Knowledge and Skills Progression for Science (Working Scientifically)

Working Scientifically	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Project Driving questions	1. How can we show compassion, care and love to those in need? 2. How can we care for our world? 3. What makes someone a hero?	1. How can we be compassionate, caring and loving towards others? 2. How can we look after our planet? 3. What is it like at the seaside? 4. What does it mean to be an explorer? 5. Growing, Changing, Belonging - Why are differences important? 6. Why did London burn and how can we design it safer today?		1. How can we be more compassionate, caring and loving towards others? 2. How could looking through 'my window' help me to be a better steward of the environment? 3. What can we learn from the Romans about work, innovation, and community? 4. Can rocks show us how to be sustainable? 5. Why is it important to hear everyone's story before we judge what happened in the past? 6. How did the Anglo Saxons build a life they could trust?		1. How can we show compassion, care and love to those in need? 2. What can we learn about stewardship from the medieval monarchs? 3. Why does Britain have the Benin bronzes and should they be given back? 4. Why is Earth special and how can we protect it? 5. How can learning about past and present lifestyles help us understand why we should not judge others? 6. How did trust help Ancient Egyptian society thrive, and how can we build fair and trusting communities today?	
Curriculum Topics - History/ *Science*	Ourselves People that help us Superheroes Journeys and transport	Neil Armstrong, Explorers, Fire of London, Holidays and Seaside, Homes and Houses, Mary Seacole ***Seasonal Changes, Plants, Animals including humans, Living things and their habitats, Everyday Materials***		Vikings and Anglo Saxons, Romans, Stone age to Iron age, Anglo Saxons to Scots, Victorians ***Plants , Light, Living things and their habitats, Animals including humans, Sound, rocks, Electricity, States of Matter, Forces and magnets***		Tudors, Ancient Egypt, Benin, Ancient Greece, WW2 ***Light, Electricity, Living things and their habitats, Earth and Space, Evolution and Inheritance, Properties and changes of materials, Animals including humans, Forces and Magnets***	
Asking scientific questions	Begin to ask questions about the world around them	Ask a yes/no questions to aid sorting. Ask one/two simple research questions linked to a topic. Choose a question to undertake a fair test. Ask a question about what might happen over time or that is looking for a pattern. *e.g. Why are flowers different colours?* *Why do some animals eat meat and others do*		Ask a range of Yes/No questions to aid sorting. Ask a range of research questions linked to a topic. Ask a range of question to undertake a fair test. Ask a range of question about what might happen over time or that is looking for a pattern.		Ask a range of Yes/No questions to aid sorting and decide which ways of sorting will give useful information. Ask a range of questions recognising that some can be answered through research and others may not. Ask a range of questions and identify the type of enquiry that will help to answer the questions.	

		not? *Why do some trees lose their leaves in autumn and others do not?* *How long are the roots of tall trees?* *Why do some animals have underground habitats?*	*e.g. Why does the moon appear as different shapes in the night sky? Why do shadows change during the day? Where does a fossil come from?* *Why are steam and ice the same thing? Why is the liver important in the digestive system? What do we mean by pitch when it comes to sound?*	Ask further questions based on results.
Plan an Enquiry		Identify the headings for the two classification groups (it is …., it is not ….) Choose equipment to use and decide what to do and what to observe or measure in order to answer the question.	Put appropriate headings onto intersecting Venn and Carroll diagrams. Choose a research source from a range provided Decide what to change and what to measure or observe Decide how often to take a measurement.	Identify specific clear questions that will help to sort without ambiguity Choose suitable sources to use • Recognise and independently control variables where necessary. Decide how often to take a measurement
Observe Closely	Explore the natural world around them, making observations and drawing pictures of animals and plants.	Compare objects based on obvious, observable features e.g. size, shape, colour, texture etc. Make observations linked to answering the question.	Compare objects based on more sophisticated, observable features and present observations in labelled diagrams. Make a range of relevant observations linked to the question.	Compare not only based on physical properties but also on knowledge gained through previous enquiry. Make a range of relevant observations linked to the question.
Take measurements		When appropriate, measure using standard units where all the numbers are marked on the scale.	Measure using standard units (according to age-related mathematics) where not all the numbers are marked on the scale, and take repeat readings where necessary Use dataloggers to measure over time.	Measure using standard units using equipment that has scales involving decimals (according to age-related mathematics), and take repeat readings where necessary. Use dataloggers to measure over time.
Record results	Record observations pictorially/photographs	• Record data in simple prepared tables, tally charts, pictorially or by taking photographs.	Prepare own tables to record data.	Prepare own tables to record data, including columns for taking repeat readings
Present results		Sort objects and living things into two group using a basic Venn diagram or simple table Present what they have learnt verbally, using pictures or block diagrams.	Sort objects and living things into groups using intersecting Venn and Carroll diagrams Present what they learnt verbally or using labelled diagrams, bar charts, or time graphs.	Create branching databases (tree diagrams) and keys to enable others to name livings things and objects Present what they learnt in a range of ways e.g. different graphic organisers, line graphs and scatter graphs.

Interpret results		Talk about the number of objects in each classification group i.e. which has more or less. Answer their questions using simple sentences using their observations or measurements.	Spot patterns in the classification data, particularly two criteria with no examples - e.g. there are no living things with wings and no legs. Answer questions using simple scientific language and refer directly to their evidence when answering their question.	Talk about the features that items share and do not share based on the information in the key etc. Answer questions using scientific evidence gained from a range of sources. Describe causal relationships, change over time and identify patterns.
Draw conclusions			Draw simple conclusions, when appropriate, for patterns - e.g. a flying insect with no legs might always crash land. Where appropriate provide oral or written explanations for their findings.	Use data to show that items grouped together have more things in common than with things in other groups Provide detailed oral or written explanations for their findings
Make a prediction			Use results from an investigation to make a prediction about a further result.	Use test results to make predictions for further investigations.
Evaluate an enquiry			Suggest improvement (e.g. a wider range of objects) and suggest new questions arising from the investigation. Suggest limitations to research (e.g. only had one book) and suggest new questions arising from the investigation. Suggest improvements (e.g. measurement method) and suggest new questions arising from the investigation.	Explain using evidence that the branching database or classification key will only work for the living things or materials it was created for. Talk about their degree of trust in the sources they used. Explain their degree of trust in their results (e.g. precision in measurements, variables that may not have been controlled, and accuracy of results.

Key
Purple - National Curriculum
Red - St Vincent's Curriculum
Black - Skills Progression