Science Skills Progression Key Stage 2

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Key	Year 3	Year 4	Year 5	Year 6	Impact
Skills	Implementation	Implementation	Implementation	Implementation	
Asking Scientific Questions	With full adult support, starting to ask simple questions which may possibly be answered using scientific enquiry. Rocks & Soils How long ago were the dinosaurs? How do we know what? What can we find out from fossils? How can we test the permeability of different soils? How can we test the durability, density and permeability of different rocks? How can we group and classify different rocks? Animals Including Humans Can we determine what would be a healthy balanced diet for an astronaut? How can we investigate the nutrient content of different foods? Forces & Magnets How can we compare materials that are attracted or repelled by magnets? Can we predict whether different materials will be attracted or repelled by magnets?	With adult support, asking effective scientific questions which can be used to plan and carry out a scientific enquiry. Plants • How can we group different animals and plants? • How can we group different kinds of materials? States Of Matter • Can we observe changes in states of matter and identify the causes? • How does the water cycle work? Sound • Can we investigate how sound travels? • Can we investigate how different materials affect how sound travels?	With only partial adult support to check for misconceptions, can ask scientific questions which can be used to plan and carry out a scientific enquiry. Earth & Space • Why are the planets and sun spherical? • How do all the heavenly bodies move around the solar system? • How can we prove why we have day and night? • How can we prove how the moon moves? Forces • What forces are acting on objects? • What effect does gravity have on objects? • How does air resistance affect how an object moves? • Can we design a working mechanism? Changes In Matter • Which metals are the best conductors and insulators? • Which solids will dissolve in a liquid? • How can we separate different materials?	Independently identifying questions which can be used to plan and carry out an effective scientific enquiry. Living Things & Their Habitats How can we group and classify living things? How does a classification key work? Why is it helpful to living classify things? What are the differences in life cycles between different living things? Light How can we prove light travels in straight lines? How can we prove light is made up of the colours of the rainbow? How do humans see? Animals Including Humans What are the parts of blood? How do nutrients travel around the human body? How does exercise and diet affect the human heart?	Over the course of Key Stage 2, children use the scientific curiosity they developed during Key Stage 1 to ask increasingly more scientific questions. Children gradually develop the skills to ask appropriate scientific questions which can be used to plan and carry out effective scientific enquiries. Children arrive at Key Stage 3 ready to develop their lab skills in a dedicated science lab. Children are able to ask logical, scientific questions about anything in their life, and have the skills to plan how to answer those questions — whatever the context may be.

Famous Scientists • What can an x-ray

- What can an x-ray show us?
- What are the functions of different parts of a plant?
- How can we investigate the living requirements of plants?

Plants

- How can we investigate how water is transported in plants?
- How can we investigate how different plants are pollinated?
 Light & Shadows
- How can we investigate the properties of light?
- What patterns can we find in the way shadows change when conditions change?

Animals Including Humans

- What can teeth tell us about what an animal eats?
- How does our digestive system work?

Electricity

- How can we investigate which materials conduct electricity and which don't?
- How does an electrical current work?

Living Things & Their Habitats

- How can we take cuttings from plants to demonstrate plant reproduction?
- What are the differences in life cycles between mammals, amphibians, insects and birds?
 Scientists & Inventors
- How can we separate mixtures using chromatography?

Microorganisms

- What is the best food for microorganisms?
- What is the best temperature for microorganisms?
- What is the best viscosity for a cough syrup?
 Electricity
- What do different electrical components so in a circuit?

Evolution & Inheritance

- What can we learn from fossils?
- How do we inherit characteristics?
- How do animals and plants adapt to suit their environment?

Key	Year 3	Year 4	Year 5	Year 6	Impact
Skills	Implementation	Implementation	Implementation	Implementation	
Making scientific predictions	With full adult support, start to make predictions about the results of scientific enquiries. Rocks & Soils Permeability of soil enquiry. Permeability, durability, density of rocks enquiry. Animals Including Humans Healthy diet for an astronaut enquiry. Nutrient content of different foods enquiry. Forces & Magnets Which materials are attracted/repelled by magnets enquiry. Famous Scientists What can x-rays show us enquiry. Plants Living requirements of plants enquiry. Transportation of water around plants enquiry. Pollination of plants enquiry. Lights & Shadows Properties of light enquiry. Patterns of change in shadows enquiry.	With adult support, suggest reasonable predictions about scientific enquiries. Living Things & Their Habitats Classification of living things enquiry. States Of Matter Changes in states of matter enquiry. Water cycle enquiry. Sound How different materials affect sound travelling enquiry. Animals Including Humans How can teeth help us identify what an animal eats enquiry. How does our digestive system work enquiry. Electricity Which materials conduct electricity and which don't enquiry.	With minimal adult support, predict the outcomes of scientific enquiries. Observe that scientific enquiries sometimes have an unexpected outcome. Earth & Space How can we prove why we have day and night enquiry. How can we prove how the moon works enquiry. Forces What effect does gravity have on objects enquiry. What effect does gravity have on object's movement enquiry. What effect does gravity have on object's movement enquiry. What effect does gravity have on object's movement enquiry. Changes In Matter Which metals are the best conductors enquiry. Which solids will dissolve in a liquid enquiry. How can we separate different materials enquiry. Living Things & Their Habitats How can we take plant cuttings to show plant reproduction enquiry. Scientists & Inventors How can we separate mixtures using chromatography enquiry.	Independently predict the outcome of scientific enquiries, with a recognition that unexpected outcomes are equally scientifically valid. Living Things & Their habitats Classification keys enquiry. Light Properties of light enquiry. Animals Including Humans How does exercise affect the human circulatory system enquiry. Microorganisms Microorganisms enquiry. Electrical Circuits Electrical circuits enquiry. Evolution & Inheritance How do we inherit characteristics enquiry. How do plants and animals adapt to their environment enquiry.	Over the course of Key Stage 2, children become increasingly able to make reasonable, evidence-based predictions about the outcome of scientific enquiries. When children arrive at Key Stage 3, they understand that the complexity of the scientific enquiries they are taking part in may mean that their predictions are not correct, but that they are still scientifically valid.

Key Skills	Year 3 Implementation	Year 4 Implementation	Year 5 Implementation	Year 6 Implementation	Impact
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Setting up a scientific enquiry	With full adult support, start to suggest some ideas about how a scientific enquiry might be set up and what it might include. Start to consider the variables and equipment needed. Rocks & Soils Permeability of soil enquiry. Permeability, durability, density of rocks enquiry. Animals Including Humans Healthy diet for an astronaut enquiry. Nutrient content of different foods enquiry.] Forces & Magnets Which materials are attracted/repelled by magnets enquiry. Famous Scientists What can x-rays show us enquiry. Plants Living requirements of plants enquiry. Transportation of water around plants enquiry. Pollination of plants enquiry. Lights & Shadows Properties of light enquiry. Patterns of change in shadows enquiry.	With adult support, suggest reasonable variables and equipment for a scientific enquiry. Living Things & Their Habitats Classification of living things enquiry. States Of Matter Changes in states of matter enquiry. Water cycle enquiry. Sound How different materials affect sound travelling enquiry. Animals Including Humans How can teeth help us identify what an animal eats enquiry. How does our digestive system work enquiry. Electricity Which materials conduct electricity and which don't enquiry.	With minimal adult support, plan and carry out scientific enquiries which consider the variables which will change, the variables which will stay the same and the equipment needed. Earth & Space • How can we prove why we have day and night enquiry. • How can we prove how the moon works enquiry. Forces • What effect does gravity have on objects enquiry. • What effect does air resistance have on object's movement enquiry. • What effect does gravity have on object's movement enquiry. • What effect does gravity have on object's movement enquiry. • Which metals are the best conductors enquiry. • Which solids will dissolve in a liquid enquiry. • How can we separate different materials enquiry. Living Things & Their Habitats • How can we take plant cuttings to show plant reproduction enquiry. Scientists & Inventors • How can we separate mixtures using chromatography enquiry.	Independently plan and carry out scientific enquiries which consider the variables which will change, the variables which will stay the same, and the equipment needed. Living Things & Their habitats Classification keys enquiry. Light Properties of light enquiry. Animals Including Humans How does exercise affect the human circulatory system enquiry. Microorganisms Microorganisms enquiry. Electrical Circuits Electrical circuits enquiry. Evolution & Inheritance How do we inherit characteristics enquiry. How do plants and animals adapt to their environment enquiry.	Over the course of Key Stage 2, children become increasingly able to plan and carry out a scientific enquiry. Children are able to consider variables which will stay the same, variables which will change and variable which will be measured. When children arrive at Key Stage 3, they are fully able to independently plan and carry out scientific enquiries – to the delight of their science teachers!

Key	Year 3	Year 4	Year 5	Year 6	Impact
Skills	Implementation	Implementation	Implementation	Implementation	
Observing and measuring	With full adult support, start to observe the results of scientific enquiries and measure what is happening. Rocks & Soils Permeability of soil enquiry. Permeability, durability, density of rocks enquiry. Animals Including Humans Healthy diet for an astronaut enquiry. Nutrient content of different foods enquiry. Forces & Magnets Which materials are attracted/repelled by magnets enquiry. Famous Scientists What can x-rays show us enquiry. Plants Living requirements of plants enquiry. Transportation of water around plants enquiry. Pollination of plants enquiry. Lights & Shadows Properties of light enquiry. Patterns of change in shadows enquiry.	With adult support, suggest observations they can see during a scientific enquiry. With adult support measure what is happening in an effective format. Living Things & Their Habitats Classification of living things enquiry. States Of Matter Changes in states of matter enquiry. Water cycle enquiry. Sound How different materials affect sound travelling enquiry. Animals Including Humans How can teeth help us identify what an animal eats enquiry. How does our digestive system work enquiry. Electricity Which materials conduct electricity and which don't enquiry.	With minimal adult support, observe what is happening during a scientific enquiry and measure the data. Earth & Space • How can we prove why we have day and night enquiry. • How can we prove how the moon works enquiry. Forces • What effect does gravity have on objects enquiry. • What effect does air resistance have on object's movement enquiry. • What effect does gravity have on object's movement enquiry. Changes In Matter • Which metals are the best conductors enquiry. • Which solids will dissolve in a liquid enquiry. • Which solids will dissolve in a liquid enquiry. • How can we separate different materials enquiry. Living Things & Their Habitats • How can we take plant cuttings to show plant reproduction enquiry. Scientists & Inventors • How can we separate mixtures using chromatography enquiry.	Independently observe what is happening during a scientific enquiry and measure the data. Living Things & Their habitats Classification keys enquiry. Light Properties of light enquiry. Animals Including Humans How does exercise affect the human circulatory system enquiry. Microorganisms Microorganisms enquiry. Electrical Circuits Electrical circuits enquiry. Evolution & Inheritance How do we inherit characteristics enquiry. How do plants and animals adapt to their environment enquiry.	Over the course of Key Stage 2, children increasingly recognise what is happening during a scientific enquiry. Children become able to interpret the importance of what they are observing and recognise the most effective way to measure it. Children understand what it is they are really measuring and why it is important.

cey cills	Year 3 Implementation	Year 4 Implementation	Year 5 Implementation	Year 6 Implementation	Impact
Recording data Key Skills	With full adult support, children begin to understand how data might be recorded e.g. tables, graphs, paragraphs. Rocks & Soils Permeability of soil enquiry. Permeability, durability, density of rocks enquiry. Animals Including Humans Healthy diet for an astronaut enquiry. Nutrient content of different foods enquiry.] Forces & Magnets Which materials are attracted/repelled by magnets enquiry. Famous Scientists What can x-rays show us enquiry. Plants Living requirements of plants enquiry. Transportation of water around plants enquiry. Pollination of plants enquiry. Lights & Shadows Properties of light enquiry. Patterns of change in shadows enquiry.	Children begin to decide for themselves how they might record their data. Working in groups, they can check misconceptions with peers. Living Things & Their Habitats Classification of living things enquiry. States Of Matter Changes in states of matter enquiry. Water cycle enquiry. Sound How different materials affect sound travelling enquiry. Animals Including Humans How can teeth help us identify what an animal eats enquiry. How does our digestive system work enquiry. Electricity Which materials conduct electricity and which don't enquiry.	Children decide with minimal adult support how to record their data. Earth & Space • How can we prove why we have day and night enquiry. • How can we prove how the moon works enquiry. Forces • What effect does gravity have on objects enquiry. • What effect does air resistance have on object's movement enquiry. • What effect does gravity have on object's movement enquiry. Changes In Matter • Which metals are the best conductors enquiry. • Which solids will dissolve in a liquid enquiry. • How can we separate different materials enquiry. Living Things & Their Habitats • How can we take plant cuttings to show plant reproduction enquiry. Scientists & Inventors • How can we separate mixtures using chromatography enquiry.	Children independently record the data from their independent enquiry in an effective format. Living Things & Their habitats Classification keys enquiry. Light Properties of light enquiry. Animals Including Humans How does exercise affect the human circulatory system enquiry. Microorganisms Microorganisms enquiry. Electrical Circuits Electrical circuits enquiry. Evolution & Inheritance How do we inherit characteristics enquiry. How do plants and animals adapt to their environment enquiry.	Over the course of Key Stage 2, children become increasingly able to record the data from their scientific enquiries in an effective, neatly presented format. When children arrive at Key Stage 3, they know how to effectively record data while they are carrying out a scientific enquiry.

<u> </u>	Year 3 Implementation	Year 4 Implementation	Year 5 Implementation	Year 6 Implementation	Impact
Key Skills					
Interpreting and communicating results	With full adult support, children begin to understand how to interpret their results. Children begin to consider the most effective ways to communicate their results to stakeholders. Rocks & Soils Permeability of soil enquiry. Permeability, durability, density of rocks enquiry. Animals Including Humans Healthy diet for an astronaut enquiry. Nutrient content of different foods enquiry.] Forces & Magnets Which materials are attracted/repelled by magnets enquiry. Famous Scientists What can x-rays show us enquiry. Plants Living requirements of plants enquiry. Transportation of water around plants enquiry. Pollination of plants enquiry. Lights & Shadows Properties of light enquiry. Patterns of change in shadows enquiry.	Children begin to suggest what their results might mean. Children begin to suggest the best way to report on their results to stakeholders. Living Things & Their Habitats Classification of living things enquiry. States Of Matter Changes in states of matter enquiry. Water cycle enquiry. Sound How different materials affect sound travelling enquiry. Animals Including Humans How can teeth help us identify what an animal eats enquiry. How does our digestive system work enquiry. Electricity Which materials conduct electricity and which don't enquiry.	Children decide with minimal adult support what is happening in their scientific enquiry. Children decide with minimal adult support the best way to communicate their results to stakeholders. Earth & Space • How can we prove why we have day and night enquiry. • How can we prove how the moon works enquiry. Forces • What effect does gravity have on objects enquiry. • What effect does air resistance have on object's movement enquiry. • What effect does gravity have on object's movement enquiry. • Which metals are the best conductors enquiry. • Which solids will dissolve in a liquid enquiry. • Which solids will dissolve in a liquid enquiry. • How can we separate different materials enquiry. Living Things & Their Habitats • How can we take plant cuttings to show plant reproduction enquiry. Scientists & Inventors • How can we separate mixtures using chromatography enquiry.	Children make independent suggestions about what their data might mean. Children independently communicate their results to stakeholders in an effective format. Living Things & Their habitats Classification keys enquiry. Light Properties of light enquiry. Animals Including Humans How does exercise affect the human circulatory system enquiry. Microorganisms Microorganisms enquiry. Electrical Circuits Electrical circuits enquiry. Evolution & Inheritance How do we inherit characteristics enquiry. How do plants and animals adapt to their environment enquiry.	Over the course of Key Stage 2, children become increasingly able to understand and interpret what is actually happening during their scientific enquiries. By the end of Key Stage 2, children are able to effectively communicate the results of their scientific enquiries to stakeholders.

ey ills	Year 3 Implementation	Year 4 Implementation	Year 5 Implementation	Year 6 Implementation	Impact
Evaluating Key Skills	With adult support, children begin to understand how to evaluate their own scientific enquiries. Rocks & Soils Permeability of soil enquiry. Permeability, durability, density of rocks enquiry. Animals Including Humans Healthy diet for an astronaut enquiry. Nutrient content of different foods enquiry.] Forces & Magnets Which materials are attracted/repelled by magnets enquiry. Famous Scientists What can x-rays show us enquiry. Plants Living requirements of plants enquiry. Pransportation of water around plants enquiry. Pollination of plants enquiry. Lights & Shadows Properties of light enquiry. Patterns of change in shadows enquiry.	Children begin to suggest how they might do better next time in future scientific enquiries. Living Things & Their Habitats Classification of living things enquiry. States Of Matter Changes in states of matter enquiry. Water cycle enquiry. Sound How different materials affect sound travelling enquiry. Animals Including Humans How can teeth help us identify what an animal eats enquiry. How does our digestive system work enquiry. Electricity Which materials conduct electricity and which don't enquiry.	Children decide with minimal adult support how they might improve their scientific enquiry process. Earth & Space • How can we prove why we have day and night enquiry. • How can we prove how the moon works enquiry. Forces • What effect does gravity have on objects enquiry. • What effect does air resistance have on object's movement enquiry. • What effect does gravity have on object's movement enquiry. Changes In Matter • Which metals are the best conductors enquiry. • Which solids will dissolve in a liquid enquiry. • Which solids will dissolve in a liquid enquiry. Living Things & Their Habitats • How can we take plant cuttings to show plant reproduction enquiry. Scientists & Inventors How can we separate mixtures using chromatography enquiry	Children independently suggest improvements on their scientific enquiry process. Living Things & Their habitats Classification keys enquiry. Light Properties of light enquiry. Animals Including Humans How does exercise affect the human circulatory system enquiry. Microorganisms Microorganisms enquiry. Electrical Circuits Electrical circuits enquiry. Evolution & Inheritance How do we inherit characteristics enquiry. How do plants and animals adapt to their environment enquiry.	Over the course of Key Stage 2, children become increasingly able to evaluate their own scientific enquiries. When H&C children arrive at H&C they already have strong scientific enquiry skills and strong scientific thinking.