THREAD: Investigation **AOLE: Science & Technology**

Progression Step 1		
Knowledge and Skills	**Vocabulary**	**Experiences and Characteristics**
Use the senses to help me talk about what I can explore Ask questions about what might happen and how things work Talk about what I am doing and say what I think might happen e.g. The higher the ramp the faster the car will travel Engage and explore a range of resources that can link to scientific ideas Use age-appropriate technical vocabulary Understand how to handle resources safely Talk about what I have found out Record what you have found out as a group and with support e.g. JIT5 Say what is the same and what is different	Question What do you think will happen if...? Equipment What can you see? What can you hear? Make Design Create How we do it Tell me/prove it (Explain) Fair How do we make sure this is fair?	**Essential** Use outdoor learning to generate questions Immerse learners in DCF, Science and Design and Technology e.g. through tuff trays and role play areas To complete an investigation and record the findings. (Plan, Develop, Reflect) To engage children through the wonders of science Eg. https://spark.iop.org/collections/marvin-and-milo Opportunities to research from a variety of sources. **Enrichment** To participate in a scientific and/or a technological project. E.g. XL Wales, Lego League STEM ambassadors Link with local businesses

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Progression Step 2		
Knowledge and Skills	**Vocabulary**	**Experiences and Characteristics**
Record results in a table and a suitable bar chart With support select appropriate equipment and use safely Begin to link patterns within results to their knowledge and understanding of the world / scientific understanding Share resources and findings with others online e.g To analyse simple data. Eg. Biggest bar on graph etc Understand what appropriate websites are and how to identify them Understand that reliability is linked to being trustworthy To share resources and findings with others online using a range of methods To use appropriate sources for research.	Accurate Predict eg. "er" sentences – the great**er** the amount of ice, the long**er** it will take to melt. Apparatus Explain Design and Create Pattern (data) Things we change Things we measure Things we keep the same Odd/Unexpected Results Observations Record Constant Evidence Information Online collaboration Sort and Compare Product Group Describe Differences Planning Construct	**Essential** Use outdoor learning to generate data To complete an investigation and record the findings. (Plan, Develop, Reflect) To engage children through the wonders of science Eg. https://spark.iop.org/collections/marvin-and-milo Opportunities to research from a variety of sources. **Enrichment** To participate in a scientific and/or a technological project. E.g. XL Wales, Lego League STEM ambassadors Link with local businesses

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Progression Step 3		
Knowledge and Skills	**Vocabulary**	**Experiences and Characteristics**
Identify relevant sources Analyse reliability of sources Obtain results from an activity Identify any anomalies and use repeatable results to calculate a mean value Find /Create and analyse data. (offline and digitally) Collaborate and share information online, eg Teams, Google Docs Make observations Ask relevant questions Identify the independent, dependent and control variable(s) Record results in a table and a suitable line graph and frequency chart (digitally and offline) Record results in a simple online bar graph Write a prediction, method and conclusion Research and evidence findings using copyright law. Ability to break up (chunk) a problem before investigation	Independent, Dependent, control Variables Predict eg. "er" sentences – the great**er** (independent variable) the amount of ice, the long**er** (dependent variable) it will take to melt. Fair test Conclusion Evaluate Analyse Correlation Research Testing Method Scale axis Copyright Anomalies (odd results) Repeatable results Referencing Success criteria Line of best fit Trend comparison Loop / repetition Justify Relevance Reliability Range Justify	**Essential** To complete an investigation where you can identify the independent, dependent and control variable(s) To engage with a range of investigative skills: • observation over time • sorting and classification • pattern seeking (eg. Is there a link between height and shoe size) researching evidence from secondary sources, • justifying opinions using evidence / own ideas • fair test To engage children through the wonders of science Eg. https://spark.iop.org/collections/marvin-and-milo Opportunities to research from a variety of sources. To create data from outdoor learning activities

Understand a process (flowchart)	Frequency Flowchart Mean Sum (Total) Max (Highest value) Min (Smallest value) Average	Use a range of software to share and collaborate online **Enrichment** To participate in a scientific and/or a technological project. E.g. XL Wales, Lego League STEM ambassadors (website community link) https://www.stem.org.uk/stem-ambassadors Link with local businesses Residential Trip

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Progression Step 4		
Knowledge and Skills	**Vocabulary**	**Experiences and Characteristics**
Apply outcomes/findings from research sources to determine the outcome. Compare a range of results from an activity. Find /Create and analyse data then present in a way appropriate to the information. Independently choose a method to collaborate and share resources online. Asking open ended and using deeper questioning. Ask follow up questions. Make observations which links the research findings allowing it to be used to drive the task or outcome Evaluate findings from graph data to find trends / patterns. Identify and explain anomalies Identify reproducible results Write a qualitative and quantitative prediction Write a method and conclusion with detailed interpretations and evaluations Use results to make further predictions	Link Quantify Elaborate Develop Compare Interpret Hypotheses Quantitative Qualitative Reproducible Sequence Recursion Estimate Flowchart / Pseudocode Independently Copyright and Patents Act 1988	**Essential** To undertake a range of investigation methods including observation, questionnaires, and interviews. Independently use a range of software to share and collaborate online To be able to display information graphically using a range of appropriate methods To complete an investigation where you can identify the independent, dependent and control variable(s) and to suggest ways of how the control variable(s) remain(s) constant **Enrichment** To participate in a scientific and/or a technological project. E.g. XL Wales, Lego League STEM ambassadors (website community link) https://www.stem.org.uk/stem-ambassadors Link with local businesses Residential Trip

Ability to act responsibly as a creator or user of work when researching online. (e.g. Copyright and Patents Act 1988) Construct a process diagram to visually display instructions / methods (e.g. flowchart / pseudocode)		