

Year Group 6

Term 1

Living things and their habitats



Living things
and their
habitats



Evolution and
Inheritance



Light



Electricity



Animals
including
Humans



Enquiry Question

How are living things grouped?

Scientific Enquiry

- To be able to record data using scientific diagrams and labels and classification keys.
- To be able to plan different types of scientific enquiry to answer questions.
- To be able to identify scientific evidence that has been used to support or refute ideas or arguments.

NC Objectives

- Describe how living things are classified into broad groups according to common observable characteristic and based on similarities and differences, including micro-organisms, plants, and animals.
- Give reasons for classifying plants and animals based on specific characteristic.

Curriculum Coherence

Prior Knowledge

- Recognise that living things can be grouped in a variety of ways.
- Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.

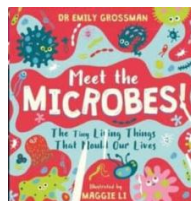
Future Learning

Links to KS3 Biology Units.

Vocabulary

Classification, microorganism, habitat, living organism, species, microscopic, ecosystem, kingdom, Linnaean system, cell.

High Quality Text



Misconceptions

All living things can be easily classified into two groups – plants and animals

Once a living thing is classified, this will not change

Assessment/Outcomes

Retrieval Practice

Written Task

Online Platform

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Unit Summary: Building on previous 'Living Things' units, this Year 6 National Curriculum course helps children identify the kingdoms of life and to classify living things within those kingdoms. The children will be introduced to the Linnean system of classification and will be able to develop their practical scientific skills through investigating mould growth on bread and mushroom spore dispersal.

Knowledge
Sequence

Lesson 1 – What is the classification system and why do we use it?

During the lesson the children will recap of what classification is and why it is important that scientists classify living organisms. The children will be reminded that several factors - including habitat, physical and behavioural characteristics and reproductive strategies - influence how an organism is classified. Children will then consider the different questions they can ask to classify and categorise the animals. [DE Lesson 1](#)

Lesson 2 – What did Carl Linnaeus discover and why is it important?

Within this lesson the children will discuss the theories of the Swedish scientist Carl Linnaeus, who developed a system to help classify living things. Discuss why this is important. Why do we need to know the names of things? As a class, work through the different levels in the system to help identify an animal and find its scientific name. [DE lesson 2](#)

Lesson 3 – How can we observe specific characteristics in a range of creatures?

During this lesson the focus shifts to start by following on from work completed in earlier years by recalling how living things can be grouped under the 'Mrs Gren' acronym. Explain how all living things use these processes to be alive and that it is because they do these things that we know they are a living organism. When exploring this theory, use a plant (like a daffodil) in your classroom to demonstrate what each part of the plant does. [DE lesson 3](#)

Lesson 4 – How do we classify and describe different a living organism?

The children will describe the processes which enable something to be classified as a living organism - MRS GREN. Recap the kingdoms which help us understand and classify living organisms. Discuss why the Linnaean system helps to name and classify species and remind the children of some of the predictions they have made and the experiments conducted. What did they learn from these? [DE Lesson 4](#)

Lesson 5 – What is asexual reproduction and how does this occur through spore dispersal?

Next up the children begin to explore how asexual reproduction works through the process of conducting an experiment using mushrooms in which they will explore what happens with the spores of a mushroom and how they are dispersed over a period of time. The children will use their knowledge of how experiments are conducted along with their Scientific knowledge of asexual reproduction to make clear predictions. [DE lesson 5](#)

Lesson 6 – How can we classify microorganisms?

During this final lesson, the children will challenge the typical association of microbes with disease. Microorganisms which cause disease are called pathogens. The lesson will help explain that microorganisms can be grouped depending on their characteristics and that they can be both helpful and harmful. [DE Lesson 6](#)

Aspiration

Your key knowledge will help you to be one of the following: Animal Care worker, Animal technician, Assistance dog trainer, Beekeeper, Biologist.

Scientist/Historical
figure

Carl Linnaeus - [KS2 Science: The work of Carl Linnaeus - BBC Teach](#) – Developed the taxonomy for classifying organisms.

Year Group 6

Term 2

Evolution and Inheritance



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Enquiry Question	How do living things adapt to their environment?			
Scientific Enquiry	<ul style="list-style-type: none"> To be able to record data using scientific diagrams and labels and classification keys To be able to plan different types of scientific enquiry to answer questions. To be able to identify scientific evidence that has been used to support or refute ideas or arguments. 			
NC Objectives	<ul style="list-style-type: none"> Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Identify how animals and plants adapt to suit their environment in different ways and that adaptation may lead to evolution. 			
Curriculum Coherence	Prior Knowledge:		Future Learning	
	<p>Identify that humans and some other animals have skeletons and muscles for support, protection and movement</p> <p>Recognise that living things can be grouped in a variety of ways</p>		<p>Links to KS3 Biology Units.</p>	
	Vocabulary	High Quality Text	Misconceptions	Assessment/outcomes
	<p>microhabitat, dead, life cycle, food chain, source, nutrients, reproduction, consumption, environment, extinction, species, characteristic, adaptation</p>		<p>Evolution is a process of gradual change:</p> <p>Environmental change can be inherited, e.g. if a dog loses a limb, its puppies will be born missing a limb</p>	<p>Retrieval Practice</p> <p>Written Task</p> <p>Online Platform</p>

Year Group 6

Term 2

Evolution and Inheritance



Living things
and their
habitats



Evolution and
Inheritance



Light



Electricity



Animals
including
Humans



Unit Summary: This unit introduces the children to the key concepts of evolution and inheritance by building upon previous topics, including animal characteristics and fossils. The children will learn about inherited traits and apply their knowledge to various animals and plants, before being introduced to the work of Mary Anning and Charles Darwin. Through the presentations and tasks, the children will learn about the fascinating history of the human race and discover links between extinct animals and those which are still living today.

Knowledge Sequence	<p>Lesson 1 – What makes us different? This lesson explains how offspring inherit different characteristics from their parents and this produces variations in animals. The children will examine the offspring produced from both same breed dogs and cross breed dogs. In both cases, the children will begin to understand that there is always some variation between parents and their offspring. The children will also be given the opportunity to think about the ways in which environmental factors might bring about variation in species. DE Lesson 1</p>
	<p>Lesson 2 – Why does the environment change and how do we keep up? Within this lesson recap on the children's learning from the previous lesson. This also an opportunity to enable the children to think back to their learning in Year 4, which looked at adaptations in animals. The lesson recaps on the different habitats around the world. It expands on knowledge first introduced in Year 4, around the adaptation of the camel to suit its environment. DE lesson 2</p>
	<p>Lesson 3 – Why is evolution important for survival? During this lesson the focus shifts to look at what makes Earth the perfect environment to make it habitable for humans and other animals. The children will explore the different eras and how some animals have been able to survive for millions of years, others have not. The children will discover the work and life of Mary Anning, the famous palaeontologist. In the presentation, the children will find out some of the most important fossils that she discovered. They will then be able to compare these findings to living creatures we see today. DE lesson 3</p>
	<p>Lesson 4 – What characteristics do we need to survive? This lesson progresses the children's learning to consider the conditions that exist in the desert and the adaptations of animals that live there. For example, the sand cat is an animal that lives in the desert and has several adaptations. E.g. the hairy foot protects against hot and cold temperatures, their sandy colour helps protect them from predators. The children then start to explore how plants have adapted to survive. DE Lesson 4</p>
	<p>Lesson 5 – What did Darwin find and how do we know it is true? Explore the term natural selection, which was the term Charles Darwin chose to describe the process in which living things adapt to their habitat. He put forward the idea that the living things which hadn't been able to adapt were the ones that went extinct. Discuss some examples of animals which are now extinct; for example, scientists believe woolly mammoths became extinct around 4,000 years ago due to climate change and lack of food. This is an example of an animal which was driven to extinction by environmental factors, rather than human activity. DE Lesson 5</p>
	<p>Lesson 6 – How have Humans evolved over time? During this final lesson, the children explore human evolution. Following the extinction of the dinosaurs, new species of mammals were able to evolve. The first ever primate appeared around 55 million years ago. This primate slowly evolved to homo sapiens, present day humans. Discuss differences in skulls, how this links to brain capacity and how they evolved to use tools. DE Lesson 6</p>
Aspiration	Your key knowledge will help you to be one of the following: Archaeologist, palaeontologist
Scientist/Historical figure	Mary Anning and Charles Darwin

Year Group 6

Term 3

Electricity



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Animals
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Enquiry Question

How many men did it take to invent the lightbulb?

Scientific Enquiry

- To be able to plan different scientific enquiry to answer questions.
- To be able to record data using scientific diagrams
- To be able to report and present findings from enquiries, including conclusions, casual relationships, and explanations of and degree of trust in results, in oral and written forms.

NC Objectives

- To recognise and use symbols in a circuit diagram.
- To compare and give reasons for variations in how components function including: the brightness of bulbs, volume of buzzers and switches.
- To associate the brightness of a lamp or buzzer with the number and voltage of the cells, used in a circuit.

Curriculum Coherence

Prior Knowledge

- Electrical conductors allow electricity to flow through them and materials that don't are called insulators.
- Simple electrical components such as cells, wires, bulbs, switches and buzzers and know that they can be used to present a simple circuit diagram.

Future Learning

Links to KS3 Physics Units.

Vocabulary

Circuit, battery, electricity, resistor, variable resistor, switch, output, systematically, synchronised, signal, conductor, insulator.

High Quality Text



Misconceptions

The size of a battery will affect the brightness of a bulb:

All metals conduct electricity equally

Assessment/outcomes

Retrieval Practice

Written Task

Online Platform

Year Group 6

Term 3

Electricity



Living things
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Light



Electricity



Animals
including
Humans



Unit Summary: This unit 'Electricity' takes children through six lessons where they learn how to: **associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit;** they learn how to **compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches;** and finally, they use **recognised symbols when representing a simple circuit in a diagram.**

Knowledge Sequence	<p>Lesson 1 – What conventional circuit symbols represents different components within a circuit? Start by revising components from Year 4 - cells, wires, bulbs, switches and buzzers. The children will learn about the appearance and function of different electrical components, including switches, bulbs, buzzers, batteries/cells, motors and wires. Provide the children with the equipment needed to create the displayed series circuit (bulb, battery, wires and switch). Identify how to accurately draw a circuit diagram. DE Lesson 1</p>
	<p>Lesson 2 – What impact does voltage have on the brightness and volume of a bulb? Within this lesson The children discover how a battery produces electricity and that the rate of electricity following through a circuit is the current. They learn about voltage (V) and that connecting cells in a battery adds their voltages together. Voltage can be measured using a voltmeter which is connected in parallel. Ask them to create several electrical circuits with different numbers of bulbs and predict whether the bulb will be brighter than the control. Measure and record the voltmeter readings and link the voltmeter readings to the number of cells and brightness of the bulb in the circuit. DE lesson 2</p>
	<p>Lesson 3 – What factors can influence how complete a circuit is? During this lesson the children will build on the children's understanding of voltage, use the presentation to explain that bulbs have a V on them to indicate how much voltage it can handle. Provide the children with the opportunity to look closely at different bulbs. Explore the uses and importance of resistors and variable resistors. The children will work in pairs to create 'deliberately broken' circuits. This could be because the voltage is too high or low, the circuit is incomplete or there are too many components. DE lesson 3</p>
	<p>Lesson 4 – What is the effect of adding more components to a circuit with only one cell? This lesson will expect the children will plan an investigation to find out 'how the number of components in a circuit affects the output.' Discuss ideas for possible variables the children could test and explore how to set up a fair test and use a control. Encourage the class to test a variety of variables to discuss after the investigation. DE Lesson 4</p>
	<p>Lesson 5 – What effect does have multiple cells have on how many competes can be added to a circuit? This lesson explores the idea of how traffic lights are central to road safety as they control the flow of traffic and allow pedestrians to cross the road. Explore what each colour of traffic light means. The children will learn that timers provide a signal to change the colour of the traffic lights. Get the children to think about how they could possibly get only one bulb within a circuit to illuminate. DE Lesson 5</p>
	<p>Lesson 6 – What is the importance of conductors and insulators in our homes? During this final lesson the children to explore some games that use electric circuits and discuss how they work. Explain how a wire loop game works. Recap learning from Years 4 & 5 to discuss materials that are conductors and insulators. Reinforce the idea that the handle should be wrapped in an insulator to keep the children safe but the end of the hook needs to be a conductor to complete the circuit. Contact with the wire loop will close the circuit, switching the bulb and buzzer on. DE Lesson 6</p>
Aspiration	Your key knowledge will help you to be one of the following: Electrician, Product designer, Operations manager, Mechanic, Solar farm manager, Engineer.
Scientist/Historical figure	Mildred S Dresselhaus - Research cards: electricity - The Ogden Trust – helped to invent the rechargeable batteries used today in modern equipment.

Year Group 6

Term 4

Light



Living things
and their
habitats



Evolution and
Inheritance



Light



Electricity



Animals
including
Humans



Enquiry Question	Why do we need eyes to see?		
Scientific Enquiry	<ul style="list-style-type: none"> To be able to plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. To be able to take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. To be able to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar, and line graphs. 		
NC Objectives	<ul style="list-style-type: none"> Recognise that light appears to travel in straight lines. Know that light travels in straight lines to explain that objects are seen because they give out reflect light into our eyes. Explain that we see things because light sources to our eyes or from light sources to objects and then to our eyes. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. 		
Curriculum Coherence	Prior Knowledge		Future Learning
	<ul style="list-style-type: none"> We need light in order to see things in that dark is the absence of light. Light is a form of energy and come from different sources. Light is reflected off surfaces. Shadows are formed when light is blocked. 		Links to KS3 Physics Units.
Curriculum Coherence	Vocabulary	High Quality Text	Misconceptions
			<p>Light travels from our eyes to an object, allowing us to see it.</p> <p>Light travels instantaneously.</p>
		Assessment/Outcomes	
		<p>Retrieval Practice</p> <p>Written Task</p> <p>Online Platform</p>	

Year Group 6

Term 4

Light



Living things
and their
habitats



Evolution and
Inheritance



Light



Electricity



Animals
including
Humans



Unit Summary: This unit 'Light' takes children through six lessons where they learn how to: **recognise that light appears to travel in straight lines; use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye; explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes; and finally, children learn how to use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.**

Knowledge Sequence

Lesson 1 – How does light travel and how do we know?

Start by recapping on the children's learning on the light unit covered in Year 3. The children have previously learnt how to recognise that they need light in order to see things and that dark is the absence of light. They have also learnt how to notice that light is reflected from surfaces. The children will carry out a mini experiment to find out that light travels in straight lines from a light source to our eyes so that we can see. [DE Lesson 1](#)

Lesson 2 – How does light travel to the eyes?

Within this lesson the children will start to understand that light travels through space as a form of electromagnetic radiation, moving at a constant speed of approximately 299,792,458 meters per second. It can be refracted, reflected, and absorbed as it encounters different media and surfaces, and its wavelength determines its colour. [DE lesson 2](#)

Lesson 3 – What impact does reflection have on helping us to see?

In this lesson, the children will explore that reflection plays a critical role in how we see the world around us. When light reflects off an object, some of that light enters our eyes, where it is focused onto the retina by the cornea and lens. The retina contains photoreceptor cells that convert the light into electrical signals, which are then sent to the brain for processing. Without reflection, we would not be able to see anything. The children will attempt to make a periscope to explore how reflection can help us to see different objects. [DE lesson 3](#)

Lesson 4 – Do shadows have the same shapes as the object that cast them?

This lesson starts by ensuring the children have the key knowledge relating to light: The fact that shadows have the same shape as the object that casts them is due to the way that light travels in straight lines. When light encounters an object, it is either absorbed, transmitted, or reflected. If the object is opaque and reflects some of the light, it will create a shadow behind it where the light cannot reach. The shape of the shadow is determined by the outline of the object, since light cannot bend around corners. The children will replicate this through an experiment and observe their findings. [DE Lesson 4](#)

Lesson 5 – Why do we have rainbows?

In this lesson, the children will begin by discussing the sun and the essential role it plays for life on Earth. The sun's energy sustains all life on Earth; without it, there would be no light, plants or animals. It would be completely dark on Earth and all the water would cool down and freeze. The children may also discuss how rain and wind patterns would be different without the sun, since the sun causes evaporation of water molecules from oceans and rivers. The children will then conduct 4 experiments which will mirror the effects of a rainbow and allow scientific discussions around this. [DE Lesson 5](#)

Aspiration

Your key knowledge will help you to be one of the following: Agriculture (working on a farm), Vet or caring for animals, Dog trainer, Beekeeper.

Scientist

Rachel Carson - [Rachel Carson | Biography, Books, & Facts | Britannica](#)– Biologist who wrote about environmental pollution

Year Group 6

Term 5 & 6

Animals including Humans



Living things
and their
habitats



Evolution and
Inheritance



Light



Electricity



Animals
including
Humans



Enquiry Question

What happens when food enters the body?

Scientific Enquiry

- To ask relevant questions and using different types of scientific enquiry to answer them.
- To make systematic and careful observations and where appropriate, taking accurate measurements using standard units, using a range of equipment including thermometers and data loggers.
- To be able to use straightforward scientific evidence to support their findings or answer questions.

NC Objectives

- Construct and interpret a variety of food chains, identify predators and prey.
- Describe the simple functions of the basic parts of the human digestive system. Identify different teeth and their function.

Curriculum Coherence

Prior Knowledge

- Year 2 curriculum – Animals including humans: Growth and Living things and their habitats
- The needs of humans and animals for survival
- Understanding food chains

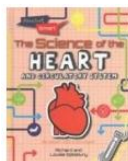
Future Learning

Describe changes in humans from birth to old age. (Y5)
Identify the main parts of the circulatory system. (Y6)

Vocabulary

Oesophagus, saliva, Peristalsis, incisors, molars, enamel, fluoride, consumer, predator, tundra, hide

High Quality Text



Misconceptions

The stomach is the only organ involved in digestion:
Food chains are always linear:

Assessment/outcomes

Retrieval Practice
Written Task
Online Platform

Year Group 6

Term 5 & 6

Animals including Humans



Living things
and their
habitats



Evolution and
Inheritance



Light



Electricity



Animals
including
Humans



Unit Summary: This unit 'Animals including humans' takes children through six lessons where they learn how to: **describe the simple functions of the basic parts of the digestive system in humans; identify the different types of teeth in humans and their simple functions;** and finally, **construct and interpret a variety of food chains, identifying producers, predators and prey.**

Knowledge Sequence	<p>Lesson 1 – Which organs make up the digestive system?</p> <p>During the lesson the children recap on prior learning and what food does for our bodies, discussing how this occurs inside our digestive organs. The children should recall that different foods have differing nutritional values and these are needed for us to stay healthy. They will discover the main organs within the digestive system and the order that they are connected. They will learn about the functions of the mouth, oesophagus, stomach, small intestine and large intestine. DE Lesson 1</p>
	<p>Lesson 2 – What is the function of the organs in the digestive system?</p> <p>Within this lesson the children will further explore the organs within the digestive system by discovering the functions of the mouth, oesophagus, stomach, small intestine and large intestine. They will touch on further organs, such as the liver and gall bladder. Using the model of the digestive system, explain the journey the food takes, describing the function of each organ. DE lesson 2</p>
	<p>Lesson 3 – What are our teeth for and how do they work?</p> <p>During this lesson the children will discover that teeth can be classified into 3 groups. They will learn about the number, location and function of the incisors, canines and molars, along with the jaw and gums. They will explore the types of teeth carnivores, omnivores and herbivores have and apply this to their knowledge of what these types of animals eat. DE lesson 3</p>
	<p>Lesson 4 – How do different liquids impact our teeth?</p> <p>This lesson progresses the children's learning by setting up an experiment that will explore the importance of caring for their teeth because humans only get one adult set and we use them for eating and speaking. They will explore the stages of tooth decay and how it can be caused. They will learn how tooth decay can be prevented and treated. DE Lesson 4</p>
	<p>Lesson 5 – What is a food chain?</p> <p>This lesson allows the children to discover what a food chain is and that the arrow shows energy flow within an ecosystem. Explore the key terms within a food chain - producer, consumer, prey and predator. Discuss some examples of food chains within ecosystems and identify producers, consumers and predators. Explore some issues within food chains and the importance of keeping them balanced. DE Lesson 5</p>
	<p>Lesson 6 – Do all ecosystems have food webs?</p> <p>During this final lesson in the sequence, the children will discover that a food web is a way of showing the energy flow in an ecosystem in a more complex way. Discuss some examples of ecosystems - coral reefs, deserts, tundras, forests, rainforests, savannas and marine ecosystems. Explore the Arctic tundra to model how to create a food web. DE Lesson 6</p>
Aspiration	Your key knowledge will help you to be one of the following: dietician, dentist, Doctor, Vet, Care worker, Ambulance worker/paramedic.
Scientist/Historical figure	Paul Sharpe – Bioengineer - Instead of Filling Cavities, Dentists May Soon Regenerate Teeth Scientific American