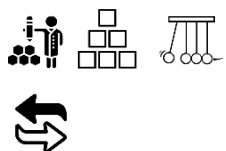


Working Scientifically: Statutory Requirements

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- 🔍 asking relevant questions and using different types of scientific enquiries to answer them
- 🔍 setting up simple practical enquiries, comparative and fair tests
- 🔍 making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- 🔍 gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- 🔍 recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- 🔍 reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- 🔍 using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- 🔍 identifying differences, similarities or changes related to simple scientific ideas and processes
- 🔍 using straightforward scientific evidence to answer questions or to support their findings.

Year 4 Autumn 1 (6 weeks)	Key concepts	Sequence of lessons	Sticky knowledge for this topic	Working scientifically	Snap Science Assessments
Big Question: How do things change over time? Snap Science Module: In a State NC Strand - Materials (Chemistry)	Working Scientifically Structure Cause and effect Change 	1. SS lesson 1 – What are my properties? (looking at solids and liquids) 2. SS lesson 2 – What happens to the ice hands? (teacher to set up ice hands on tables at beginning of day – monitor throughout day) Science lesson pm – draw conclusions and SS lesson 4 – What are melting and freezing? 3. SS lesson 5 – Are spaces really empty? And SS lesson 6 – What state am I in? 4. SS lesson 7 – How can we get it dry? (may need setting up earlier in day, or teacher set up) And SS lesson 8 – What is evaporation? 5. SS lesson 9 - What is boiling? And SS lesson 10 – Where did the water come from? (condensation) 6. SS lesson 11 – Where does rain come from?	1. I know that a solid keeps its shape and has a fixed volume. Particles in a solid are ordered and very close together 2. I know that liquids have a fixed volume but change shape according to their container. A liquid can be poured and keeps a level, horizontal surface (granular and powdery solids like sand can be confused with liquids because they can be poured, but when poured they form a heap and they do not keep a level surface when tipped. Each individual grain demonstrates the properties of a solid) 3. I know that a gas fills all available space; it has no fixed shape or volume. Gas particles are widely spaced and randomly arranged 4. I know that some materials change state when heated or cooled (melting, freezing) 5. I know that freezing happens at 0 degrees Celsius and boiling point is 100 degrees Celsius 6. I understand the stages of the water cycle (collection, evaporation, condensation, precipitation)	Pupils might work scientifically by: grouping and classifying a variety of different materials; exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice-cream for a party). They could research the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid. They might observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of temperature on washing drying or snowmen melting	1. Which state is which? 2. Changes of state 3. The water cycle

Working Scientifically: Statutory Requirements

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

☐ asking relevant questions and using different types of scientific enquiries to answer them

☐ setting up simple practical enquiries, comparative and fair tests

☐ making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers

☐ gathering, recording, classifying and presenting data in a variety of ways to help in answering questions

☐ recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables

☐ reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

☐ using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

☐ identifying differences, similarities or changes related to simple scientific ideas and processes

☐ using straightforward scientific evidence to answer questions or to support their findings.

Year 4 Autumn 2 (7.5 weeks)	Key concepts	Sequence of lessons	Sticky knowledge for this topic	Working scientifically	Snap Science Assessments
Big Question: What can we learn about the world around us? Snap Science Module: Where Does All That Food Go? NC Strand - Animals including Humans (Biology)	Working Scientifically Function Process 	1. SS lesson 1 – What do we know about food? 2. SS lesson 2 – Where does the food go inside your body? 3. SS lesson 3 – What sort of teeth do we have? 4. SS lesson 4 – Why do we have different types of teeth? And SS lesson 5 – How can we look after our teeth? 5. SS lesson 6 – What do animals eat? And SS lesson 7 – What do animals' teeth tell us? 6. SS lesson 8 – How is food broken down? 7. SS lesson 9 – How can we model the digestive system?	1. I know that digestion is the process by which our body breaks down the food we eat to get the nutrients and energy we need. The main parts of the digestive system in humans (mouth, oesophagus, stomach, large intestine, small intestine, rectum) 2. I can describe the process of digestion – I know that digestion starts when the teeth start to break the food down. Saliva is added and the tongue rolls the food into a ball 3. I know that the food is swallowed and passes down the oesophagus to the stomach. Here the food is broken down further by being churned around and other chemicals are added 4. I know that the food then passes into the small intestine. Here nutrients are removed from the food and leave the digestive system to be used elsewhere in the body. The rest of the food then passes into the large intestine. Here the water is removed for use elsewhere in the body. What is left is then stored in the rectum until it leaves the body through the anus when you go to the toilet. 5. I know the use of each type of human tooth in breaking down food Incisors – cutting and snipping Canines – ripping and tearing Molars – crushing and grinding 6. I can identify producers, predators and prey in a food chain	Pupils might work scientifically by: comparing the teeth of carnivores and herbivores, and suggesting reasons for differences; finding out what damages teeth and how to look after them. They might draw and discuss their ideas about the digestive system and compare them with models or images.	1. Food and nutrients 2. Digestion 3. Teeth teaser 4. Who eats who?

Working Scientifically: Statutory Requirements

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

☐ asking relevant questions and using different types of scientific enquiries to answer them

☐ setting up simple practical enquiries, comparative and fair tests

☐ making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers

☐ gathering, recording, classifying and presenting data in a variety of ways to help in answering questions

☐ recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables

☐ reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

☐ using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

☐ identifying differences, similarities or changes related to simple scientific ideas and processes

☐ using straightforward scientific evidence to answer questions or to support their findings.

--	--	--	--	--	--

Year 4 Spring 1 (5.5 weeks)	Key concepts	Sequence of lessons	Sticky knowledge for this topic	Working scientifically	Snap Science Assessments
Big Question: How has diversity improved life? Snap Science Module: Good Vibrations NC Strand - Sound (Physics)	Working Scientifically Cause and effect Energy 	1. SS lesson 1 – What do we know about sounds? 2. SS lesson 2 – How are sounds made? And SS lesson 3 – How do sounds travel? 3. SS lesson 4 – How can we make a sound louder and quieter? And SS lesson 5 – How do sounds change as we move away from the source? 4. SS lesson 6 – How can we change the pitch of a plucked note? 5. SS lesson 7 – How can we use air to make music?	1. I know that a sound produces vibrations which travel through a medium from the source to our ears 2. I know that vibrations from sound travel through the air (or a medium) to our ears, and the vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound 3. I know that stronger vibrations come from louder sounds 4. I know that sounds are fainter when I am further away from the sound source as the loudness (volume) of the sound depends on the strength (size) of vibrations which decreases as they travel through the medium 5. I know that pitch is the highness or lowness of a sound and is affected by features of objects producing the sounds. For example, smaller objects usually produce higher pitched sounds 6. I know that a sound insulator is a material which blocks sound effectively	Pupils might work scientifically by: finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. They might make earmuffs from a variety of different materials to investigate which provides the best insulation against sound. They could make and play their own instruments by using what they have found out about pitch and volume.	1. Making sounds 2. Sound travelling 3. Changing pitch 4. Changing volume 5. How far away can you hear it?

Working Scientifically: Statutory Requirements

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

☐ asking relevant questions and using different types of scientific enquiries to answer them

☐ setting up simple practical enquiries, comparative and fair tests

☐ making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers

☐ gathering, recording, classifying and presenting data in a variety of ways to help in answering questions

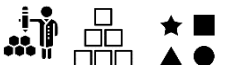
☐ recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables

☐ reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

☐ using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

☐ identifying differences, similarities or changes related to simple scientific ideas and processes

☐ using straightforward scientific evidence to answer questions or to support their findings.

Year 4 Spring 2 (6 weeks)	Key concepts	Sequence of lessons	Sticky knowledge for this topic	Working scientifically	Snap Science Assessments
Big Question: What makes a good place to live? Snap Science Module: Who Am I? Our Changing Worlds NC Strand - Living things and their Habitats (Biology)	Working Scientifically Structure Variation 	1. Who am I? SS lesson 1 – Who are you? 2. Who am I? SS lesson 2 – Who lives here? 3. Who am I? SS lesson 3 – How are vertebrates grouped? 4. Who am I? SS lesson 4 – How are invertebrates grouped? 5. OCW SS lesson 1 – How can we classify trees by looking at their leaves? 6. OCW SS lesson 3 – How can we classify plants by looking at their flowers?	1. I know that living things can be grouped (classified) in different ways according to their features 2. I know that classification keys can be used to identify and name living things 3. I know that an invertebrate is an animal which has no backbone 4. I know that a vertebrate is an animal which has a backbone inside its body 5. I can identify and explain why an animal is a fish, amphibian, reptile, bird or mammal 6. I can identify and explain why an animal is a worm, crustacean, arachnid, insect, mollusc or myriapod	Pupils might work scientifically by: using and making simple guides or keys to explore and identify local plants and animals; making a guide to local living things; raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched.	1. Identification keys 2. Odd one out: animals

Working Scientifically: Statutory Requirements

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- 🔍 asking relevant questions and using different types of scientific enquiries to answer them
- 🔍 setting up simple practical enquiries, comparative and fair tests
- 🔍 making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- 🔍 gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- 🔍 recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- 🔍 reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- 🔍 using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- 🔍 identifying differences, similarities or changes related to simple scientific ideas and processes
- 🔍 using straightforward scientific evidence to answer questions or to support their findings.

Year 4 Summer 1 (6 weeks)	Key concepts	Sequence of lessons	Sticky knowledge for this topic	Working scientifically	Snap Science Assessments
Big Question: Where does the power come from? Snap Science Module: Switched On NC Strand - Electricity (Physics)	Working Scientifically Cause and effect Energy Structure Process 	1. SS lesson 1 – What makes it work? 2. SS lesson 2 – Can you light the bulb? And SS lesson 3 – How does a circuit work? 3. SS lesson 4 – Why doesn't it work? 4. SS lesson 5 – What does a switch do? 5. SS lesson 6 – What can we use instead of wires? And SS lesson 7 – What types of material conduct electricity? 6. SS lesson 8 – How are electrical conductors and insulators used?	1. I can name some common appliances that run on electricity, and know that some plug in to the mains and others run on batteries 2. I can name the basic parts of a circuit (cells, wire, bulbs, switches and buzzers) 3. I know how to get a bulb to light in a simple circuit and know that if there is a break in the circuit, a loose connection or a short circuit, the component will not work 4. I know that a switch can be added to the circuit to turn the component on and off 5. I know that a conductor allows electric current through and that metals are good conductors. Water, if not completely pure, also conducts electricity 6. I know that an insulator blocks electric current. Non-metallic solids are insulators except for graphite (pencil lead)	Pupils might work scientifically by: observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit.	1. Does it use electricity? 2. Making a circuit 3. Will it light? 4. Switches 5. Electrical inductors and insulators

Working Scientifically: Statutory Requirements

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- 🔍 asking relevant questions and using different types of scientific enquiries to answer them
- 🔍 setting up simple practical enquiries, comparative and fair tests
- 🔍 making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- 🔍 gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- 🔍 recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- 🔍 reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- 🔍 using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- 🔍 identifying differences, similarities or changes related to simple scientific ideas and processes
- 🔍 using straightforward scientific evidence to answer questions or to support their findings.

Year 4 Summer 2 (7.5 weeks)	Key concepts	Sequence of lessons	Sticky knowledge for this topic	Working scientifically	Snap Science Assessments
Big Question: Is everything what it first appears to be? Snap Science Module: Human Impact NC Strand - Living things and their Habitats (Biology)	Working Scientifically Change Cause and effect 	1. SS lesson 1 – What impact do humans have locally? 2. SS lesson 2 – How can we find out about litter? 3. SS lesson 3 – What types of litter are dropped locally? 4. SS lesson 4 – Why does clearing litter matter? 5. SS lesson 5 – What happens when a food chain is broken? 6. SS lesson 6 – What is the impact of habitat destruction in other parts of the world? 7. SS lesson EL1 – what do zoos do? And SS lesson EL 2 – Should we have zoos?	1. I know that the environment may change naturally e.g. through flooding, fire, earthquakes 2. I can describe how these natural changes may impact nature 3. I know that humans also cause the environment to change. This can be in a good way (i.e. positive human impact, such as setting up nature reserves) or in a bad way (i.e. negative human impact, such as littering) 4. I can describe how these changes caused by humans may impact nature 5. I know that environments also change with the seasons; different living things can be found in a habitat at different times of the year	Pupils might work scientifically by: making a guide to local living things; raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched.	1. Positive or negative change?