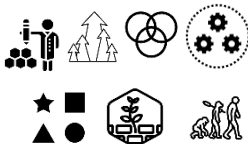


Working Scientifically: Statutory Requirements

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

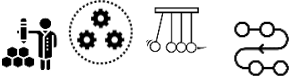
- 🔍 planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
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- 📋 using test results to make predictions to set up further comparative and fair tests
- 🗣️ reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
- 🔍 identifying scientific evidence that has been used to support or refute ideas or arguments.

Year 6 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: Everything Changes NC Strand - Evolution and Inheritance (Biology)	Working Scientifically Evolution Changes Adaptation Growth Variation Similarity and difference 	1. SS lesson 1 – Why do living things vary? 2. SS lesson 2 – Can you breed a dog for a specific purpose? And SS lesson 3 – How can we make our food better? 3. SS lesson 4 – How does the environment affect plants? And SS lesson 5 – How do environmental variables affect plants? 4. SS lesson 6 – How do living things survive? And SS lesson 7 – Why do living things become extinct? 5. SS lesson 8 – What does it take to survive? And SS lesson 9 – What evidence is there that living things have changed over time? 6. SS lesson 10 – How does natural selection work?	1. I know that all living things have offspring of the same kind, as features in the offspring are inherited from the parents 2. I know that due to sexual reproduction, the offspring are not identical to their parents and vary from each other 3. I know that plants and animals have characteristics that make them suited (adapted) to their environment. If the environment changes rapidly, some variations of a species may not suit the new environment and will die 4. I know that if the environment changes slowly, animals and plants with variations that are best suited survive in greater numbers to reproduce and pass their characteristics on to their young 5. I know that over time, these inherited characteristics become more dominant within the population. Over a very long period of time, these characteristics may be so different to how they were originally that a new species is created. This is evolution 6. I know that fossils provide information about living things from the past	Pupils might work scientifically by: observing and raising questions about local animals and how they are adapted to their environment; comparing how some living things are adapted to survive in extreme conditions, for example, cactuses, penguins and camels. They might analyse the advantages and disadvantages of specific adaptations, such as being on two feet rather than four, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers	1. What if? Consequences 2. Environmental change 3. Looking for clues

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Year 6 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: Body Pump NC Strand - Animals including Humans (Biology)	Working Scientifically Function Cause and effect Process 	1. SS lesson 1 – What does my circulatory system do? 2. SS lesson 2 – What is a heart and what does it do? 3. SS lesson 3 – What is blood? And SS lesson 4 – What is in blood? 4. SS lesson 5 – What do valves and blood vessels do? 5. SS lesson 6 – What happens to water in our bodies? 6. SS lesson 7 – What does the road around our body look like?	1. I can name and label the parts of the human circulatory system, the heart (cardiovascular), lungs (pulmonary), and arteries, veins, coronary and portal vessels (systemic). 2. I can describe the functions of the heart, blood vessels and blood. The heart's role is to pump oxygen-rich blood to every cell in the body. The blood vessels and veins provide the pathway in which blood travels 3. I can explain how the human circulatory system works - 4. I know that the heart pumps blood in the blood vessels around to the lungs 5. I know that oxygen then goes into the blood and carbon dioxide is removed. The blood goes back to the heart and is then pumped around the body. Nutrients, water and oxygen are transported in the blood to the muscles and other parts of the body where they are needed. As they are used, they produce carbon dioxide and other waste products 6. I know that carbon dioxide is carried by the blood back to the heart and then the cycle starts again as it is transported back to the lungs to be removed from the body. This is the human circulatory system	Pupils might work scientifically by: exploring the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health.	1. Circulation system 2. Why water?

Working Scientifically: Statutory Requirements

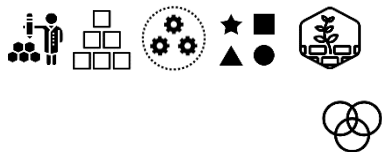
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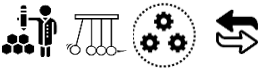
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Year 6 Spring 1 (5.5 weeks)	Key concepts	Sequence of lessons	Sticky knowledge for this topic	Working scientifically	Snap Science Assessments
Big Question: How has diversity improved life? Snap Science Module: The Nature Library NC Strand - Living things and their Habitats (Biology)	Working Scientifically Variation Structure Similarity and difference Adaptation Function 	1. SS lesson 1 – Can you sort this mess? And SS lesson 2 – Can you face the garden centre challenge? 2. SS lesson 3 – How are vertebrates grouped together? And SS lesson 4 – How are invertebrates grouped together? 3. SS lesson 5 – Where do things fit? And SS lesson 6 – What else is living besides plants and animals? 4. SS lesson 7 – How can you grow your own micro-organism? And SS lesson 8 – Was it always this way? 5. SS lesson 9 – What happens when scientists disagree? And SS lesson 10 – What should we call it?	1. I can describe how living things can be formally grouped according to characteristics, and these broad groups can be divided into sub-groups - plants and animals, but there are other living things that do not fit into these groups e.g. micro-organisms such as bacteria and yeast, and toadstools and mushrooms 2. I know that animals can be divided into two main groups: those that have backbones (vertebrates); and those that do not (invertebrates) 3. I know that vertebrates can be divided into five small groups: fish; amphibians; reptiles; birds; and mammals. Each group has common characteristics 4. I know that invertebrates can be divided into a number of groups, including insects, spiders, snails and worms 5. I know that plants can be divided broadly into two main groups: flowering plants and non-flowering plants 6. I can explain why something classified into one group and not another e.g. plants are grouped together as they make their own food by photosynthesis whereas animals can not	Pupils might work scientifically by: using classification systems and keys to identify some animals and plants in the immediate environment. They could research unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system.	1. Who am I? 2. Classification: true or false?

Working Scientifically: Statutory Requirements

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Year 6 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: Body Health NC Strand - Animals including Humans (Biology)	Working Scientifically Function Cause and effect Change 	1. SS lesson 1 – What does being healthy mean? And SS lesson 2 – How is food divided into different groups? 2. SS lesson 3 – What makes a healthy snack or drink? And SS lesson 4 – How have diets changed? 3. SS lesson 5 – How is pulse rate affected by exercise? And SS lesson 6 – What are the benefits of sports and exercise? 4. SS lesson 7 – How do drugs affect the body over time? 5. SS lesson 8 – How does smoking affect the body?	1. I know that diet, exercise, drugs and lifestyle have an impact on the way our bodies function 2. I know that aspects of our lifestyle (diet, exercise, drugs) can affect how well our heart and lungs work, how likely we are to suffer from conditions such as diabetes, how clearly we think, and generally how fit and well we feel 3. I know that for a balanced diet, the body needs a range of food types – carbohydrates, fats, protein, vitamins, minerals - and some conditions are caused by deficiencies in our diet e.g. lack of vitamins 4. I can explain why exercise is good for the body and can explain how lack of exercise poses a risk to health 5. I can describe the effects of various substances on the body (alcohol, solvents, nicotine, caffeine)	Pupils might work scientifically by: exploring the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health.	1. Impact of drugs 2. Impact of exercise choices 2. Impact of diet choices

Working Scientifically: Statutory Requirements

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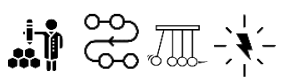
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Year 6 Summer 1 (6 weeks)	Key concepts	Sequence of lessons	Sticky knowledge for this topic	Working scientifically	Snap Science Assessments
Big Question: Where does the power come from? Snap Science Module: Danger: Low Voltage! NC Strand - Electricity (Physics)	Working Scientifically Energy Cause and effect Function Structure 	1. SS lesson 1 – How many simple circuits can you make? 2. SS lesson 2 – What does a switch do? 3. SS lesson 3 – How strong is your resistance? 4. SS lesson 4 – Do you know your circuit diagrams and can you construct working circuits for them? 5. SS lesson 5 – Will the lights stay on? Part one 6. SS lesson 6 – Will the lights stay on? Part two	1. I can use recognised circuit symbols to draw simple circuit diagrams 2. I can compare the different functions of the brightness of bulbs, the loudness of buzzers and the on/off positions of switches. 3. I can explain the reason for variations in how components function 4. I know that adding more cells/battery with a higher voltage to a complete circuit will make a bulb brighter, a motor spin faster or a buzzer make a louder sound 5. I know that adding more bulbs to a circuit will make each bulb less bright 6. I know that turning a switch off (open) breaks a circuit so the circuit is not complete and electricity cannot flow. Any bulbs, motors or buzzers will then turn off as well	Pupils might work scientifically by: systematically identifying the effect of changing one component at a time in a circuit; designing and making a set of traffic lights, a burglar alarm or some other useful circuit.	1. Circuit diagrams 2. Resistance 3. Voltage

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Year 6 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: Light Up Your World NC Strand - Light (Physics)	Working Scientifically Energy Cause and effect Process 	1. SS lesson 1 – What is light and what does it do? 2. SS lesson 2 – Can you see more than just your face in a mirror? 3. SS lesson 3 – Can light go round corners? 4. SS lesson 4 – Can you make a camera with a box, paper and pin? 5. SS lesson 5 – How can you measure a shadow? And SS lesson 6 – What do we know about changing shadow sizes? 6. SS lesson 7 – Can light change direction without a mirror? 7. SS lesson 8 – How many ways can you make a rainbow?	1. I know that light travels from light sources to our eyes, or from light sources to objects then our eyes – this is how we see things 2. I know that light travels in straight lines 3. I know that light may come directly from light sources, but for other objects some light must be reflected from the object into our eyes for the object to be seen 4. I know that objects that block light (are not fully transparent) will cause shadows 5. I can explain that shadows have the same shape as the object from which they are cast because light travels in straight lines	Pupils might work scientifically by: deciding where to place rear-view mirrors on cars; designing and making a periscope and using the idea that light appears to travel in straight lines to explain how it works. They might investigate the relationship between light sources, objects and shadows by using shadow puppets. They could extend their experience of light by looking a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters (they do not need to explain why these phenomena occur)	1. Seeing objects 2. How does light travel? 3. Making sharply defined shadows

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