THREAD: Logical Thinking **AOLE: Science & Technology**

Progression Step 1		
Knowledge and Skills	**Vocabulary**	**Experiences and Characteristics**
Identifies sequences and patterns and discusses the changes in physical form. Identifies and talk about the relationship between a collection related items with computing e.g. the mouse moves the cursor around the screen. Follow simple set instructions with support.	Pattern Instruction Always Sometimes Never	**Essential** Enterprise Project Using Beebots **Enrichment** Creating a Beebot map link to school topic.

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Progression Step 2		
Knowledge and Skills	**Vocabulary**	**Experiences and Characteristics**
Explain and construct tasks in logical steps e.g. algorithm Create basic selection statements e.g. IF Discover problems in a set of instructions and begin to correct them. Eg. correct order Begin to use in online an repeated (e.g. loops) in online and offline processes Designing a product in logical steps which uses simple materials Generate a range of concepts to meet a given brief Use a simple model to describe and explain certain concepts e.g. electricity, forces, particles. Follow a set of instructions Discuss what is happening in a given context (eg.science experiment) and why you think this is. Use knowledge and understanding to predict effects and what might happen	Develop Plan Order Improve Navigate Test Loop Explain Sequence Stage Repeat Algorithm Construct Diagram Flowchart Create	**Essential** Complete a project from start to finish e.g. enterprise project **Enrichment** Links with community projects

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Progression Step 3		
Knowledge and Skills	**Vocabulary**	**Experiences and Characteristics**
Explain and construct tasks in logical steps e.g. algorithm Understand the importance of ordering instructions correctly. Create basic selection statements e.g. IF Discover problems in a set of instructions and correct them. Develop outcomes using repeated (e.g. loops) processes Planning logical stages of manufacturing Generate a range of concepts to meet a given brief Use a simple model to describe and explain certain concepts e.g. forces, particles	Selection Statement Terminate Repetition Algorithm Refine Loops Statements Construct Flowchart Interrogate Plan Stage Navigate Structuring Develop Generate Iteration	**<u>Essential</u>** **<u>Enrichment</u>** Community projects / events e.g. Lego League with coding or logical thinking

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Progression Step 4		
Knowledge and Skills	**Vocabulary**	**Experiences and Characteristics**
Decompose problems and apply them in different environments e.g. apply an algorithm(flowchart/pseudocode) to different coding platforms. Plan and test data in a logical manner to identify problems Develop and use a variety of selection statements and loops e.g. Nested IF, While, Repeat until Understand and use basic Logical statements e.g. AND, OR, NOT, XOR Create a physical system using logic to complete a task Applying logical stages of manufacturing Generate a range of concepts to meet a given brief and decide on the most appropriate Use a simple model to describe and explain further concepts e.g. electricity (protons, neutrons and electrons)	Recursion Detecting errors Correcting errors Decompose Nested IF XOR Coding Platform Transferrable Pseudocode	**<u>Essential</u>** **<u>Enrichment</u>** Community projects / events e.g. Lego League with coding or logical thinking Draw.io website - create flowcharts