



Singleton Church of England Primary School

Progression of Skills and Knowledge

Computing - Y6



	Year 6 Unit 6.1 Coding	Year 6 – Unit 6.2 Online Safety	Year 6 – Unit 6.3 Spreadsheets	Year 6 – unit 6.4 Blogging
KEY VOCABULARY	Action, algorithm, command, co-ordinates, events, decomposition, execute, debug, flowchart, function, input, launch command, object, output, procedure, properties, predict, selection, sequence, repeat, tab, simulation, timer, variable	Data analysis, digital footprint, location sharing, password, PEGI rating, phishing, print screen, screen time, secure websites, spoof	Rows, spreadsheet, column, data, formula, advance mode, budget, chart, count tool. Dice tool, expense, format cell, formula bar, formula wizard, move cell tool, probability, profit.	Approval, archive, blog, blog post, collaborate, vlog, commenting
SUBSTANTIVE KNOWLEDGE	<ul style="list-style-type: none"> Know how to implement a game which includes timers and a score. Know what the launch command is. Build on knowledge of functions. Know how to use multiple functions in own program. Know how to arrange code in multiple tabs. Know how to develop creativity when coding to generate novel effects. Know the different options of generating user input in 2Code. Know how to attribute variables to user input. Know the need to code for all possibilities when using user inputs. Know how 2Code can be used to make a text based adventure game. Know with improving understanding of how they can alter existing programs to reflect their own ideas. Building on existing knowledge of debugging, children know how to debug more effectively. 	<ul style="list-style-type: none"> Know the benefits and risks of mobile devices broadcasting the location of the user/device, e.g., apps accessing location. Know what secure sites are. Know that secure sites will have industry standard seals of approval. Build on knowledge of Digital Footprints. For example, know how and why people use their information. Build on knowledge of appropriate online behaviours and how this can protect themselves and others from possible online dangers. For example, the dangers of promoting inappropriate content online. Have greater knowledge of how to make more informed choices of how free time is used. Know the effects on individual health when having too much screen time. 	<ul style="list-style-type: none"> Know how to create a spreadsheet to help answer a mathematical question relating to probability. Know how to take 'copy' and 'paste' shortcuts. Know how to problem solve during mathematical investigations when using spreadsheets by using tools such as the 'Count tool'. Know how to create a spreadsheet to produce computational models. For example, creating a spreadsheet that works out discounts and final price sales. Children will know how to use advanced formula to assist with this. Know how to use a spreadsheet to help plan actions. For example, create a spreadsheet to plan how to spend pocket money and the effect of saving. 	<ul style="list-style-type: none"> Know the purpose of writing a blog. Know the features of successful blog writing. Know how to plan a blog. Know how to write a blog. Know how to write a blog post. Know that the way information is presented within a blog has an impact upon the audience. Know how to contribute to others' blogs. Know the importance of having an approval process when creating blog content or modifying it. Know from Online Safety knowledge that content within blogs applies. For example, children know the issues surrounding inappropriate posts and cyberbullying.
MAKING CONNECTIONS Key knowledge / key questions	<p>Key Learning</p> <ul style="list-style-type: none"> To design a playable game with a timer and a score. To plan and use selection and variables. To understand how the launch command works. To use functions and understand why they are useful. To understand how functions are created and called. To use flowcharts to create and debug code. To create a simulation of a room in which devices can be controlled. To understand how user input can be used in a program. To understand how 2Code can be used to make a text-adventure game. <p>Key Questions</p> <p>How can you use Tabs in 2Code Gorilla? Tabs are used to organise you code and make it more readable. This also makes it easier to debug. Give the Tabs useful names to help with this.</p> <p>What is a function in coding? Give an example that you have used in 2Code Gorilla. A function is a block of code that you can access when you need it, so you don't have to rewrite the same block repeatedly. You call the function each time you want it. In a turtle program you could have a button that will make the turtle draw a square each time you click it. In the text adventure, there were functions for each room that were called when the user navigated to the room.</p> <p>In 2Code Gorilla, how can a program receive user input? When the user clicks on an object, when the user presses keys or swipes the screen with the mouse, the 'Get Input' and 'Prompt for input' commands. On a touchscreen: when the screen is touched or swiped.</p> <p>Prior Learning Year 5 Unit 5.1 Coding</p>	<p>Key Learning</p> <ul style="list-style-type: none"> To identify benefits and risks of mobile devices broadcasting the location of the user/device. To identify secure sites by looking for privacy seals of approval. To identify the benefits and risks of giving personal information. To review the meaning of a digital footprint. To have a clear idea of appropriate online behaviour. To begin to understand how information online can persist. To understand the importance of balancing game and screen time with other parts of their lives. To identify the positive and negative influences of technology on health and the environment. <p>Key Questions</p> <p>Why do I need to be aware of the dangers of being online? Although the Internet is a brilliant resource for learning and entertainment some people use the Internet to cause you harm. Being aware of these dangers can help keep you safe and protect your privacy.</p> <p>What is meant by my digital footprint? The term digital footprint is used to describe the traces that people leave behind when they have visited a website or used social media. Your digital footprint is unique to you.</p> <p>Why is it important to think about how much time use a screen for? Using a screen can help you surf the Internet or enjoy computer games but you need to be careful how much time you spend using a screen. For instance, using a screen at night can damage your sleep patterns. Turn your screen off regularly and enjoy the world outside.</p> <p>Prior Learning Year 5 Unit 5.2 Online safety • Responsibility to others when sharing • Sources of support • SMART rules • Sharing passwords</p> <p>Unit 5.8 Word processing</p>	<p>Key Learning</p> <ul style="list-style-type: none"> To use a spreadsheet to investigate the probability of the results of throwing many dice. To use a spreadsheet to calculate the discount and final prices in a sale. To use a spreadsheet to plan how to spend pocket money and the effect of saving money. To use a spreadsheet to plan a school charity day to maximise the money donated to charity. <p>Key Questions</p> <p>How would you add a formula so that the cell shows the total of a column of cells? Use the formula wizard advanced total tool or type a formula into the cell by using the '=' symbol, mathematical operators and cell references</p> <p>What is a computational model and what it can be used for? Modelling in Computing means creating or using a simulation (a model) of a real-life situation, on a computer. It represents the data of a situation. For example; budgeting for a party; working out how big a field needs to be for a certain number of animals; working out the best price for an item or using the existing data to predict what time your shadow will be a certain length.</p> <p>If you were going to use a spreadsheet to plan your dream holiday, what data would you collect to cost the trip? Ideas could include: Travel; comparing the cost of different methods, airports, airlines, different companies and discounts such as rail cards. Cost of accommodation of different types, trips out, food, passports, immunisations.</p> <p>Prior Learning Year 5 Unit 5.3 Spreadsheets • Converting measures • Count tool • Formulae • Variables in formulae • Event planning</p> <p>Unit 5.4 Databases</p>	<p>Key Learning</p> <ul style="list-style-type: none"> To identify the purpose of writing a blog. To identify the features of a successful blog. To plan the theme and content for a blog. To understand how to write a blog and a blog post. To consider the effect upon the audience of changing the visual properties of the blog. To understand how to contribute to an existing blog. To understand how and why blog posts are approved by the teacher. To understand the importance of commenting on blogs. <p>Key Questions</p> <p>What is a blog? A blog is a website or webpage that is regularly updated by the author. A blog also allows the reader to post comments or opinion based on what is written.</p> <p>What can a blog be about? A blog can be written about any subject. You could write a blog about school such as information about the subject you are studying. Alternatively, you could write a blog about your favourite team or movie.</p> <p>How are the audience involved in a blog? A key feature of blogs is that the audience can leave a comment or opinion about what they have read on the blog.</p> <p>Prior Learning Year 5 Unit 5.6 Online safety • Responsibility to others when sharing • Sources of support • SMART rules • Sharing passwords • Image manipulation • Citing sources • Searching • Reliability</p> <p>Unit 5.8 Word Proce4ssing • Use of images • Plagiarism • Citing sources</p>

Year 6 Knowledge Overview

	<ul style="list-style-type: none"> Efficient Coding Simulating a Physical System Decomposition and Abstraction Friction and Functions Introducing Strings Text Variables and Concatenation <p>Future Learning Year 6 Unit 6.5 Text Adventures Text Adventures • Development from text based coding • Maintaining a mental map. • Debugging skills</p>	Word Processing • Use of images • Plagiarism • Citing sources Future Learning Year 6 Unit 6.4 Blogging • Impact of communication on the audience • Appropriate comments	Data representation in 2Investigate • Creating and interrogating data • Use of filter, sort and search Future Learning Year 6 Unit 6.9 Spreadsheets with excel • Calculations • Modelling and problem solving • Organising Data • Advanced formulae • Charts and graphs	
Key Assessment Opportunity	<p>Task: To design and make a text-based adventure game.</p> <ul style="list-style-type: none"> Children can code programs that take text input from the user and use this in the program. Children can attribute variables to user input. Children are aware of the need to code for all possibilities when using user input. Children can follow through the code of how a text adventure can be programmed in 2Code. Children can design their own text-based adventure game based on one they have played. Children can adapt an existing text adventure so it reflects their own ideas. 	<p>Task: Create an information leaflet for their peers that highlights the positive and negative aspects of being physically active and digitally active.</p> <ul style="list-style-type: none"> Children can take more informed ownership of the way that they choose to use their free time. They recognise a need to find a balance between being active and digital activities. Children can give reasons for limiting screen time. Children can talk about the positives and negative aspects of technology and balance these opposing views. 	<p>Task: To use a given spreadsheet to plan a school charity day.</p> <ul style="list-style-type: none"> Children can create a spreadsheet and collect data using 2Calculate that answers a mathematical problem relating to probability. Children can use a spreadsheet to model a real-life situation. Most children will be able to create spreadsheets which contain visual elements such as suitable graphs which represent their data. They will select an appropriate graphical representation of their data from the available choice. 	<p>Task: Use 2connect to create a blog post linked to history/geography topic of work.</p> <ul style="list-style-type: none"> Children can create a blog or blog post with a specific purpose. Children understand that the way in which information is presented has an impact upon the audience. Children can post comments and blog posts to an existing class blog. Children understand the approval process that their posts go through and demonstrate an awareness of the issues surrounding inappropriate posts and cyberbullying. Children can assess the effectiveness and impact of a blog. Children understand that content included in their blog carefully considers the end user
Key Skills	<ul style="list-style-type: none"> I can turn a complex programming task into an algorithm. I can identify the important aspects of a programming task (abstraction). I can decompose important aspects of a programming task in a logical way, identifying appropriate coding structures that would work. I can test and debug my program as I work on it and use logical methods to identify a cause of a bug. I can identify a specific line of code that is causing a problem in my program and attempt a fix. I can translate algorithms that include sequence, selection and repetition into code and nest these structures within each other. I can use inputs and outputs within my coded programs such as sound, movement and buttons and represent the state of an object I can interpret (understand) a program in parts and can make logical attempts to put the separate parts together in an algorithm to explain the program as a whole. 	<ul style="list-style-type: none"> I can explain the difference between the internet and the World Wide Web. I can explain what a WAN and LAN is and describe the process of how access to the internet in school is possible. I can use filters when searching for digital content. I can explain in detail how accurate and reliable a webpage and its content is. I can demonstrate safe and respectful use of a range of different technologies and online services. I can identify more discrete inappropriate behaviours online. For example, someone who may be trying to groom me or someone else. I can use critical thinking to help me stay safe online. I know the value of protecting my privacy and others online. 	<ul style="list-style-type: none"> I can compare a range of digital content sources and rate them in terms of content quality and accuracy. I can consider the intended audience carefully when I design and make digital content. I can use criteria to evaluate the quality of my own and others digital solutions, suggesting refinements. 	<ul style="list-style-type: none"> I can explain the difference between the internet and the World Wide Web. I can compare a range of digital content sources and rate them in terms of content quality and accuracy. I can consider the intended audience carefully when I design and make digital content. I can design and create my own online blogs. I can use criteria to evaluate the quality of my own and others digital solutions, suggesting refinements. I can demonstrate safe and respectful use of a range of different technologies and online services. I know the value of protecting my privacy and others online.



Singleton Church of England Primary School

Progression of Skills and Knowledge

Computing - Y6



	Year 6 Unit 6.5 Text adventures Game creator	Year 6 – Unit 6.6 Networks	Year 6 – Unit 6.7 Quizzing	Year 5 6 – Unit 6.8 Binary
KEY VOCABULARY	Text-based adventure, debugging, sprite, selection, function	Hub, internet, LAN, network, world wide web, router, wide-area network, wi-fi	Audience, audio, case-sensitive, clone, cloze, preview, quiz,	Base 2, bit, base 10, nimble, byte, megabyte, kilobyte, gigabyte, integer, transistor, switch
SUBSTANTIVE KNOWLEDGE	<ul style="list-style-type: none"> Know what a text based adventure is. Know how to convert a simple story with 2 or 3 levels of decision making into a logical design. Know how to use the functionality of 2Create a Story Adventure mode to create, test and debug using plans. Know the difference between a map-based game and a sequential story-based game. Know how to use written plans to code a map-based adventure using 2Code. • Know how to recall existing knowledge to support coding a map-based adventure game. For example, using functions, two-way selection (IF/ELSE statements) and repetition. 	<ul style="list-style-type: none"> Know the difference between the World Wide Web and the Internet. Know what a WAN and LAN is and the key differences between them. Know how a school network accesses the Internet. Know the history of the Internet. Know some of the major changes in technology which have taken place in their lifetime. 	<ul style="list-style-type: none"> Know how to use create activities for younger children using software such as 2DIY. Know about different question types within quizzing software tools such as 2Quiz. Know how to give and respond to feedback based on quizzes made. Know how to create their own grammar games. Know how to use multiple pieces of software to enhance a quiz. For example, creating a quiz that requires children to look up information on a database. 	<ul style="list-style-type: none"> Know that all data in a computer is saved in the computer memory in a binary format. Know that binary uses only the integers 0 and 1. Know that we can relate 0 as an 'off' switch and 1 to an 'on' switch. Know how to count up from 0 in binary using visual aids if required. Know that bits are related to computer storage. <ul style="list-style-type: none"> Know how to convert numbers to binary using the division by two method. Know how to use a converter tool to check binary conversions
MAKING CONNECTIONS Key knowledge / key questions	<p>Key Learning</p> <ul style="list-style-type: none"> To find out what a text adventure is. To use 2Connect to plan a story adventure. To make a story-based adventure using 2Create a Story. To introduce an alternative model for a text adventure which has a less sequential narrative. To use written plans to code a map-based adventure in 2Code. <p>Key Questions</p> <p>What is a text based adventure? A text-based adventure is a type of game that uses text rather than graphics to tell the story. The player normally selects the next move from a series of text-based options.</p> <p>Why is it important to plan a text-based adventure? Text based adventures can often be complicated and give the player lots of options about what to do next. Planning the game ensures the player doesn't make a decision that has no outcome.</p> <p>Prior Learning Year 5</p> <p>Unit 5.1 Coding</p> <ul style="list-style-type: none"> Familiarity with the functionality of 2Code • Planning and designing for a logical outcome. <p>Unit 5.5 Game creator</p> <ul style="list-style-type: none"> Game Design planning • Refining and reviewing games <p>Unit 5.7 Concept maps</p> <ul style="list-style-type: none"> Use of 2Connect in a variety of ways for different purposes 	<p>Key Learning</p> <ul style="list-style-type: none"> To learn about what the Internet consists of. To find out what a LAN and a WAN are. To find out how the Internet is accessed in school. To research and find out about the age of the Internet. To think about what the future might hold. <p>Key Questions</p> <p>What is the difference between the Internet and the World Wide Web? The Internet is a global network of networks while the Web, also referred formally as the World Wide Web (www) is collection of information which is accessed via the Internet.</p> <p>What is the difference between a LAN and a WAN? Both are networks that connect computers together. A LAN (Local Area Network) is normally for computers connected less than 1KM distance, whilst a WAN (Wide Area Network) extends over a large geographical area.</p> <p>Who is Tim Berners-Lee? Tim Berners-Lee is the inventor of the World Wide Web. The WWW is the system that delivers webpages over the internet.</p> <p>Prior Learning Year 5</p> <p>Unit 4.7 Effective searching</p> <ul style="list-style-type: none"> Understanding of the 2- way communication technologies using algorithms that run of the hardware connections <p>Unit 4.8 Hardwork investigators</p> <ul style="list-style-type: none"> Understanding of the hardware components that make devices function including those for networking <p>Future Learning Year 6</p> <p>Unit 6.4 Blogging</p> <p>Using device functions for 2-way communication via the World Wide Web</p>	<p>Key Learning</p> <ul style="list-style-type: none"> To create a picture-based quiz for young children. To learn how to use the question types within 2Quiz. To explore the grammar quizzes. To make a quiz that requires the player to search a database. To make a quiz to test your teachers or parents. <p>Key Questions</p> <p>What factors do you need to consider when creating a quiz? The intended audience; age and reading ability and interests. The aim of the quiz; is it for fun like a game, or to make sure that the user has learnt something?</p> <p>Name three question types in 2Quiz. • Sequencing • Grouping and Sorting • Text based • Multiple-choice • Labelling</p> <p>Apart from the questions, what else does a quiz need to contain? A title screen and instructions for the user. Feedback for the user (some quizzes). Time limits (some quizzes). Images for interest as well as part of the questions</p> <p>Prior Learning Year 5</p> <p>Unit 5.4 databases</p> <ul style="list-style-type: none"> Creating and searching a database for information • Wording of questions to be effectively answered by searching a database 	<p>Key Learning</p> <ul style="list-style-type: none"> To examine how whole numbers are used as the basis for representing all types of data in digital systems. To recognise that digital systems represent all types of data using number codes that ultimately are patterns of 1s and 0s (called binary digits, which is why they are called digital systems). To understand that binary represents numbers using 1s and 0s and these represent the on and off electrical states respectively in hardware and robotics. <p>Key Questions</p> <p>How does binary relate to the programs that you use or create? In a computer, everything is translated into binary stored by on and off switches that pass electronic signals that the computer interprets. It can then pass the correct signals to the components of the computer such as the sound card to make the requested sound. Or graphics card to make images appear on the screen.</p> <p>How does binary relate to computer memory? A single 0 or 1 is called a bit. The word comes from Binary Digit. The bigger the program, the more bits are used so more memory space is taken up. For example, 1 byte is 8 bits, 1 megabyte (Mb) or 8,388,608 bits, 1 gigabyte (GB) is 8,589,934,592 bits!</p> <p>How would you write the numbers 0 to 10 in binary? 0, 1, 10, 11, 100,101,110,111,1000, 1001, 1010.</p> <p>Prior Learning Year 5</p> <p>Unit 5.1 Coding</p> <p>Efficient Coding • Simulating a Physical System • Decomposition and Abstraction • Friction and Functions • Introducing Strings • Text Variables and Concatenation</p> <p>Unit 6.1 Coding</p> <ul style="list-style-type: none"> Complex programs • Using Functions • Flowcharts and Control Simulations • User Input:
Key Assessment Opportunity	<p>Task: To use written plans to code a map-based adventure in 2Code.</p> <ul style="list-style-type: none"> Children can create their own text based adventure based upon a map. 	<p>Task: Create a fact file about Sir Tim Berners-Lee and the start of the WWW.</p> <ul style="list-style-type: none"> Children have researched and found out about Tim Berners-Lee. 	<p>Task: Design a curriculum-based game show style quiz in 2quiz which you can use to challenge the teachers to see if they are smarter than a 10 or 11 year old.</p> <ul style="list-style-type: none"> Children can plan, design and create various quizzes using a variety of software- 2DIY, 2Quiz and 2Investigate. Throughout 	<p>Task: To sketch a simple design for a program that uses a variable set to 0 or 1 to control the on or off state of an aspect of the program. Once designed, make it using 2code gorilla.</p> <ul style="list-style-type: none"> Throughout the unit, children will examine and understand how within digital systems, whole numbers are used as the

Year 6 Knowledge Overview

	<ul style="list-style-type: none"> Children can use coding concepts of functions, two-way selection (if/else statements) and repetition in conjunction with one another to code their game. Children make logical attempts to debug their code when it does not work correctly. 	<ul style="list-style-type: none"> Children have considered some of the major changes in technology which have taken place during their lifetime and the lifetime of their teacher/another adult. Children can explain the difference between the Internet and the World Wide Web. Children know what a WAN and LAN are and can describe how they access the internet in school 	<p>the unit, children consider their audience, their ability and interests and make decisions based upon this. Children choose appropriate software for the questions that they want to ask. Children give and respond to feedback; they edit and redesign their quizzes accordingly.</p> <ul style="list-style-type: none"> Most children can create purposeful online quizzes for an intended audience using the 2DIY suite of applications. With ease, they combine text with images and audio to enhance their quizzes. The question types used are fit for audience and serve to add additional enhancements for the intended user. 	<p>basis of representing all types of data and that this is known as a binary format.</p> <ul style="list-style-type: none"> Children will know that binary codes contain only the digits 0 and 1. When looking at binary, children will be able to relate 0 to an 'off' switch and 1 to an 'on' switch and know that these represent the on and off electrical states respectively in hardware and robotics. Most children will show an understanding of the system in order to be able to count up from 0 in binary, as well as converting decimal numbers into binary, using visual aids if necessary. Children will understand the 'division by two' method as a way of converting numbers from decimal to binary. Children will be able to use their knowledge of binary and of code to make their own program which represents the state of an object as active or inactive, using the respective binary values or 1 or 0
<p>Key Skills</p>	<ul style="list-style-type: none"> I can compare a range of digital content sources and rate them in terms of content quality and accuracy. I can consider the intended audience carefully when I design and make digital content. I can use criteria to evaluate the quality of my own and others digital solutions, suggesting refinements. 	<ul style="list-style-type: none"> I can explain the difference between the internet and the World Wide Web. I can explain what a WAN and LAN is and describe the process of how access to the internet in school is possible 	<ul style="list-style-type: none"> I can use inputs and outputs within my coded programs such as sound, movement and buttons and represent the state of an object I can compare a range of digital content sources and rate them in terms of content quality and accuracy. I can consider the intended audience carefully when I design and make digital content I can use criteria to evaluate the quality of my own and others digital solutions, suggesting refinements. 	<ul style="list-style-type: none"> I can make appropriate improvements to digital work I have created. I can comment on how successful a digital solution is that I have created. I can work collaboratively with others creating solutions to problems using appropriate software