • Not meeting • Attachments • Reliability of information and spoof websites • Appropriate ratings • Emotional effects • Cyberbullying • Reporting problems  <b>Unit 3.5 Email</b>          • Evaluating communications • Email safety • Sharing images - safety • Not meeting • Attachments</p>	<p>• Data representation in 2Graph • Use software to investigate data</p>	<p><b>Unit 1.3 Pictograms</b>          • Collecting and presenting data in a picture format</p> <p><b>Future Learning Year 3</b>  <b>Unit 3.3 Spreadsheets</b>          • Use of 2Calculate to collect data and produce a variety of graphs  <b>Unit 3.6 Branching databases</b>          • Sorting and interrogate data  <b>Unit 3.8 Graphing</b>          • Displaying and interrogating data in a graph form using 2Graph</p>
<b>Key Assessment Opportunity</b>	<p><b>Task: Use skills learnt to complete ‘Smelly Code 1 – monster hero’ challenge.</b></p> <ul style="list-style-type: none"> <li>Children can explain what debug (debugging) means.</li> <li>Children can use a design document to start debugging a program.</li> <li>Children can debug simple programs.</li> </ul>	<p><b>Task: Create a poster about keeping an appropriate digital footprint.</b></p> <ul style="list-style-type: none"> <li>Most children will be able to explain what a digital footprint is, that it is permanent and their online behaviour influences what it shows.</li> <li>Most children will be able to give reasons for keeping their password safe that include protecting their personal information.</li> <li>Most children will be able to express the good and bad sides of digital technology. They can give examples of positive effects on life as well as negative. Children add their name to work but show a differentiation between full name and first name only when information is to be shared online</li> </ul>	<p><b>Task: Use 2graph to create a table and graph showing data of children’s favourite ice cream flavours.</b></p> <ul style="list-style-type: none"> <li>Children can create a table of data on a spreadsheet.</li> <li>Children can use the data to create a block graph manually.</li> </ul>	<p><b>Task: Use the fruit database on 2Investigate to ask and answer questions.</b></p> <ul style="list-style-type: none"> <li>Using 2Count, children can create pictograms to represent data</li> <li>Children demonstrate their ability to organise data using a database in 2Investigate and can run simple searches on their data set</li> <li>Using 2Question, children use a binary tree to sort information and can manipulate their data, answering questions relating to this</li> <li>They can use their own created binary trees to support the answering of related questions to the data</li> </ul>
<b>Key Skills</b>	<ul style="list-style-type: none"> <li>I can explain an algorithm is a set of instructions to complete a task.</li> <li>I know I need to carefully plan my algorithm so it will work when I make it into code.</li> <li>I can design a simple program using 2Code that achieves a purpose.</li> <li>I can find and correct some errors in my program.</li> <li>I can say what will happen in a Program.</li> <li>I can spot something in a program that has an action or effect (does something).</li> <li>I understand that my creations such as programs in 2Code, need similar skills to the adult world. e.g. The program used for collecting money for school trips.</li> </ul>	<ul style="list-style-type: none"> <li>I know the consequences of not searching online safely.</li> <li>I know the consequences of not searching online safely.</li> <li>I can share work and communicate electronically – for example using 2Email or the display boards.</li> <li>I can report unkind behaviour and things that upset me online, to a trusted adult.</li> <li>I can see where technology is used at school such as in the office or canteen.</li> </ul>	<ul style="list-style-type: none"> <li>I can organise data – for example, using a database such as 2Investigate.</li> <li>I can name, save and find my work.</li> <li>I can create a table of data on a spreadsheet.</li> <li>I can use the data to create a block graph manually.</li> </ul>	<ul style="list-style-type: none"> <li>I can organise data – for example, using a database such as 2Investigate.</li> <li>I can find data using specific searches – for example, using 2Investigate.</li> <li>I can use several programs to organise information – for example, using binary trees such as 2Question or spreadsheets such as 2Calculate.</li> <li>I can name, save and find my work.</li> </ul>



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## Progression of Skills and Knowledge

### Computing - Y2



	Year 2 – Unit 2.5 Effective Searching	Year 2 – Unit 2.6 Creating pictures	Year 2 Unit 2.7 Making Music	Year 2 Unit 2.8 Presenting Ideas
<b>KEY VOCABULARY</b>	Digital footprint, domain, internet, network, search engine, web address, web page, website, world wide web	Art, ill, impressionism, palette, style, pointillism, surrealism	Beat, compose, note, tune, sound effect, sound track, speed, tempo, volume	e-book, fact file, fiction, mind map, node, non-fiction, presentation, quiz
<b>SUBSTANTIVE KNOWLEDGE</b>	<ul style="list-style-type: none"> <li>Knows the meaning of key Internet and searching terms.</li> <li>Knows the basic parts of a web search engine page.</li> <li>Knows how to navigate a web search results page.</li> <li>Knows how to search the Internet to some degree for answers to a quiz.</li> <li>Knows the premise of what effective Internet searching is.</li> </ul>	<ul style="list-style-type: none"> <li>Knows the purpose and benefits of painting software tools such as 2Paint a Picture.</li> <li>Knows how to recreate Impressionism, surrealism and Pointillism using features within 2Paint a Picture.</li> <li>Knows how to reproduce the style of William Morris by using repeating patterns, manipulating patterns and adding multiple effects in painting software such as 2Paint a picture.</li> </ul>	<ul style="list-style-type: none"> <li>Knows how to make forms of music (digitally) using age appropriate software such as 2Sequence.</li> <li>Knows how to edit and combine sounds using 2Sequence.</li> <li>Knows how to refine composed music.</li> <li>Knows how to upload/import and record sounds beyond the software environment.</li> </ul>	<ul style="list-style-type: none"> <li>Know that digital content can be presented in many different forms e.g. stories.</li> <li>Know how to use presentational or interactive software such as a quiz, making improvements to it based on people feedback.</li> <li>Know that data can be structured in tables to make it useful for an audience.</li> <li>Know how to add images such as clipart and photos to presentational software.</li> <li>Know how to collect, organise and present data and information in digital format.</li> </ul>
<b>MAKING CONNECTIONS</b> <b>Key knowledge / key questions</b>	<p><b>Key Learning</b></p> <ul style="list-style-type: none"> <li>To understand the terminology associated with searching.</li> <li>To gain a better understanding of searching on the Internet.</li> <li>To create a leaflet to help someone search for information on the Internet.</li> </ul> <p><b>Key Questions</b></p> <p><b>How can I search the Internet?</b> The easiest way to search the Internet is using a search engine. The search engine crawls the Internet looking for answers to the search enquiry. Google is a popular search engine.</p> <p><b>Prior Learning Year 1</b></p> <p><b>Unit 1.1 Online safety</b></p> <ul style="list-style-type: none"> <li>Safe logins • Using Purple Mash search functionality</li> </ul> <p><b>Unit 1.9 Technology outside school</b></p> <ul style="list-style-type: none"> <li>Developing ideas about the concept of technology that we are surrounded by and its purpose</li> </ul> <p><b>Future Learning Year 3</b></p> <p><b>Unit 3.2 Online Safety</b></p> <ul style="list-style-type: none"> <li>Reliability of information and spoof websites • Appropriate ratings</li> <li>Reporting problems</li> </ul>	<p><b>Key Learning</b></p> <ul style="list-style-type: none"> <li>To learn the functions of the 2Paint a Picture tool.</li> <li>To learn about and recreate the Impressionist style of art (Monet, Degas, Renoir).</li> <li>To recreate Pointillist art and look at the work of pointillist artists such as Seurat.</li> <li>To learn about the work of Piet Mondrian and recreate the style using the lines template.</li> <li>To learn about the work of William Morris and recreate the style using the patterns template.</li> <li>To explore surrealism and eCollage.</li> </ul> <p><b>Key Questions</b></p> <p><b>What are the main features of Impressionism?</b> Impressionism is a style of painting that focuses on the effects of light and atmosphere on colours and forms. Impressionist artists often used broken brush strokes.</p> <p><b>What are the main features of Pointillism?</b> Pointillism is a painting technique developed by the artist George Seurat. It involves using small, painted dots to create areas of colour that together form a pattern or picture.</p> <p><b>What are the main features of Surrealism?</b> Surrealistic art is characterized by dream-like visuals, the use of symbolism and collage images. Several prominent artists came from this movement, including Renee Magritte, Salvador Dali, and Max Ernst.</p> <p><b>Prior Learning Year 1</b></p> <p><b>Unit 1.1 Online safety and Exploring PM</b></p> <ul style="list-style-type: none"> <li>General use of Purple Mash • Design: avatar creation • Paint Projects: use of the simple paint tools</li> </ul> <p><b>Unit 1.6 Animated story books</b></p> <ul style="list-style-type: none"> <li>2Create a Story: Painting tool. • Animating images using built in effects • Concept of background (static) and foreground (can move)</li> </ul> <p><b>Future Learning Year 4</b></p> <p><b>Unit 4.6 Animation</b></p> <ul style="list-style-type: none"> <li>Create a stop motion animation using 2Animate • Use of art tools to create backgrounds and effects</li> </ul>	<p><b>Key Learning</b></p> <ul style="list-style-type: none"> <li>To make music digitally using 2Sequence.</li> <li>To explore, edit and combine sounds using 2Sequence.</li> <li>To edit and refine composed music.</li> <li>To think about how music can be used to express feelings and create tunes which depict feelings.</li> <li>To upload a sound from a bank of sounds into the Sounds section.</li> <li>To record and upload environmental sounds into Purple Mash.</li> <li>To use these sounds to create tunes in 2Sequence.</li> </ul> <p><b>Key Questions</b></p> <p><b>What is meant by digital music?</b> Digital music is made using a computer or other device. Digital music allows the computer to copy the sound made by instruments and combine them together to make a piece of music.</p> <p><b>How can I change how my music sounds?</b> You can change how your digital music sounds in many ways. One way is to increase the tempo of the music or vary the volume of each instrument in the piece.</p> <p><b>What is it meant by the tempo of the music?</b> Tempo is measured in BPM, or beats per minute. One beat every second is 60 BPM.</p> <p><b>Prior Learning Year 1</b></p> <p><b>Unit 1.6 Animated story books</b></p> <ul style="list-style-type: none"> <li>Adding simple sound effects to stories in 2Create a Story</li> </ul> <p>Future Learning Year 4</p> <p><b>Unit 4.6 Animation</b></p> <ul style="list-style-type: none"> <li>Use of music and sounds in stop animation creation</li> </ul> <p><b>Unit 4.9 Making music</b></p> <ul style="list-style-type: none"> <li>Electronically compose a piece of music on Busy Beats</li> </ul>	<p><b>Key Learning</b></p> <ul style="list-style-type: none"> <li>To explore how a story can be presented in different ways.</li> <li>To make a quiz about a story or class topic.</li> <li>To make a fact file on a non-fiction topic.</li> <li>To make a presentation to the class.</li> </ul> <p><b>Key Questions</b></p> <p><b>What do we need to think about when planning a presentation?</b> The important thing to consider is the audience. Think about how old they are and what they would find interesting. For younger children, a presentation with pictures may be more appropriate.</p> <p><b>Why should I plan out my presentation?</b> Planning out your presentation allows you to make sure you have included all the information you need to. It is easier to do this in the planning phase rather than when you have started the presentation.</p>

<b>Key Assessment Opportunity</b>	<b>Task: To create a leaflet to help someone search for information on the Internet</b> <ul style="list-style-type: none"><li>Children can identify the basic parts of a web search engine search page.</li><li>Children have learnt to read a web search results page.</li><li>Children can search the Internet for answers to a quiz.</li><li>Children have created a leaflet to consolidate knowledge of effective Internet searching.</li></ul>	<b>Task: Create a piece of surrealist art using eCollage in 2paint.</b> <ul style="list-style-type: none"><li>Using 2Paint a Picture, children can create an image replicating an established style e.g. pointillism</li><li>Children can enhance a picture using the tools within 2Paint a Picture which demonstrates their ability to manipulate a digital image</li><li>They can combine and use multiple effects &amp; features to enhance their patterns, such as rotational effects, repeat style buttons and size slide. Throughout this unit, children show that they can efficiently store and retrieve their work from their saved area on Purple Mash. Most children will be able to successfully create their own pieces of inspired art using 2Paint a Picture. They will be able to use a range of effects and functions, such as e-collage, in 2Paint a Picture</li></ul>	<b>Task: Compose a soundtrack to accompany a film or cartoon.</b> <ul style="list-style-type: none"><li>Children have added sounds to a tune they have already created to change it.</li><li>Children have considered how music can be used to express feelings.</li><li>Children can change the volume of the background sounds.</li><li>Children have created two tunes which depict two feelings.</li><li>Children have uploaded and used their own sound chosen from a bank of sounds.</li><li>Children have created, uploaded and used their own recorded sound.</li><li>Children have created their own tune using some of the chosen sounds.</li></ul>	<b>Task To create a leaflet to help someone search for information on the Internet</b> <ul style="list-style-type: none"><li>Children can identify the basic parts of a web search engine search page.</li><li>Children have learnt to read a web search results page.</li><li>Children can search the Internet for answers to a quiz.</li><li>Children have created a leaflet to consolidate knowledge of effective Internet searching.</li></ul>
<b>Key Skills</b>	<ul style="list-style-type: none"><li>I can find data using specific searches – for example, using 2Investigate.</li><li>I can find information I need using a search engine.</li><li>I know the consequences of not searching online safely.</li></ul>	<ul style="list-style-type: none"><li>I can name, save and find my work.</li><li>I can include photos, text and sound in my creations.</li></ul>	<ul style="list-style-type: none"><li>I can edit digital data such as data in music composition software like 2Sequence.</li><li>I can name, save and find my work.</li></ul>	<ul style="list-style-type: none"><li>I can use several programs to organise information – for example, using binary trees such as 2Question or spreadsheets such as 2Calculate.</li><li>I can name, save and find my work.</li><li>I can include photos, text and sound in my creations</li></ul>