

Nursery

<u>Autumn 1</u> Understanding the World	<u>Autumn 2</u> Understanding the World	<u>Spring 1</u> Understanding the World
<i>People, culture and communities</i> <i>The Natural World</i>	<i>The Natural World</i>	<i>The Natural World</i>
Orally name plants. Explore and notice the similarities and differences between themselves and their peers. Use all their senses in hands on exploration of natural materials. Begin to understand the need to respect and care for the natural environment and all living things.	Explore how toys work by pressing parts and lifting flaps to achieve effects. Explore different forces they can feel. Begin to talk about cold places in the world and different weather.	Explore collections of materials with similar and different properties. Understand how animals can provide us with useful resources. To look at books/digital media to investigate cold places in the world. Talk about cold and hot places in the world (Antarctic/desert) and their experiences or about past holidays.

Nursery:

<u>Spring 2</u> Understanding the World	<u>Summer 1</u> Understanding the World	<u>Summer 2</u> Understanding the World
<i>People, culture and communities</i> <i>The Natural World</i>	<i>People, culture and communities</i> <i>The Natural World</i>	<i>People, culture and communities</i> <i>The Natural World</i>
Investigate how things work, for example, wind-up toys. Plant seeds and care for growing plants. Understand key features of the life cycle of a plant/animal. Understand how to care and respect for the natural environment and all living things.	Talk about difference between materials and changes they notice. Make comparisons of habitats of different animals (farm/wild). Talk about how things work. Introduce facts about Iceland and Australia (hot/cold).	Talk about different forces they can feel. Explore and talk about hot areas of the world. Talk about similarities and differences of living in hot and cold countries (animals and people)

Reception

<p>Autumn 1 Understanding the World Past and Present and the Natural World</p>	<p>Autumn 2 Understanding the World Past and Present and the Natural World</p>	<p>Spring 1 Understanding the World Past and Present and the Natural World</p>
<p>Past and Present I can order pictures of my family in age order and describe similarities and differences. I can recognise that some members of my family were born before and after me. I know that some events happened before I was born. I know that dinosaurs lived a long time ago. I know that some things from the past do not exist anymore (extinct). I know we can use fossils to learn about things from a long time ago.</p>	<p>Past and Present I can describe a key event from the past. I know the first man/woman/animal A on the moon, and this happened before I was born. I know that recently in my living memory a famous astronaut is Tim Peake. I can talk about the differences in technology in the past and present.</p>	<p>Past and Present I can describe an important person from the past (Nelson Mandela). I can talk about similarities and differences between people who help us now and in the past. I can talk about the differences in technology in the past and present. I can talk about the food to fork process. I can talk about farming</p>
<p>The Natural World I know what season it is and can create a simple picture of a tree showing how the colour and leaves change. I can talk about the weather in the UK and notice how this may change from day to day. I know I use my ears to hear environmental sounds and I know what causes these sounds. I know what my five senses are and what they are for. I can use a variety of natural materials to build/play etc. I know my body parts and can verbally label these on a body map. I know features of a human face and how these changes depending on emotion.</p>	<p>The Natural World I know what season it is and can create a simple picture of a tree showing how the colour and leaves change. I know what can be seen on a walk through my community (lamp post, church etc.). I can talk about the similarities between my area and those in books and stories. I can know there are different natural materials and describe how they feel. I know that some materials are see-through, and some are not. I know that some are hard and soft etc.</p>	<p>The Natural World I know what season it is and can create a simple picture of a tree showing how the colour and leaves change. I know some features of animals in the U.K and Africa and can draw these in simple pencil sketch. I can observe and draw plants that grow at forest school. I know that water changes to ice through freezing and ice can melt when warm.</p>

Reception

<p><u>Spring 2</u> Understanding the World Past and Present and the Natural World</p>	<p><u>Summer 1</u> Understanding the World Past and Present and the Natural World</p>	<p><u>Summer 2</u> Understanding the World Past and Present and the Natural World</p>
<p>Past and Present I can describe the life cycle of an animal and how they change over time. I can talk about similarities and differences between people who help us now and in the past. I can describe the life cycle of a plant and how they change over time. I know that something from the past does not exist anymore (extinct).</p>	<p>Past and Present I can describe the life cycle of a plant and how they change over time. I can talk about similarities and differences between people who help us now and in the past. I know that traditional tales were written in the past. I can talk about how stories were told in the past.</p>	<p>Past and Present I can talk about the lives of the people around me and their roles in society; - I know some similarities and differences between things in the past and things in the present. I can understand the past through settings, characters and events encountered in books read in class and storytelling.</p>
<p>The Natural World I know what season it is and can create a simple picture of a tree showing how the colour and leaves change. I know the different body parts of some animals (wings/claws/feet etc.) I can draw some mini beasts/spring animals and describe what they look like. I can describe the life cycle of some living things. I can plant and look after my own flowers. I know this is my responsibility and I know what to do to keep it alive. I know what a plant needs to grow and what happens if it does not have these things.</p>	<p>The Natural World I know what season it is and can create a simple picture of a tree showing how the colour and leaves change. I know the importance of recycling and how I can do this at home/school. I know why it is important to look after my community and I can participate in a whole class litter pick. I can observe the way different plants grow and can draw them in a pencil drawing. I can observe ice melting in the sun.</p>	<p>The Natural World I know what season it is and can create a simple picture of a tree showing how the colour and leaves change. I understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. I can explore the natural world around me and make observations of plants and animals. I can draw pictures of animals and plants. I know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.</p>

Year 1

<p><u>Autumn 1</u> Animals, including humans Using Our Senses</p>	<p><u>Autumn 2</u> Seasonal Changes Sensing seasons</p>	<p><u>Spring 1</u> Everyday Materials Everyday materials</p>
<p>I can name parts of the body. I can recognise my five senses. I can identify which part of the body is associated with each sense. I can identify and compare sounds on a sound walk. I can describe different foods using the sense of taste. I can say if I like or dislike a smell. I can describe what I can feel.</p>	<p>I can suggest and sort which clothes are suitable for each season. I can describe the purpose of the weather box object. I can look for signs of autumn. I can make observations of the weather over time. I can use key vocabulary as I talk about my observations of the weather.</p>	<p>I can sort materials into the correct groups. I can carry out simple and fair tests. I can describe different types of fabrics. I can identify and test materials that bend and stretch. I can predict and test to see whether materials are waterproof. I can describe the simple physical properties of everyday materials.</p>

Year 1

<p><u>Spring 2</u> Living things and their habitats Animal Antics</p>	<p><u>Summer 1</u> Plants Plants</p>	<p><u>Summer 2</u> Plants Plants</p>
<p>I can identify and name a variety of common animals. I can name the parts of the animal's body and include these in my model. I can identify the main features of a bird. How do different animals move? To recognise that some animals mainly eat meat (carnivores), some only eat plant materials (herbivores) and some eat both (omnivores) Which part is daytime and which part is night-time? How many animals can we find? I can recognise a variety of birds that visit our school</p>	<p>To identify, name, describe and compare some familiar garden plants in the local environment. I can make observations of wild plants.</p> <p>Where can I find this plant? Grouping plants by colour. Grouping fruits, vegetables and flowers. Labelling parts of a plant. What makes a tree a tree?</p>	

Year 2

<p>Autumn 1 Living things and their habitat Which is your habitat?</p>	<p>Autumn 2 Animals, including humans Growing up / Take care</p>	<p>Spring 1 Our changing world</p>
<p>I can recognise and compare the main components of different habitats. Which habitat has the most animals? I can identify that most living things live in habitats to which they are suited. I can identify how most living things depend on each other. I know that most living things live in habitats which change throughout the year.</p>	<p>I can describe the importance for humans of eating the right amounts of different types of food. I can talk about the importance of eating the right amounts of different types of food. I can talk about the importance for humans of exercise and hygiene. I can talk about the importance for humans of eating the right amounts of different types of food and of hygiene. I can recognise the needs of a human baby for survival. I can compare the characteristics of a baby and a child. I can classify and describe changes that happen as humans grow older. I can gather and record data to help in answering questions.</p>	<p>I can identify and name a variety of plants and animals in their habitats, including micro-habitats. I know that most living things live in habitats which change throughout the year. I can talk about how the animals in a habitat depend on each other. I can find out and discuss how animals change over time.</p>

Year 2

<p>Spring 2 Plants The Apprentice Gardener part 1</p>	<p>Summer 1 Plants / Everyday Materials Apprentice Gardener part 2 / Materials good choices</p>	<p>Summer 2 Uses of everyday materials Materials shaping up</p>
<p>I can say what plants need to grow and stay healthy. I can identify which seeds grow into which type of plants. I can find out when and how to plant seeds to grow ingredients for soup. I can talk about how plants grow. I can talk about the processes of living things. How can I tell a fake plant from a real one? How big will a plant grow in a fair test?</p>	<p>What happens when a seed germinates? Keeping a plant diary. Can you use new vocabulary to describe objects? I can describe how to improve the growing conditions for an unhealthy plant. Planning a fair test on how to grow healthy plants. I can describe and identify objects made of particular materials. I can explain if a material is a good choice for an object. Fair test: Which fabric is best for dungarees? I can complete a fair test and record my findings.</p>	<p>Fair test: What is the best fabric for curtains? Which fabric lets the least light through? I can use observation and ideas to suggest answers to questions. I can gather and record data to help in answering questions. I can perform simple tests and gather data. Which materials are suitable for these items? Fair test: Which material is best for the elastic on a catapult?</p>

Year 3

<p>Unit 1 Rocks: Rock Detectives</p>	<p>Unit 2 Light: Can you see me?</p>	<p>Unit 3 Forces and magnets: The Power of Forces</p>
<p>1. What different types of rock are there and which rock is which? Working scientifically: Grouping and classifying In this lesson children will explore first-hand a variety of rocks and identify some of their observable properties. Children continue to identify and sort rocks according to their properties.</p>	<p>1. What do we need to see and which surface is shiniest? Working scientifically: Grouping and classifying In this lesson children will begin to understand that light is needed for us to see things and that some objects are easier to see than others. Children will develop their understanding of how light is reflected from surfaces and investigate how different surfaces reflect different amounts of light</p>	<p>1. How can you start to make it move? Working scientifically: NA In this lesson children will begin to learn about forces by looking at the different ways objects can be made to start moving.</p>
<p>2. Are all rocks as hard as one another? Working scientifically: Carrying out comparative and fair tests In this lesson children will test the hardness of a variety of rocks and make comparisons between them.</p>	<p>2. What do mirrors do? Working scientifically: Looking for patterns In this lesson children will carry out a number of different activities to investigate how light reflects off a mirror.</p>	<p>2. What's making it move? Working scientifically: Comparative and fair tests In this lesson children will explore how air can be used to make a windmill move.</p>
<p>3. Are all rocks waterproof and how do rocks change over time? Working scientifically: Carrying out simple and comparative fair tests In this lesson children will test whether a variety of rocks absorb water or not.</p>	<p>3. How can I make a shadow? Working scientifically: Noticing patterns In this lesson children will explore shadows for the first time.</p>	<p>3. How well can an object slide on different materials? Working scientifically: Comparative and fair tests In this lesson the children will develop their understanding of how objects move on different surfaces.</p>
<p>4. What is a fossil and how is it formed? Working scientifically: Finding things out using secondary sources of information In this lesson, which builds on from Lesson 9, children will examine in more detail how fossils are formed and create storyboards to tell the story.</p>	<p>4. How can you change the shape of a shadow? Working scientifically: simple investigations; Noticing patterns In this lesson children build on work from the previous lesson. They make real shadows of themselves and other objects, draw the shadows and look for patterns between the object making the shadow and the shadow.</p>	<p>4. Which materials are magnetic? Working scientifically: Grouping and classifying In this lesson children will explore a range of materials to identify which are magnetic and which are not. This builds on work in KS1 around the properties of materials.</p>
<p>5. How is soil made? Working scientifically: Grouping and classifying In this lesson children will explore a variety of soils, making the link between soils and the rocks they are made from. This builds on work carried out in lesson 6, which looked at how rocks change over time.</p>	<p>5. How can you change the size of a shadow? Working scientifically: Noticing patterns In this lesson children will develop their understanding of shadows and shape further, building on lesson 6.</p>	<p>5. What do magnets do and how do magnets affect each other? Working scientifically: Comparative and fair tests; Exploration In this lesson children will use a magnet in a variety of activities to see how it attracts certain materials. They will investigate how strong their magnet is. They will use what they observe in this lesson to help them in Lesson 6. In this lesson children will look at magnets in more detail, focusing on the fact that they have two poles, and will investigate the effect of holding two magnets together.</p>
<p>6. Why do some soils hold water? Working scientifically: Carrying out comparative and fair tests. In this lesson children will revisit the problem introduced at the end of Lesson 5 and, in order to solve it, they will test soils to discover whether they all let water through at the same rate.</p>	<p>6. What makes the best sunglasses? Working scientifically: Setting up simple comparative and fair tests In this lesson, children will plan, test, make and promote a pair of sunglasses. This lesson will focus on planning an investigation to test suitable materials for the lenses of sunglasses, followed by the testing of those materials.</p>	<p>6. How strong are the magnets? Working scientifically: Comparative and fair tests In this lesson children will build on their work in Lesson 5 and will test different magnets to compare their strength in order to test a number of given statements.</p>

Year 3

<p>Unit 4 Animals, including humans: Amazing Bodies</p>	<p>Unit 5 Plants: Our Changing World, How does your garden grow?</p>	<p>Unit 6 Plants: How does your garden grow? (Part 2)</p>
<p>1. What do you need to survive? Working scientifically: Exploration In this lesson children will consider what humans need in order to survive. This will continue work started in KS1 on the basic needs of animals for survival, as well as the importance of exercise and nutrition.</p>	<p>1. How do sunflower seeds and plants grow over time? How does your garden grow? (Part 1) What do we know about plants? Working scientifically: Observation over time In this sequence of lessons children will plant different varieties of sunflower seeds and grow them on, selecting the best seedlings, planting them out and caring for them as they grow into adult flowering plants.</p>	<p>1. Where do new plants come from? Working scientifically: Using secondary sources of information In this lesson children present the main stages in the life cycle of a flowering plant as a sequenced diagram.</p>
<p>2. What do we need to eat to stay healthy and how does an adventurer stay healthy? Working scientifically: Grouping and classifying; In this lesson children will explore different types of food, sorting them into different categories and planning meals. Children will use what they have learnt about nutrition in a different context by exploring what Sarah Outen, the British adventurer, eats when on expedition to remain healthy. They will learn about the challenges Sarah faces in choosing food that contains all the nutrition she needs without taking up too much room or being too heavy</p>	<p>2. What do we know about leaves? Working scientifically: Grouping and classifying In this lesson children will make close observations of a variety of leaves, using manual and digital magnifiers</p>	<p>2. What do flowers have in common? Working scientifically: Grouping and classifying In this lesson children will dissect a flower in order to make a close observation of the different parts. They will also compare different flowers.</p>
<p>3. Why do we have a skeleton and can you design a new vertebrate species? Working scientifically: Grouping and classifying; Using secondary source of information In this lesson children will research animals that have skeletons inside their bodies (vertebrates) and some will compare them to animals that don't (invertebrates). Children will create a new species of animal and draw its skeleton.</p>	<p>3. What would happen if a plant lost its leaves? Working scientifically: Carrying out comparative and fair tests In this lesson children will set up a fair test investigation to find out the effect of removing the leaves from a plant. They will make observations over the next few weeks and summarise their findings to answer the question "Can plants survive without leaves?"</p>	<p>3. What do bees do? Working scientifically: Using secondary sources In this lesson children model the process of insect pollination.</p>
<p>4. How do muscles help us move? Working scientifically: Grouping and classifying In this lesson children will learn about some of the muscles in the body and how these help to move our skeleton.</p>	<p>4. Are all roots the same? Working scientifically: Grouping and classifying In this lesson children will make close observations of a variety of roots using manual and digital magnifiers.</p>	<p>4. How are seeds dispersed? Working scientifically: Using secondary sources In this lesson children use their observations of seeds to make model seeds suited to different methods of dispersal.</p>
<p>5. Do our bodies affect how well we can do things? Working scientifically: Looking for patterns In this lesson children will learn about some of the muscles in the body and how these help to move our skeleton.</p>	<p>5. Where does the water go? Working scientifically: Observing over time In this lesson children will observe the transport of coloured water in carnations and celery and will set up an observation over time to investigate this in more detail in Lesson 6.</p>	<p>5. Can plants survive without leaves? Working scientifically: Carrying out comparative and fair tests In this lesson children will use their ongoing observations from the investigation started in Lesson 3 to draw conclusions.</p>
<p>6. How good are we at different activities? Working scientifically: Looking for patterns In this lesson, which builds on Lesson 5, children will carry out and analyse the results of an investigation into the correlation between a person's physical characteristics and their performance in a certain activity.</p>	<p>6. Why do plants need stems? Working scientifically: Observing over time and using secondary sources of information In this lesson children will use the results of the observation-over-time investigation that they set up in Lesson 5 and information from a video to produce information texts to explain the function of stems.</p>	<p>6. Am I the perfect plant? Working scientifically: NA In this lesson children will design flowering plants, labelling and annotating their drawings.</p>

Year 4

<p>Unit 1 Animals, including humans: Where does all the food go?</p>	<p>Unit 2 Electricity: Switched On</p>	<p>Unit 3 Living things and their habitats: Human Impact</p>
<p>1. What do we know about food? Working scientifically: Finding things out using secondary sources of information In this lesson children will share what they have previously learned about food and nutrition. This builds on the work in the Year 3 module, Amazing bodies. By the end of the lesson children will have gathered questions to explore during the remaining lessons.</p>	<p>1. What makes it work and can you light the bulb? Working scientifically: Grouping and classifying; Exploring In this lesson children will learn about different sources and uses of electricity. By the end of this lesson they will know that electrical items can be powered by mains electricity or batteries and that electricity can be used to produce light, sound, heat and movement. This lesson also provides an opportunity to assess what children already know about electricity. Children explore making circuits using different components. By the end of this lesson children will know the names of common components and will be able to make and draw complete circuits.</p>	<p>1. What impact do humans have locally? Working scientifically: Grouping and classifying things In this lesson children will consider the impact that humans have on the local environment. By the end of this lesson they will be able to identify some positive and negative ways that humans change the environment. This lesson includes an out-of-school task, the results of which will be considered at the start of Lesson 2.</p>
<p>2. Where does the food go inside your body? Working scientifically: Finding things out using secondary sources of information In this lesson children will learn about the basic parts of the digestive system. By the end of the lesson the children will be able to say where the food goes as it travels through the body.</p>	<p>2. How does a circuit work and why doesn't it work? Working scientifically: Exploring; Exploration In this lesson children will learn more about how electricity flows in a complete circuit and how to use a model to explain their observations. By the end of this lesson children will be able to use a model to explain how a simple circuit works. Children will learn more about how electricity flows through components in a complete circuit and apply their knowledge to identify and correct circuits which will not work. By the end of this lesson children will be able to recognise correct and incorrect circuits and identify some simple things to look for and try if a circuit does not work.</p>	<p>2. How can we find out about litter? Working scientifically: Grouping and classifying things This is the first part of a two-part lesson. In this lesson children will interpret data about waste and plan a litter survey. The Explore section of this lesson uses the outcomes from an out-of-school activity introduced in Lesson 1. By the end of this lesson children will be able to interpret data presented in a bar chart and draw up a data collection sheet. In Lesson 3 children will carry out their litter surveys and present their findings. Preparation required: Use the notes, drawings and/ or photographs that children collected from the out-of-school activity at the end of Lesson 1 to make a display of human impact that is evident locally</p>
<p>3. What sort of teeth do we have and how can we look after them? Working scientifically: Grouping and classifying things In this lesson children will learn about the types of teeth that humans have and how these differ in children and adults. By the end of the lesson they will be able to identify and name the types of teeth that they have.</p>	<p>3. What does a switch do? Working scientifically: Exploring In this lesson children will make and use toggle and press switches. By the end of this lesson they will know that a switch is a controlled break which stops electricity flowing to all parts of the circuit.</p>	<p>3. What types of litter are dropped locally? Working scientifically: Looking for patterns This is the second part of a two-part lesson. In this lesson children will carry out the litter survey planned in Lesson 2. By the end of this lesson they will have collected and presented data about an aspect of human impact on the environment. Preparation required: ensure that all adults accompanying the children have been fully briefed about health and safety and the activity to be carried out. Prepare a tally chart for the adult accompanying the group undertaking Challenge 1.</p>

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<p>4. Why do we have different sorts of teeth? Working scientifically: Grouping and classifying things In this lesson children will learn about the functions of the different types of teeth. By the end of the lesson they will have identified that incisors are used for cutting, canines for tearing and molars for grinding.</p>	<p>4. What can we use instead of wires? Working scientifically: Grouping and classifying This is the first part of a two-part lesson. In this lesson children will test materials to see whether they are electrical conductors or insulators and record information in tables, Venn diagrams and Carroll diagrams. By the end of this lesson they will be able to identify common conductors and insulators and interpret information presented in different ways. In Lesson 7 children will obtain further evidence about conductors and insulators and write a conclusion.</p>	<p>4. Why does clearing litter matter? Working scientifically: Finding things out using secondary sources of information In this lesson children will learn about the impact that different types of litter can have on wildlife. By the end of this lesson they will understand why it is important to dispose of waste responsibly. Preparation required: ask colleagues and/or children in advance to bring in items of clean rubbish.</p>
<p>5. What do animals eat and what do their teeth look like? Working scientifically: Finding things out using secondary sources of information; Grouping and classifying things This is the first of two lesson about food chains in this module, and builds on work done in Year 2. Children will apply their understanding of food chains in the Human impact module lesson 'What happens when a food chain is broken?' In this lesson the children will create food chains and webs for different habitats. By the end of the lesson they will be able to construct and interpret a variety of food chains. In this lesson children will use evidence from animal skulls to identify the correct position of an animal in a food chain. By the end of the lesson the children will understand about producers and consumers, and they will be able to identify which animals are predators, prey or both. They will understand that a food chain shows what different animals eat in a habitat and that the arrows show the flow of energy.</p>	<p>5. What types of material conduct electricity? Working scientifically: Grouping and classifying This is the second part of a two-part lesson. In this lesson children will consider what they can conclude from the data collected in Lesson 6 and collect further data so they can be more certain about their conclusions. By the end of this lesson children will know that metals are conductors of electricity, most non-metals are electrical insulators and conclusions can only be based on the evidence collected, which must be sufficient.</p>	<p>5. What happens if a food chain is broken? Working scientifically: Finding things out using secondary sources of information In this lesson children will learn about what a food chain is and link changes in a food chain to their previous learning about human impact. They will relate this to a real life situation for a new building project. By the end of the lesson children will understand and appreciate the impact that humans can have on the stability of the food chain.</p>
<p>6. How is food broken down and how can we model the digestive system? Working scientifically: Finding things out using secondary sources of information During this lesson children will learn about how digestion takes place in different parts of the digestive system. By the end of the lesson they will understand that food can be broken down mechanically and chemically and then absorbed into the body. They will be able to identify in which organs food is broken down in these different ways. They will also learn what is removed from the food in each organ.</p>	<p>6. How are electrical conductors and insulators used? Working scientifically: NA In this lesson children will learn more about the properties and uses of conductors and insulators and will make tilt and pendulum switches. By the end of this lesson they will know that some materials are better electrical conductors than others and be able to choose suitable materials to make the different parts of a switch.</p>	<p>6. What is the impact of habitat destruction in other parts of the world? Working scientifically: Finding things out using secondary sources of information In this lesson children will apply their recent learning about local food chain destruction to explore human impact further afield. They will research different issues and present their findings. By the end of the lesson children will be able to explain some of the implications of human impact on the location being studied.</p>

Year 4

<p>Unit 4 States of matter: In A State</p>	<p>Unit 5 Sounds: Good Vibrations</p>	<p>Unit 6 Living things and their habitats: Our Changing World / Who Am I?</p>
<p>1. What are my properties? Working scientifically: Grouping and classifying In this lesson children will explore the properties of solids and liquids, demonstrating what they already know. By the end of this lesson they will be able to use key properties to distinguish between solids and liquids.</p>	<p>1. What do we know about sound? Working scientifically: Exploration Apart from the work on hearing in Year 1 this is likely to be the first time that children will have studied sound in science. However, they will have developed some ideas about sound from their general experiences and in this lesson, children will share these ideas, which will allow you to gauge previous understanding. By the end of the lesson children will have gathered questions to explore during the rest of the module.</p>	<p>1. Our Changing World How can we classify trees by looking at their leaves? Working scientifically: Grouping and classifying things In this lesson children will use their observations of the key features of leaves to classify the leaves of a variety of trees in their local environment. They will devise a simple classification key to sort leaves that they find. By the end of the lesson they will know the main characteristics used to classify leaves. This lesson should be carried out when trees are in full leaf, i.e. spring or summer. It builds on learning about the features and functions of leaves in Year 3 and links with learning about keys in the Y4 Who am I? module.</p>
<p>2. What happens to ice hands and what makes a difference to how fast ice melts? Working scientifically: Observing over time leading to fair testing In this lesson children will use ideas from observing melting ice to help them to plan a fair test investigation to answer a question. In Lesson 3 they will carry out their investigation and draw conclusions. By the end of this lesson children will have planned a fair test and will know that melting and freezing are changes of state.</p>	<p>2. How are sounds made and how do they travel? Working scientifically: Carrying out simple comparative and fair tests; Carrying out simple comparative and fair tests In this lesson children will explore how sounds are made. They will notice that often there is something that visibly moves, or that we can feel moving when a sound is made (e.g. the skin of a drum moves when hit), but that sometimes these movements may be invisible (e.g. the movement of air) or so small that we can't feel them. By the end of the lesson children will be able to start to associate some sounds with vibrations. This will be a noisy lesson. In this lesson children will make ear gongs to explore how sounds travel from the source to our ears. They will learn that sound needs a medium to travel through and by the end of the lesson they will have explored and tested how sounds travel through different materials.</p>	<p>2. How can we identify and classify deciduous trees in winter? Working scientifically: Looking for patterns In this lesson children will look at deciduous trees and consider features other than leaves that can be used to classify them. By the end of the lesson the children will be aware of different tree shapes, the type of bark, buds and vein patterns. They will have looked for similarities and differences between trees and identified possible patterns. These patterns can be turned into questions that will require a follow-on visit to gather evidence to support or refute the pattern. It is best to do this lesson at the end of winter or in the early spring.</p>
<p>3. What are melting and freezing? Working scientifically: Observing changes over time In this lesson children consolidate their understanding of the processes of melting and freezing and explore how materials behave when they are heated or cooled. By the end of this lesson children will know that different materials melt at different temperatures and will be able to define melting and freezing.</p>	<p>3. How can we make sound louder and quieter? Working scientifically: Carrying out simple comparative and fair tests In this lesson children will explore different instruments to compare the volume of sound that they produce. They will also learn how to measure the loudness of the sound produced. By the end of the lesson they will be able to explain what makes a sound louder or quieter.</p>	<p>3. How can we classify plants by looking at their flowers? Working scientifically:</p>

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<p>4. Are spaces really empty and what state am I in? Working scientifically: Exploring; Grouping and classifying In this lesson children will explore the properties of air. By the end of this lesson children will know that gases are materials with substance and weight. Children will consolidate their understanding of the properties of solids, liquids and gases. By the end of this lesson children will know that there are three states of matter and be able to recognise the characteristics of each of them.</p>	<p>4. How do sounds chase as we move away from the source? Working scientifically: Carrying out simple comparative and fair tests In this lesson the children will carry out an investigation to explore how sounds get fainter as you move away from the source of the sound. By the end of this lesson they will be able to justify their findings by giving examples to demonstrate that sounds get fainter as you move away from the source.</p>	<p>4. Who Am I? Who are you and who lives here? Working scientifically:</p>
<p>5. What is evaporation and how can we get it dry? Working scientifically: Fair test; Fair test In this lesson children will experience evaporation in a range of contexts and will draw conclusions from the data collected in Lesson 7. By the end of this lesson children will be able to describe what the data shows and use their developing understanding of evaporation to explain their findings. Children will investigate factors that affect how fast fabric dries and learn the term evaporation. By the end of this lesson children will have collected data and recorded it in a table. In Lesson 8 children will draw conclusions from their data. Enrichment Lesson 4 offers children the opportunity to present their data in graphs.</p>	<p>5. How can we change the pitch of a plucked note? Working scientifically: Noticing patterns In this lesson children will explore different ways to change the pitch of a note produced by a plucked string/band. By the end of the lesson they will understand that the pitch of the note is affected by the length, thickness and tautness of the string/ band.</p>	<p>5. How are vertebrates grouped? Working scientifically:</p>
<p>6. What is boiling? Working scientifically: Observing change over time Children will observe and measure water boiling, interpret temperature graphs from a data logger and research boiling of other liquids. By the end of this lesson children will know that liquids have characteristic boiling points, including water, which boils at 100°C, and will be able to identify the boiling point on a time and temperature graph.</p>	<p>6. How can we use air to make music? Working scientifically: Noticing patterns In this lesson children will explore how air can be used to make sounds with different pitches. By the end of the lesson they will have identified that it is the air in the instrument that is vibrating to make the sound and not the instrument itself. Using this they will be able to explain that the longer the pan pipe, the more air is vibrating, therefore the lower the note that is produced.</p>	<p>6. How are invertebrates grouped? Working scientifically:</p>

Year 5

<p>Unit 1 Forces Feel the Force</p>	<p>Unit 2 Living things and their habitats Circle of Life</p>	<p>Unit 3 Properties and changes of materials Get sorted!</p>
<p>1. How can we measure forces? Working scientifically: Noticing patterns In this lesson children extend their understanding of friction by learning how to measure forces using a Newton meter.</p>	<p>1. What is a life cycle and what do we know about the life cycle of mammals? Working scientifically: Using a wide range of secondary sources of information; Using a wide range of secondary sources of information In this lesson children are introduced to the life cycles of four significant types of animals: mammals, amphibians, insects and birds. They compare and contrast different animal life cycles, identifying common features and differences. In this lesson children deepen their knowledge about the group of animals called mammals. They find out about the life cycles of a variety of mammals, identifying some common characteristics.</p>	<p>1. How can we compare and group materials? Working scientifically: Grouping and classifying In this lesson children identify, compare and group materials based on their properties and according to their own or given criteria.</p>
<p>2. Why does an object fall and what makes things move? Working scientifically: Carrying out comparative and fair tests; Carrying out simple comparative and fair tests In this lesson children identify how scientific evidence is used to support and refute ideas, testing the explanations of Aristotle and Galileo about how things fall. Children investigate and find evidence for these ideas, exploring gravity as a non-contact force. In this lesson children investigate how forces make things change direction, speed up, slow down, start or stop moving and use force arrows to represent these.</p>	<p>2. What do we know about the life cycle of amphibians? Working scientifically: Using a wide range of secondary sources of information In this lesson children deepen their knowledge about the group of animals called amphibians. They find out about the life cycles of a variety of amphibians, identifying some common characteristics including the process of metamorphosis</p>	<p>2. Is a solid always hard? Working scientifically: Carrying out comparative and fair tests In this lesson children investigate solids and compare them according to their properties.</p>
<p>3. How can we slow down falling objects? Working scientifically: Carrying out simple comparative and fair tests In this lesson children plan and carry out a fair test investigation into air resistance, using parachutes. They make parachutes and measure the time taken for the parachute to fall. They will then use the results of their initial investigations to predict how they could improve their parachutes and plan and test out their ideas.</p>	<p>3. What do we know about the life cycle of insects? Working scientifically: Using a wide range of secondary sources of information In this lesson children deepen their knowledge about the group of animals called insects. They find out about the life cycles of a variety of insects, identifying some common characteristics</p>	<p>3. Is a liquid always runny? Working scientifically: Grouping and classifying In this lesson children carry out various comparative tests, exploring the viscosity of liquids.</p>
<p>4. Does the shape of an object affect its movement in a liquid? Working scientifically: Carrying out comparative and fair tests In this lesson the children learn that water resistance is a form of friction that opposes movement in water. They explore how the shape of an object affects its movement through a liquid.</p>	<p>4. What do we know about the life cycle of birds? Working scientifically: Using a wide range of secondary sources of information In this lesson children deepen their knowledge about the group of animals called birds. They find out about the life cycles of a variety of birds, identifying some common characteristics.</p>	<p>4. Are all metals the same? Working scientifically: Grouping and classifying In this lesson children explore the ways in which metals are used around their school and in the wider world, and link these uses to the properties of the metals.</p>

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<p>5. Do all heavy things sink? Working scientifically: Carrying out comparative and fair tests In this lesson children measure the effect of upthrust on objects in water, by measuring and comparing weights of objects in water and air. They find out how the relationship between weight and size affects floating.</p>	<p>5. What makes a successful life cycle? Working scientifically:</p>	<p>5. Are all plastics the same? Working scientifically: Grouping and classifying In this lesson children identify and investigate the wide-ranging properties of plastics.</p>
<p>6. How far can you stretch? Working scientifically: Noticing patterns In this lesson children investigate what happens to rubber bands and springs when a force is applied.</p>	<p>6. How are humans helping endangered animals to complete their life cycles? Working scientifically: Finding things out using secondary sources of information In this lesson children apply their knowledge and understanding of animal life cycles to an unfamiliar context. They invent their own animal, describe in detail each stage of its life cycle and explain how this will ensure its long-term success.</p>	<p>6. To bounce or not to bounce – why are sports balls so different? Working scientifically: Carrying out comparative and fair tests In this lesson children investigate the variables that affect how a ball bounces.</p>

Year 5

<p>Unit 4 Properties and changes of materials Marvellous Mixtures</p>	<p>Unit 5 Earth and space Earth and beyond</p>	<p>Unit 6 Animals, including humans Reproduction in Plants and Animals</p>
<p>1. How can we separate mixtures? Working scientifically: Grouping and classifying In this lesson children are introduced to the idea that materials can mix in different ways and that they can be separated. They make their own sieves to separate a complex mixture of dry solids.</p>	<p>1. What's in space? Working scientifically: Finding things out using a wide range of secondary sources of information In this lesson children make observations of the night sky. Using secondary sources of information they consider explanations for, and raise questions about, their observations. They find answers to some of their questions through a 'journey into space', during which they explore diagrams and photographs of the solar system and beyond.</p>	<p>1. How do flowering plants reproduce? Working scientifically: Grouping and classifying In this lesson children revise work about the part that flowers play in the life cycle of flowering plants. They learn about the role of the flower, its parts and their function, and the processes of pollination and fertilisation.</p>
<p>2. What happens when we mix liquids and solids? Working scientifically: Grouping and classifying</p>	<p>2. What is a year and what is a day? Working scientifically: Finding things out using a wide range of secondary sources of information; Noticing patterns In this lesson children will draw a large 'plan' of the solar system and an annotated scientific diagram of Earth's orbit which they use to explain the year, number of days in a year, leap years and how astronomers in the past used the stars as markers for the start and finish of an orbit. In this lesson children investigate how the Earth's rotation causes the apparent movement of the Sun across the sky.</p>	<p>2. Are all flowers on all plants the same? Working scientifically: Grouping and classifying In this lesson children further develop their understanding of the role of flowers in the reproductive cycle of plants.</p>
<p>3. What makes a difference to how fast sugar or salt dissolves? Working scientifically: In this lesson children investigate dissolving solids.</p>	<p>3. How does the sun help us to measure time? Working scientifically: Observing changes over different periods of time In this lesson children test different types of shadow clock. Children record the position and length of a shadow.</p>	<p>3. Do all plants reproduce by producing seeds? Working scientifically: Finding things out using a wide range of secondary sources of information In this lesson children learn about asexual reproduction, that is, the ways that plants can produce new plants from different parts of the parent plant, rather than by producing seeds.</p>
<p>4. How can we get drinkable water from sea water and how can we purify materials? Working scientifically: Observation over time In this lesson children use their knowledge of evaporation and condensation to work out how to get materials back from a solution by investigating a real world problem: how to produce drinkable water from seawater, using limited equipment.</p>	<p>4. What time is it around the world? Working scientifically: Finding things out using a wide range of secondary sources of information In this lesson children use a globe and world maps to find out about world time zones and how time is linked to longitude.</p>	<p>4. How do amphibians and insects reproduce? Working scientifically: Finding things out using a wide range of secondary sources of information In this lesson children find out in more detail about how amphibians and insects reproduce. They compare the process of reproduction in amphibians and insects, identifying and describing similarities and differences between the two and recognising both as examples of sexual reproduction, with some exceptions.</p>

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<p>5. All Change Are the changes that happen around us reversible or non-reversible and how long does it take for iron nails to rust? Working scientifically: Grouping and classifying; Observing over time In this lesson children begin to explore how materials change when they are brought together in different ways. They identify types of changes and group them according to whether they think the change could be reversed, and then according to the conditions needed to bring about the change. In this lesson children set up an investigation to observe the changes that take place when some metals are exposed to the air or water.</p>	<p>5. Why do we have seasons? Working scientifically: Observing change over time (modelled) In this lesson children explore how Earth's tilt on its axis causes seasonal changes and changes in daylight hours.</p>	<p>5. How do mammals and birds reproduce? Working scientifically: Grouping and classifying In this lesson children find out more about how mammals and birds reproduce. They compare the process of reproduction in mammals and birds, identifying and describing similarities and differences between the two and naming both as examples of sexual reproduction.</p>
<p>6. How much gas can be produced by non-reversible change and what happens when a candle burns? Working scientifically: Carrying out comparative and fair tests; Observing over time In this lesson, as an example of a non-reversible change, children explore a variety of solids and liquids that react chemically when they are mixed. In this lesson children observe and discuss the changes involved in burning a candle, recognising that there are reversible and non-reversible changes involved in the process.</p>	<p>6. Why does the moon change shape? Working scientifically: Observing changes over different periods of time In this lesson the children use their Moon diaries as a source of information to investigate how the Moon appears to change shape over a month.</p>	<p>6. How does the human life cycle compare with that of other mammals? Working scientifically: Noticing patterns In this lesson children identify the stages of the human life cycle, including puberty and pregnancy, and compare lengths of gestation for different mammals.</p>

Year 6

<p>Unit 1 Living Things and their Habitats The Nature Library</p>	<p>Unit 2 Evolution and Inheritance Everything Changes</p>	<p>Unit 3 Animals, including humans Body Pump</p>
<p>1. Can you sort this mess? Working scientifically: Grouping and classifying In this lesson children build on their knowledge from previous years about how living things can be grouped together in different ways according to the characteristics they have in common; this is classification.</p>	<p>1. Why do living things vary? Working scientifically: Grouping and classifying In this lesson children investigate and discuss how characteristics of living things, for example, height, size or colour, vary from individual to individual.</p>	<p>1. What does my circulatory system do? Working scientifically: Finding things out using a wide range of secondary sources of information In this lesson children begin their investigations of the human circulatory system, first revising knowledge of the digestive, muscular and skeletal systems</p>
<p>2. Can you face the garden centre challenge? Working scientifically: In this lesson children decide ways in which to group plants. They apply their classification skills to different types of plants, giving their reasons for the groups and justifying them to others</p>	<p>2. Can you breed a dog for a specific purpose? Working scientifically: Finding things out using a wide range of secondary sources of information In this lesson children develop their understanding of inheritance and explore how characteristics are passed on from parents to offspring. They sort dogs into breeding pairs in order to produce offspring with particular characteristics. Some children extend these ideas to plants.</p>	<p>2. What is the heart and what does it do? Working scientifically: Finding things out using a wide range of secondary sources of information In this lesson children make a model of the heart to illustrate how the different parts fit and work together.</p>
<p>3. How are vertebrates grouped together? How are invertebrates grouped together? Working scientifically: In this lesson children consider the classification of animals. After revising their knowledge of different types of animals from previous years, they investigate in more detail the grouping and classification of vertebrates This lesson follows on from Lesson 3 and deliberately adopts the same pattern and activities in order for children to explore the classification of invertebrates.</p>	<p>3. How does the environment affect plants? Working scientifically: Carrying out comparative and fair tests In this lesson children begin to investigate ways in which the environment can affect how plants grow. They make observations, and plan and set up a fair test to investigate a demonstrable effect that the environment has on plants.</p>	<p>3. What is blood? Working scientifically: Finding things out using a wide range of secondary sources of information In this lesson children pose and answer different types of questions to find out how blood transports oxygen and waste gases round the body.</p>
<p>4. What else is living besides plants and animals? Working scientifically:</p>	<p>4. How do environmental variables affect plants? Working scientifically: Carrying out comparative and fair tests In this lesson children continue to develop their knowledge and understanding of how environmental variables affect plant populations by carrying out and analysing the results of the investigations they planned in Lesson 3.</p>	<p>4. What is in blood? Working scientifically: Finding things out using a wide range of secondary sources of information In this lesson children make 'blood soup' as an illustrative practical activity to help them find out about how the different parts of blood enable it to carry oxygen, waste gases, nutrients and water, and compile a fact file.</p>
<p>5. How can you grow your own micro-organism? Working scientifically: Grouping and classifying In this lesson children are introduced to the idea that plants and animals are only two types of living things and that there are three further kingdoms – fungi, bacteria and protista. Together they are often described as micro-organisms.</p>	<p>5. How do living things survive? Working scientifically: Finding things out using a wide range of secondary sources of information</p>	<p>5. What do valves and blood vessels do? Working scientifically: Finding things out using a wide range of secondary sources of information In this lesson children use their learning from previous lessons in this module and secondary sources to explore valves and blood vessels. They create concept sentences and maps to present their findings about valves, veins, arteries and capillaries.</p>

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<p>6. How can you grow your own micro-organism? (continued) Working scientifically: Observing changes over different periods of time In this lesson children plan and set up an investigation to observe how micro-organisms grow and multiply over time. The results of this investigation need to be recorded over time. Weekly opportunities to observe changes are needed during the enquire stage, ideally over four weeks.</p>	<p>6. How does natural selection work? Working scientifically: In this lesson children continue to develop their understanding of the idea that changes in the environment can impact on living things. They examine ways in which the physical features and behaviour of living things make them more suited to the particular habit in which they live, and how adaptations of living things help them to survive in their environment.</p>	<p>6. What happens to water in our bodies? Working scientifically: Finding things out using a wide range of secondary sources of information In this lesson children learn more about how water is transported through their bodies, building on their knowledge about how the blood transports nutrients and gases.</p>
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Year 6

<p>Unit 4 Light Light up Your World</p>	<p>Unit 5</p>	<p>Unit 6 Electricity Danger! Low Voltage</p>
<p>1. What is light and what does it do? Working scientifically: NA In this lesson children carry out illustrative practical activities to review their knowledge and understanding about the behaviour of light, including light sources and shadows from Year 3.</p>	<p>SATs</p>	<p>1. How many simple circuits can you make? Working scientifically: Carrying out simple comparative and fair tests In this lesson children revise and build on their work from Year 4 on how to construct simple circuits.</p>
<p>2. Can you see more than just your face in a mirror? Working scientifically: Noticing patterns In this lesson children carry out illustrative practical activities to review and develop their knowledge and understanding of how mirrors work from Year 3, Module 3.</p>	<p>SATs</p>	<p>2. What does a switch do? Working scientifically: Carrying out simple comparative and fair tests In this lesson children make and control simple circuits using purchased switches and classroom-made switches.</p>
<p>3. Can light go around corners and can light change direction without a mirror? Working scientifically: NA; Recognise that light appears to travel in straight lines In this lesson children develop their understanding of mirrors from Lesson 2 and use this to develop a model of how light travels. In this lesson children explore the refraction of light and some of the phenomena it creates.</p>	<p>SATs</p>	<p>3. How strong is your resistance? Working scientifically: Carrying out simple comparative and fair tests In this lesson children add different components to electrical circuits and role play the flow of electrons in a circuit to explain the idea of resistance.</p>
<p>4. Can you make a camera with a box, paper and a pin? Working scientifically: NA In this lesson the idea that light travels in straight lines is reinforced through an illustrative practical activity where children investigate how a pinhole camera works</p>	<p>SATs</p>	<p>4. Do you know your circuit diagrams and can you construct working circuits for them? Working scientifically: Carrying out simple comparative and fair tests. In this lesson children consolidate their learning on circuits and recognised electrical symbols from the previous three lessons</p>

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<p>5. How can you measure a shadow? Working scientifically: Carrying out comparative and fair tests In this lesson children will build on their learning about shadows from Year 3, and about the movement of the Earth in space in Year 5, to plan fair tests to investigate how different variables affect the size of a shadow.</p>	<p>SATs</p>	<p>5. Will the light stay on? Working scientifically: Finding things out using secondary sources of information In these two lessons children research how electricity is generated in different ways. During this first part children prepare debates about different methods of electricity generation, transmission and the siting of generating plants, which they present to the class in Lesson 6. They learn to recognise which secondary sources are most useful to research their ideas and to use relevant scientific language in their debates. In these two lessons children are researching how electricity is generated in different ways. In the previous lesson children prepared debates about different methods of electricity generation and transmission, and the siting of generating plants.</p>
<p>6. What do we know about changing shadow sizes? Working scientifically: Carrying out comparative and fair tests In this lesson children carry out the fair test to investigate shadow size that they planned in Lesson 5.</p>	<p>SATs</p>	<p>6. DT: Electrical systems – Steady Hand game Working scientifically: Carrying out simple comparative and fair tests In this lesson children use their knowledge of circuits to a Steady Hand game.</p>