

KNOWLEDGE OVERVIEW GRID						
	Subject: Computing			Year Group: 5		
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Computing Systems & Networks – systems and searching	Hour of Code Course E	Data and Information – Flat – file databases	Programming B – selection in quizzes	Vector Drawing	Video Production
NC Objectives Covered (Taken directly from the National Curriculum)	Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration. I can explain the benefits and limitations of using different types of search technologies e.g. voice-activation search engine. I can explain how some technology can limit the information I am presented with. I can explain what a strong password is and demonstrate how to create one. Pupils should know how to be a discerning consumer of information online, including that from search engines, is ranked, selected and targeted.	Understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms, and data representation. Analyse problems in computational terms and have repeated practical experience of writing computer programs to solve such problems. Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. Understand computer networks, including the internet, and how they can provide multiple services, such as the World Wide Web. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information.	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information. Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour.	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information.
Digital Literacy Strand	Privacy and Security AUP Password setting	Online Relationships and Online bullying.	Health Well Being Bramhope Change One thing competition	Self-Image and Identity	Managing Online Information. Copywrite	Online reputation
Previous Knowledge -What have children learnt previously that will support this next step?	Some knowledge on the internet and networks but no specific theory unit prior to 2022-2023.	Block coding – Year 3 Course D Event blocks, Loops, Debugging Microbits: beginner projects in Year 3/4. Closed projects involving loops.			LKS2: Previous use of Power Point. Previous Office skills 3/4 Save/Save as, Embolden and other features, Bullets Spell check	Photo editing in Year 3 and 4.
Misconceptions -What are the common misconceptions in knowledge for this unit?	Search engines find all the information on a topic. Search engines show the most accurate results first. All search engines work the same way and give the same results.	Errors in code from mistakes made by the programmer's instructions. Algorithms are the same as code. Inputting instructions in the wrong order which means the correct output cannot be achieved.	Databases are the same as spreadsheets. Databases can store unlimited data. Databases can only store numbers.	The program will understand the input even if there is a mistake in the code. The program doesn't need to be tested out the first time. The program will automatically know what to do after the code has been written.	A vector drawing is just like a photograph. All objects in a vector drawing are the same. Layering objects in a vector drawing doesn't affect the final image.	Recording can begin straight away without having a plan first. Too many special effects or transitions are used to try and enhance the video. Not considering how audio plays a critical role in video and the importance of clear dialogue, background music or sound effects.

Learning Sequence -Detail the learning sequence using key questions in an ordered sequence. -The questions should have a sequential build up to answer the overall learning challenge.	Re-visit Acceptable Use Policy. 1.Can I explain that computers can be connected together to form systems? 2. Can I recognise the role of computer systems in our lives?	E Safety Warm Up <u>Lesson 1</u> - Learners will be introduced to the concept of programming and how computers follow instructions. Can I understand what programming is? Can I understand how programming can be used to make computers do specific tasks? Can I drag and drop blocks to complete simple tasks? <u>Lesson 2</u> – Learners will learn how to arrange commands in a correct sequence to perform a specific task. Can I place instructions in the right order to ensure the program runs correctly? Can I sequence a number of blocks to solve puzzles and move a character through a maze? <u>Lesson 3</u> – Learners will explore loops, learning how to repeat actions multiple times without needing to write the same instructions. Can I create loops to make characters move repeatedly or perform actions a set number of times? <u>Lesson 4</u> – Learners will understand how events work, such as how a program can respond to user actions. Can I create an interactive project where a character moves when I press a key? <u>Lesson 5</u> – Learners will learn how to use ‘if’ statements to make decisions on their code based on specific conditions. Can I code a simple decision-based game where a character performs different actions? <u>Lesson 6</u> – Learners will be introduced to functions, which allow them to group instructions to a single command. Can I create my own instructions to simplify a code? Can I make a character perform a set of instructions using a single command?	E Safety Warm Up <u>Lesson 1</u> - Learners will create a paper version of a record database. Can I create a database using cards? Can I explain how information can be recorded? Can I order, sort and group my data cards? E Safety Warm Up <u>Lesson 2</u> - Learners will compare paper and computer-based databases. Can I explain what a field and a record is in a database? Can I navigate a flat-file database to compare different views of information? Can I choose which field to sort data by to answer a given question? E Safety Warm Up <u>Lesson 3</u>- Learners will understand how you can answer questions by grouping and sorting data. Can I explain that data can be grouped using chosen values? Can I group information using a database? Can I combine grouping and sorting to answer specific questions? E Safety Warm Up <u>Lesson 4</u>- Learners understand that tools can be used to select specific data. Can I choose which field and value are required to answer a specific question? Can I outline how, ‘and’ and ‘or’ can be used to refine data selection. Can I choose multiple criteria to answer a specific question? E Safety Warm Up Lesson 5- Learners will explain that computer programs can be used to compare data visually. Can I select an appropriate chart to compare data visually? Can I refine a chart by selecting a particular filter? Can I explain the benefits of using a computer to create charts? <u>E Safety Warm Up</u>	E Safety Warm Up <u>Lesson 1</u> - Learners explain how selection is used in computer programs. Can I recall how conditions are used in selection? Can I identify conditions in a program? Can I modify a condition in a program? E Safety Warm Up <u>Lesson 2</u>- Learners relate that a conditional statement connects a condition to an outcome. Can I use selection in an infinite loop to check a condition? Can I identify the condition and outcomes in an ‘if, then, else’ statement? Can I show that a condition can direct flow in a program in one of two ways? E Safety Warm Up <u>Lesson 3</u>- Learners design a program that uses selection. Can I outline a given task? Can I design a format to outline my project? Can I identify the outcome of user input in an algorithm? E Safety Warm Up <u>Lesson 4</u>- Learners design a program that uses selection. Can I outline a given task? Can I design a format to outline my project? Can I identify the outcome of user input in an algorithm? E Safety Warm Up <u>Lesson 5</u>- Learners create a program that uses selection. Can I implement my algorithm to create the first section of my program? Can I test my program? Can I share my program with others? E Safety Warm Up <u>Lesson 6</u>- Learners evaluate their program. Can I identify ways the program can be improved? Can I identify the setup code I need in my program? Can I extend my program further?	E Safety Warm Up <u>Lesson 1</u> - Learners identify that drawing tools can be used to produce different outcomes. Can I recognise that vector drawings are made using shapes? Can I experiment with the shape and line of tools? Can I discuss how vector drawings are different from paper-based drawings? E Safety Warm Up <u>Lesson 2</u> - Learners create a vector drawing by combining shapes. Can I identify the shapes used to make a vector drawing? Can I explain that each element added to a vector drawing is an object? Can I move, resize and rotate objects I have duplicated? E Safety Warm Up <u>Lesson 3</u> - Learners use tools to achieve a desired effect. Can I use the zoom tool to add detail to drawings? Can I explain how alignment grids and resize handles can be used to improve consistency? Can I modify objects to create a new image? E Safety Warm Up <u>Lesson 4</u> - Learners will recognise that vector drawings consist of layers. Can I identify that each added object creates a new layer in the drawing? Can I change the order of layers in a vector drawing? Can I use layering to create an image? E Safety Warm Up <u>Lesson 5</u> - Learners will group objects to make them easier to work with. Can I copy part of a drawing by duplicating several objects? Can I recognise when I need to group and ungroup objects? Can I reuse a group of objects to further develop my vector drawing? E Safety Warm Up <u>Lesson 6</u> - Learners apply what they have learned about vector drawings. Can I create a vector drawing for a specific purpose? Can I reflect on the skills I have used and why we have them? Can I compare vector drawings to freehand paint drawings?	E Safety Warm Up <u>Lesson 1</u> - Learners explain what makes a video effective. Can I explain that a video is a visual media format? Can I identify features of videos? Can I compare features in different videos? E Safety Warm Up <u>Lesson 2</u> - Learners use a digital device to record a video. Can I identify and find features on a digital video recording device? Can I experiment with different camera angles? Can I make use of a microphone? E Safety Warm Up <u>Lesson 3</u>- Learners capture a video using a range of techniques. Can I suggest filming techniques for a given purpose? Can I capture a video using a range of filming techniques? Can I review how effective my video is? E Safety Warm Up <u>Lesson 4</u> - Learners create a storyboard. Can I outline the scenes of my storyboard? Can I decide which filming techniques I will use? Can I create and save video content? E Safety Warm Up <u>Lesson 5</u> - Learners identify that a video can be improved through reshooting and editing. Can I store, retrieve and export my recording to a computer? Can I explain how to improve a video by reshooting and editing? Can I select the correct tools to make edits to my video? E Safety Warm Up <u>Lesson 6</u> - Learners consider the impact of choices made when making and sharing a video. Can I make edits to my video and improve the final outcome? Can I recognise that my choices when making a video will impact the quality of the final outcome? Can I evaluate my video and share my opinions?
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Curriculum End Points -What will children know and be able to do by the end of the unit? -What will the children produce to demonstrate this knowledge?	Children will develop their understanding of how computer systems work and how information is transferred between systems and devices. They will be able to explain the input, output and process aspects of a variety of different real-world systems. They will discover how information is found on the World Wide Web through learning how search engines work and what influences searching.	Understand basic programming concepts such as sequencing, loops, and conditionals, and apply them to create simple programs and interactive animations. Demonstrate problem solving skills by debugging and refining their code to improve functionality and efficiency within their projects. Produce a completed or animated game or animation that uses the concepts learned, showcasing their ability to write code and make decisions based on user input.	Children will understand how a flat-file database can be used to organise data in records. They will use tools within a database to order and answer questions about data. They will create graphs and charts from their data to solve problems. They will also use a real-life database to answer a question and present their work to others.	Children will develop their knowledge of ‘selection’ by revisiting how ‘conditions’ can be used in programming and then learning how the ‘if’, ‘then’, ‘else’ structure can be used to select different outcomes. Children will represent their understanding in algorithms and then by constructing programs in the Scratch programming environment. They learn how to write programs that ask questions and use selection to control the outcomes based on the answers given.	Children start to learn to create vector drawings. They learn how to use different drawing tools to create images. Learners recognise that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object. Learners layer their objects and begin grouping and duplicating them to support the creation of more complex pieces of work.	Children will learn how to make short videos by working in pairs or groups. They will use topic-based language throughout the topic and develop the skills of capturing, editing and manipulating video. Learners are guided with step-by-step support to take their ideas through from planning to completion. At the conclusion of the unit, learners have the opportunity to reflect and assess their progress in creating a video.
Knowledge Sentences -Using the end points, what are the key statements children need to remember by the end of the unit? (I know that...) (To share with children when it is taught during the unit)	I know that computer systems include inputs, processes, and outputs to complete tasks. I know that networks connect devices to transfer information in small data packets. I know that the World Wide Web is a collection of webpages accessed through the internet. I know that search engines use algorithms to find and organise information online. I know that search results are influenced by keywords, relevance, and advertisements.	I know that sequencing is putting instructions in the correct order to make a program work. I know that loops allow actions to repeat, making my code shorter and more efficient. I know that debugging is finding and fixing mistakes in my code to improve how it works. I know that I can use code to create animations and games that respond to user input.	I know that a flat-file database stores information in rows called records and columns called fields. I know that I can sort and filter data in a database to find the information I need. I know that I can use a database to create graphs and charts to help solve problems. I know that databases are used in real life to organise and find information quickly. I know that I can use data from a database to answer questions and present my findings.	I know that selection is when a program makes a choice based on a condition. I know that the ‘if’, ‘then’, ‘else’ structure helps programs decide between different outcomes. I know that conditions are questions or statements that a program checks to make decisions. I know that I can use algorithms to plan how a program will use selection to work.	I know that vector drawings are made using shapes, lines, and other objects. I know that each part of a vector drawing is called an object, and I can move or change it separately. I know that I can layer objects in my drawing to create depth and complexity. I know that I can group and duplicate objects to make my drawings quicker and more detailed. I know that using different drawing tools helps me create images in a clear and precise way.	I know that planning my video helps me organize my ideas and decide what to include. I know that I can use a camera or device to capture video clips for my project. I know that I can edit my video by trimming clips, adding text, and rearranging scenes. I know that manipulating video means changing parts of it to improve or adjust the final product. I know that reflecting on my video helps me understand what went well and how I can improve next time.

Key Vocabulary (To share with children and add to working walls/knowledge mats)		Network Data World Wide Web Search engine Algorithm Input Output Process	Sequencing Loops Debugging Function Command Coordinate Sprite Decompose	Database Record Field Sort Graph Organise Analyse Criteria	Selection Condition If, then, else Algorithm Scratch Predict Flowchart Outcome	Vector Object Layer Group Duplicate Shape Resize Scale	Capture Edit Storyboard Trim Reflect Scene Zoom Transition Timeline
What does this look like at Bramhope?	Enrichment Activities (trips, residentials, speakers, SMSC)	Digital Leader assembly	Digital Leader assembly Parent Workshop linked to Parents evening.	Digital Leader assembly Change One Thing Competition Parent Workshop linked to Parents evening.	Digital Leader assembly	Digital Leader assembly	Digital leader assembly
	Physical Resources (artefacts)	E Safety Warm Up Planning	Hour of Code Course E E Safety Warm Up Planning	E Safety Warm Up Planning	E Safety Warm Up Planning	E Safety Warm Up Planning	E Safety Warm Up Planning
	Cross Curricular learning (Include opportunities for writing and quality texts)						
	Local Learning including outdoor learning						
	Opportunities for cultural Diversity						