**ICKNIELD HIGH SCHOOL** **KEY STAGE 3 CURRICULUM MAP**

**'Raising the Achievement of All'**

**WELL-SEQUENCED** **CONTEXUALISED/INCLUSIVE** **AMBITIOUS**

**SUBJECT: Computing** **Year: 7**

| | Autumn 1<br><br>**Impact of technology: collaborating online respectfully** Identifying how to use online collaboration tools respectfully. An introduction to the computing lab. | Autumn 2<br><br>**Using media: gaining support for a cause** Creating a digital product for a real-world cause. | Spring 1<br><br>**Modelling data: spreadsheets** Sorting and filtering data and using formulas and functions in spreadsheet software. | Spring 2<br><br>**Networks: from semaphores to the internet** Recognising networking hardware and explaining how networking components are used for communication. | Summer 1<br><br>**Programming essentials in Scratch: part I** Applying the programming constructs of sequence, selection, and iteration in Scratch. | Summer 2<br><br>**Programming essentials in Scratch: part II** Using subroutines to decompose a problem that incorporates lists in Scratch. |
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| Key Questions | - What is my digital footprint?<br>- Why is there a need to have a strong password?<br>- How do I stay safe online?<br>- Why should I set my social media profile setting to private?<br>- What are the most important factors to be aware of when using social media to keep myself safe?<br>- What is cyberbullying?<br>- What are the effects of cyberbullying? | - What are application software?<br>- How do I identify the most appropriate type of software to use that is most suitable for the problem to be solved. -When is a source credible?<br>-Can I use this source in my work?<br>-What is a creative commons licence?<br>-What is a blog?<br>-What makes a good blog?<br>-What is the most suitable layout for my blog?<br>-How do I format correctly so that the information I am trying to | -Can I use criteria to evaluate the quality of solutions and identify improvements making some refinements to future solutions.<br><br>-How can I analyse and evaluate data to become information?<br><br>-Do I know that poor quality data leads to unreliable results, and inaccurate conclusions for individuals and organisations? | - What is a network?<br><br>- What are the components needed to make a network?<br><br>- What is network connectivity?<br><br>- What is the internet? Is it a protocol?<br>- What are packets?<br><br>- What is the difference between the internet and the world wide web?<br><br>- What services are available to us when using the WWW. How do these services all work together? | -How can I use sequence, selection and iteration to develop a program to solve a problem?<br><br>-What is the difference between, and appropriately use of if, then and else statements.<br><br>-Can I use a variable and relational operators within a loop to govern termination?<br><br>- Can I use loops and a sequence of selection statements in programs, including an IF, THEN and ELSE statement? | - How can I develop modular programs that use procedures or functions?<br><br>- Can I design, write and debug modular programs using procedures?<br><br>- Can I combine programming theory with the use of hardware? |
| **Content:** 'Know what' | -Be familiar with school network.<br>-Communicate safely and | -Purpose of each software.<br>-Formatting tools. | -Navigate a spreadsheet via its rows and column.<br>-Become familiar with | -What is the Internet?<br>-What services are provided over the | -The basic concepts of programming like sequencing, variables and expressions. | -Programming Constructs – Sequence, Selection & Iteration.<br>- Input and output. |

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| | respectfully online.<br>-Cyberbullying and the effects of cyberbullying.<br>-Create presentation suitable for intended audience.<br>- Concept of people impersonating others online. | -Copyright.<br>-Plagiarism.<br>-Credibility of sources.<br>Searching the Internet.<br>- Concerns surrounding the use of other people's work, including licensing and legal issues. | the cell referencing.<br>-Perform calculations on the data using basic formulas and cell references.<br>-Use the autofill tool to duplicate cells.<br>-Difference between data and information, and between primary and secondary sources of data.<br>-Use functions to analyse data in a spreadsheet. | Internet.<br>-Internet connected services and the impact on people.<br>- Hardware required to connect networks. | -Pattern recognition.<br>-Humans and computers understand instructions.<br>-Instructions are performed in order. | - If statements.<br>-Breaking a problem down into smaller, more manageable sub problems.<br>- -Repetition being used to complete a set of instructions. |
| **Expertise:**<br>'Know how' | -Create a memorable and secure password for an account on the school network.<br>-Remember the rules of the computing lab.<br>-Find personal documents and common applications.<br>-Recognise a respectful email.<br>-Construct an effective email and send it to the correct recipients.<br>-Describe how to communicate with peers online.<br>-Plan effective presentations for a given audience.<br>-Describe cyberbullying.<br>-Explain the effects of cyberbullying.<br>-Plan effective presentations for a given audience.<br>-Check who you are talking | -Select the most appropriate software to use to complete a task.<br>-Identify the key features of a word processor.<br>-Apply the key features of a word processor to format a document.<br>-Evaluate formatting techniques to understand why we format documents.<br>-Select appropriate images for a given context.<br>-Apply appropriate formatting techniques.<br>-Demonstrate an understanding of licensing issues involving online content by applying appropriate.<br>-Creative Commons licences.<br>-Demonstrate the ability to | -Identify columns, rows, cells, and cell references in spreadsheet software.<br>-Use formatting techniques in a spreadsheet.<br>- Use basic formulas with cell references to perform calculations in a spreadsheet (+, -, *, /).<br>-Use the autofill tool to replicate cell data.<br>-Explain the difference between data and information.<br>-Explain the difference between primary and secondary sources of data.<br>-Collect data Analyse data.<br>-Create appropriate charts in a spreadsheet.<br>-Use the functions SUM, COUNTA, MAX, and MIN in a spreadsheet.<br>-Analyse data Use a spreadsheet to sort and filter data.<br>-Use the functions | -Define what a computer network is and explain how data is transmitted between computers across networks.<br>-Define 'protocol' and provide examples of non-networking protocols<br>-List examples of the hardware necessary for connecting devices to networks.<br>-Compare wired to wireless connections and list examples of specific technologies currently used to implement such connections.<br>-Define 'bandwidth', using the appropriate units for measuring the rate at which data is transmitted, and discuss familiar examples where bandwidth is important.<br>-Define what the internet is. | -Compare how humans and computers understand instructions (understand and carry out).<br>-Recognise that computers follow the control flow of input/process/output.<br>Define a sequence as instructions performed in order, with each executed in turn.<br>-Predict the outcome of a simple sequence.<br>-Modify a sequence.<br>-Define a variable as a name that refers to data being stored by the computer.<br>-Recognise that computers follow the control flow of input/process/output<br>-Predict the outcome of a simple sequence that includes | -Define a subroutine as a group of instructions that will run when called by the main program or other subroutines.<br>-Define decomposition as breaking a problem down into smaller, more manageable subproblems<br>Identify how subroutines can be used for decomposition.<br>-Identify where condition-controlled iteration can be used in a program.<br>-Implement condition-controlled iteration in a program.<br>-Evaluate which type of iteration is required in a program.<br>-Define a list as a collection of related elements that are referred to by a single name.<br>-Describe the need for lists.<br>-Identify when lists can be used in a program Use a list. |

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| | to online. | credit the original source of an image.<br>-Critique digital content for credibility.<br>-Apply techniques in order to identify whether or not a source is credible.<br>-Apply referencing techniques and understand the concept of plagiarism.<br>-Evaluate online sources for use in own work.<br>-Construct a blog using appropriate software.<br>-Organise the content of the blog based on credible sources.<br>-Apply referencing techniques that credit authors appropriately.<br>-Design the layout of the content to make it suitable for the audience.<br>-Construct a blog using appropriate software.<br>-Organise the content of blog based on credible sources. | AVERAGE, COUNTIF, and IF in a spreadsheet.<br>-Use conditional formatting in a spreadsheet | -Explain how data travels between computers across the internet.<br>-Describe key words such as 'protocols', 'packets', and 'addressing'.<br>-Explain the difference between the internet, its services, and the World Wide Web.<br>-Describe how services are provided over the internet.<br>-List some of these services and the context in which they are used.<br>-Explain the term 'connectivity' as the capacity for connected devices ('Internet of Things') to collect and share information about me with or without my knowledge (including microphones, cameras, and geolocation).<br>-Describe how internet-connected devices can affect me.<br>-Describe components (servers, browsers, pages, HTTP and HTTPS protocols, etc.) and how they work together. | variables.<br>-Trace the values of variables within a sequence.<br>-Make a sequence that includes a variable.<br>-Define a condition as an expression that will be evaluated as either true or false.<br>-Identify that selection uses conditions to control the flow of a sequence. Identify where selection statements can be used in a program.<br>-Modify a program to include selection.<br>- Create conditions that use comparison operators (>,<,=).<br>-Create conditions that use logic operators (and/or/not)<br>-Identify where selection statements can be used in a program that include comparison and logical operators.<br>-Define iteration as a group of instructions that are repeatedly executed.<br>-Describe the need for iteration.<br>-Identify where count-controlled iteration can be used in a program.<br>-Implement count-controlled iteration in a program.<br>-Detect and correct errors in a | - Decompose a larger problem into smaller subproblems.<br>-Apply appropriate constructs to solve a problem. |

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| | | | | | program (debugging). | |
| Literacy/ Numeracy/ SMSC/ | **Literacy**<br>- Glossary tier 3 terminology.<br>- Writing and presenting information suitable for audience and purpose.<br><br>**Numeracy**<br>- Collecting and managing data.<br>- Data visualisation<br>- Qualitative and quantitative data.<br>- Interpretation of data.<br><br>**SMSC**<br>- Resilience.<br>- Initiative. | **Literacy**<br>- Glossary tier 3 terminologies.<br>- Writing and presenting information suitable for audience and purpose.<br><br>**Numeracy**<br>- Problem solving.<br>- Collecting and analysing data.<br><br>**SMSC**<br>- Copyright and ownership.<br>Managing online information. | **Literacy** – Glossary tier 3 terminology.<br><br>**Numeracy**<br>- Students use arithmetic operations to create efficient formulas in spreadsheets.<br>- Problem solving.<br><br>**SMSC**<br>- Peer assessments.<br>- Group work.<br>- Ability to follow set of instructions | **Literacy**<br>- Glossary tier 3 terminologies.<br>- Writing and presenting information suitable for audience and purpose.<br><br>**Numeracy**<br>- Problem solving.<br>- collecting and analysing data.<br><br>**SMSC**<br>- Copyright and ownership.<br>- Managing online information. | **Literacy**<br>- Glossary tier 3 terminology.<br>- Recap of tier 3 terminology through the use of 'Beat the teacher' game.<br><br>**Numeracy**<br><br>- Iteration of code using count. controlled loops.<br>-Using conditions that use comparison operators.<br>-Problem solving and algorithmic thinking.<br><br>**SMSC**<br>- Interacting with an online BOT.<br>-Use of nursery rhymes and dance sequences to complete programming tasks.<br>- Peer support and experimentation.<br>- Peered Instruction.<br>- Confidence.<br>Resilience. | **Literacy**<br>- Glossary tier 3 terminology.<br><br>**Numeracy**<br>- Decomposition.<br>- Subroutines Condition-controlled iteration.<br>- Lists.<br>- Problem solving.<br><br>**SMSC**<br>- Peer support and experimentation.<br>- Confidence.<br>- Resilience.<br>- Initiative. |
| Careers | https://icould.com/stories/malcolm-b/<br><br>https://icould.com/stories/malcolm-b/ | - https://icould.com/stories/malcolm-b/<br><br>https://icould.com/stories/malcolm-b/ | https://icould.com/stories/malcolm-b/<br><br>https://icould.com/stories/malcolm-b/ | - https://icould.com/stories/malcolm-b/<br><br>https://icould.com/stories/malcolm-b/ | Henrique O - icould<br><br>https://icould.com/stories/mark-b-2/ | - https://www.youtube.com/watch?v=sgbRUB0pt4c<br><br>https://www.youtube.com/watch?v=TuKp733BF54 |
| Disciplinary Literacy | • Prioritise Tier 2 and 3 vocabulary.<br>• Provide explicit vocabulary instruction to help students access and use academic language.<br>• Reading and Analysing Technical Texts: Encourage students to read and critically analyse technical texts related to computing. This could include textbooks, articles, or online resources that explain various concepts or technologies. Students can then discuss and reflect on the ideas presented in these texts. Reading strategies, such as activating prior | | | | | |

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| | knowledge, prediction and questioning can improve students' comprehension.<br>• Writing for Different Purposes: Assign tasks that require students to write for different purposes within the context of computing. For example, they can write instructions for a coding project, create technical documentation for a program, or write a report analysing the ethical implications of a technology. Targeted support should be provided to students who struggle to write fluently, as this may affect writing quality.<br>• Understanding Domain-Specific Vocabulary: Teach students the specific vocabulary and terminology used in computing. Make sure they understand the meanings of words such as algorithm, variable, loop, binary, cybersecurity, etc. Encourage them to use this vocabulary correctly and effectively in their written and verbal communication. Teachers can also use high quality talk to introduce new vocabulary and encourage students to incorporate these terms into their discussions.<br>• Collaborative Discussions: High quality talk is typically well-structured and guided by teachers. High quality talks promotes collaborative discussions and group work in which students can engage in discourse about computing-related topics. Encourage them to share their ideas, ask questions, and challenge each other's viewpoints. This will help develop their ability to communicate effectively and engage in disciplinary conversations. Modelling high quality talk, for example key vocabulary and metacognitive reflection. By engaging in discussions, students can deepen their understanding of key terms and concepts.<br>• Presentations and Debates: Assign presentations or debates on computing-related topics to allow students to present their ideas, arguments, and evidence to an audience. This will provide them with an opportunity to develop their oral communication skills, research abilities, and critical thinking.<br>• Combining reading activities and writing instruction to improve students' skills in both, particularly with coding units.<br>• Teachers can use questioning techniques to prompt students to reflect on their thought processes, identify gaps in their understanding, and develop strategies to improve their learning. |