Newton Hill Community School: Progression Documents

Computing: Year Group: 4

Prior Learning Year 3	Year 4 Learning	Year 5 Future Learning	Vocabulary - Subject Specific	Linked Vocabulary
Computer Science: Children can turn a simple real-life situation into an algorithm for a program by deconstructing it into manageable parts. Their design shows that they are thinking of the desired task and how this translates into code. Children can identify an error within their program that prevents it following the desired algorithm and then fix it. Children demonstrate the ability to design and code a program that follows a simple sequence. They experiment with timers to achieve repetition effects in their programs. Children are beginning to understand the difference in the effect of using a timer command rather than a repeat command when creating repetition effects. Children understand how variables can be used to store information while a program is executing. Children's designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures Pupils compare digital and non-digital devices, before being introduced to computer networks that include network infrastructure devices like routers and switches. **Information Technology**	**Computer Science:** When turning a real-life situation into an algorithm, the pupil's design shows that they are thinking of the required task and how to accomplish this in code using coding structures for selection and repetition. Children make more intuitive attempts to debug their own programs. Pupils use of timers to achieve repetition effects are becoming more logical and are integrated into their program designs. They understand 'if statements' for selection and attempt to combine these with other coding structures including variables to achieve the effects that they design in their programs. As well as understanding how variables can be used to store information while a program is executing, they are able to use and manipulate the value of variables. Pupils can trace code and use step-through methods to identify errors in code and make logical attempts to correct this. In programs such as Logo, they can 'read' programs with several steps and predict the outcome accurately. Pupils will apply their knowledge and understanding of networks, to appreciate the internet as a network of networks which need to be kept secure. They will learn that the World Wide Web is part of the internet, and be given opportunities to explore the World Wide Web for themselves to learn about	**Computer Science:** Children may attempt to turn more complex real-life situations into algorithms for a program by deconstructing it into manageable parts. Children are able to test and debug their programs as they go and can use logical methods to identify the approximate cause of any bug but may need some support identifying the specific line of code. Children can translate algorithms that include sequence, selection and repetition into code with increasing ease and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures. They are combining sequence, selection and repetition with other coding structures to achieve their algorithm design. When children code, they are beginning to think about their code structure in terms of the ability to debug and interpret the code later, e.g. the use of tabs to organise code and the naming of variables. Pupils will develop their understanding of computer systems and how information is transferred between systems and devices. Learners will consider small-scale systems as well as large-scale systems. They will explain the input, output, and process aspects of a variety of different real-world systems.	Row, spreadsheet, formula, column, average, budget, chart, data, decimal place, equals tool, format cell, formula wizard, line graph, percentage, place value, random number tool, timer, spin tool, Balanced view, Easter eggs, Internet, key words, reliability, results page, search engine, Action, alert, algorithm, background, button, code blocks, command, debug/ debugging, design, execute, event, flowchart, 'if' statement, 'if/else statement, input, nest, object, prompt, implement, repeat, repeat until, predict, run, priorities, selection, sequence, timer, variable, Debugging, grid, LOGO, LOGO commands (e.g. FD, BK, RT, LT), Multi Line Mode, pen down, pen up, prediction, procedure, repeat, run speed, SETPC, SETPS, AdFly, attachment, citation, collaborate, cookies, copyright, digital footprint, malware, phishing, plagiarism, ransomware, SMART	Row, spreadsheet, formula, column, average, budget, chart, data, decimal place, line graph, percentage, place value, timer, Balanced view, Easter eggs, reliability, algorithm, background, command, design, execute, event, flowchart, input, nest, object, prompt, implement, repeat, predict, run, priorities, selection, sequence, timer, variable, grid, procedure, repeat, run speed, collaborate, copyright, virus, watermark

Pupils will carry out simple searches to retrieve digital content. They understand that to do this, they are connecting to the internet and using a search engine such as Purple Mash search or internet-wide search engines. Pupils will use slide show software to create a presentation. They will learn how to add pages, include media, customize animations and add timings. Pupils will create their own 'branching database' and be able to sort objects using 'yes' or 'no' questions. **Digital Literacy:** Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact See 'Online Safety'.	who owns content and what they can access, add, and create. Finally, they will evaluate online content to decide how honest, accurate, or reliable it is, and understand the consequences of false information. **Information Technology** Pupils will understand the function, features and layout of a search engine. They can appraise selected webpages for credibility and information at a basic level. Pupils are able to make improvements to digital solutions based on feedback. Pupils make informed software choice when presenting information and data. Pupils create linked content using a range of software such as 2Connect and 2Publish+. Pupils share digital content within their community e.g. using virtual display boards. **Digital Literacy:** Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact See 'Online Safety'.	Pupils will also take part in a collaborative online project with other class members and develop their skills in working together online. **Information Technology** Pupils search with greater complexity for digital content when using a search engine. Pupils are able to explain in some detail how credible a webpage is and the information it contains. Pupils will use the Purple Mash application '2Design' to design and print their own 3D model. Pupils will create their own database that will then be used to group and organise data e.g. through the Year 5 history unit where they can create data for Egyptian gods. **Digital Literacy:** Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact See 'Online Safety'.	rules, spam, virus, watermark	

Common Misconceptions	Key Questions:	Famous People Links
• Misunderstanding of key vocabulary. • Tools and their functions. • Effective searches. • Debugging accuracy. • If / else statement accuracy. • Plagiarism	• How would you add a formula so that the cell shows the percentage score for a test? • Give an example of the data that could be best represented by a line graph. • Which tools would you use to create a timed times tables test in 2Calculate? • Explain what a spreadsheet model of a real-life situation is and what it can be used for? • What is a search engine? • Explain the stages of the design, code, test, debug coding process. • What does selection mean in coding and how can you achieve this in 2Code?	• Charles Babbage – First person to make a mechanical computer. • Alan Turing – Mathematician who famously helped break Germany's Enigma code by design a computer to decipher the code. • John Von Neumann – Mathematician who developed computer architecture. E.g. memory (RAM). • Douglas Engelbart – pioneer in the development of modern computers. • Steve Jobs – Co-founder of Apple which invented iPad, iPhone, Apple Mac. • Philip Don Estridge – Developed the first IBM personal computer which paved the way for universal parts/ peripherals.

	• How can variables and if/else statements be useful when coding programs with selection? • What is the difference between the different object types in 2Code Gibbon level? • What is Logo? • What is meant by a digital footprint? • What is SPAM? • What is meant by plagiarism?	• Bill Gates – Founder of Microsoft. • Tim Berners-Lee – invented the WWW. • https://www.sutori.com/en/story/famous-people-in-computer-history--TcHp7hWrDd1ZfLW2zQfxCs5h
Assessment Opportunities/Final Assessment		
• FFT – Termly Assessments • Continuous assessment (AfL / formative).		