

Science MTP - Year 4 - Living things and their habitats

Knowledge	Working Scientifically		Scientific Enquiry	
To recognise that living things can be grouped in a variety of ways.	L1		L1	
To explore and use classification keys to help group.	L2		L2	
Identify and name a variety of living things in the environment.	L3		L3	
	L4		L4	
Recognise that environments can change and this can sometimes pose dangers to living things.	L5		L5	
	L6		L6	

Our Scientific Enquiry Skills

 Comparative/Fair testing	 Research	 Observation over time	 Pattern seeking	 Identifying and classifying
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Our Working Scientifically Skills

 Questioning	 Prediction	 Setting up tests	 Observation and measurement	 Recording	 Interpreting results	 Evaluating
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Science MTP - Year 4 - Living things and their habitats

LESSON 1

WS

I can observe carefully and identify similarities and differences between living things.

SE

I can classify living things using observable characteristics.

NEW KNOWLEDGE

In Year 2, children learned about living things, habitats and simple food chains. In Year 3, they learned about vertebrates and invertebrates. In this lesson, children will recap these ideas and learn that living things can be grouped in different ways based upon their characteristics. Children will learn that scientists classify living things to help identify and compare them.

ACTIVITY

Children will sort living things into groups based on observable characteristics. They will explain how they grouped them and compare different methods of classification.

Vocabulary:
classify,
classification,
characteristics,
living thing,
group,
compare.

Assessment Question: What does it mean to classify a living thing?

LESSON 2

WS

I can ask relevant questions to help identify and group living things.

SE

I can use a classification key to identify living things.

NEW KNOWLEDGE

Children will learn that scientists use classification keys to identify living things. They will understand that classification keys use a series of questions to help identify unknown organisms.

ACTIVITY

Children will use and follow simple branching keys and then create a classification key based on human characteristics.

Vocabulary:
classification
key, identify,
yes/no
question,
branch, feature,
classify

Assessment Question: How does a classification key help us identify living things?

LESSON 3

WS

I can gather, record and classify information.

SE

I can use classification keys to identify vertebrates and invertebrates.

NEW KNOWLEDGE

Children will learn that animals can be classified into vertebrates and invertebrates. They will use classification keys to identify animals and investigate the habitats in which they are found.

ACTIVITY

Children will complete a minibeast hunt and use classification keys to identify the organisms they find.

Vocabulary:
vertebrate,
invertebrate,
insects, mammals,
reptiles, birds, fish,
amphibians.

Assessment Question: What is the difference between a vertebrate and an invertebrate?

Science MTP - Year 4 - Living things and their habitats

LESSON 4

WS: I can ask questions to identify and classify living things.

SE: I can use classification keys to identify plants.

NEW KNOWLEDGE

In KS1 children learned about deciduous and evergreen trees. In this lesson, children will use classification keys to identify leaves. They will learn that plants can be classified using observable features.

ACTIVITY

Children will use and create classification keys to identify leaves and trees.

Vocabulary:
deciduous,
evergreen, classify,
leaf, identify,
characteristic

Assessment Question: What does evergreen mean? What does deciduous mean?

LESSON 5

WS

I can use secondary sources to answer scientific questions.

SE

I can explain how environmental change can affect living things.

NEW KNOWLEDGE

Children will learn that environments can change naturally and as a result of human actions. They will learn that environmental change can affect living things.

ACTIVITY

Children will research an endangered species and explain how environmental change has affected it.

Vocabulary:
endangered,
environment,
habitat, species,
human impact,
change

Assessment Question: How can changes to an environment affect animals?

LESSON 6

WS

I can record and communicate scientific information using tables and scientific vocabulary.

SE

I can explain the impact of environmental change on living things.

NEW KNOWLEDGE

Children will learn that changes to environments can have positive and negative effects on living things. They will review examples of environmental change and consider actions that can help protect habitats.

ACTIVITY

Children will create a table showing environmental changes, their effects on living things and possible solutions. Children will then complete the end-of-unit assessment.

Vocabulary:
environment,
human impact,
positive impact,
negative impact,
conservation

Assessment Question: Name three ways an environment can change and explain how these changes may affect living things.

Science MTP - Year 4 - Sound

Knowledge	Working Scientifically		Scientific Enquiry
To identify how sounds are made, associating some of them with something vibrating. (Vibration stations)	L1		L1 
	L6		L6 
Recognise that vibrations from sounds travel through a medium to the ear. (String phones)	L2		L2 
Find patterns between pitch of a sound and features of the object that produced it.	L3		L3 
Find patterns between the volume of a sound and the strength of the vibrations that produced it.	L5		L5 
Recognise that sound gets fainter as the distance from the sound source increases	L4		L4 

Our Scientific Enquiry Skills

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Science MTP - Year 4 - Sound

LESSON 1

WS

I can make careful observations and describe what I notice.

SE

I can identify that sounds are made by vibrations.

NEW KNOWLEDGE:

This is a new topic, but pupils should be aware of the 5 senses and that they use their ears to hear things. Children will learn that sounds are made when objects vibrate. They will explore different ways vibrations can be seen and felt.

ACTIVITY

Children will investigate different objects and identify where vibrations occur when sounds are made.

Vocabulary:
vibration, sound,
vibrate, source,
loud, quiet

Assessment Question: How are sounds made?

LESSON 2

WS

I can make predictions and test my ideas.

SE

I can explain that sound travels through a medium.

NEW KNOWLEDGE

Children will learn that sound travels through solids, liquids and gases. They will learn that sound cannot travel through empty space.

ACTIVITY

Children will investigate how sound travels using string telephones.

Vocabulary:
sound, travel,
medium, solid,
liquid, gas

Assessment Question: Can sound travel through space? Why?

LESSON 3

WS

I can record my results and identify patterns.

SE

I can explain how pitch changes.

NEW KNOWLEDGE

Children will learn that pitch refers to how high or low a sound is. They will investigate how changing an instrument changes pitch.

ACTIVITY

Children will investigate pitch using rulers, straws or water-filled containers.

Vocabulary:
Pitch, vibration,
high, low, sound

Assessment Question: What is pitch?

Science MTP - Year 4 - Sound

LESSON 4

WS

I can record results in a table.

SE

I can identify patterns in how sound changes over distance.

NEW KNOWLEDGE

Children will learn that sounds become quieter as they move further away from the source.

ACTIVITY

Children will measure how sound changes over distance and will record this in a **written fair test.**

Vocabulary:
distance, source,
louder, quieter

Assessment Question: What happens to sound as the distance increases?

LESSON 5

WS

I can observe how sounds are created.

SE

I can explain how volume can be changed.

NEW KNOWLEDGE

Children will learn that volume describes how loud or quiet a sound is.

ACTIVITY

Children will make simple instruments and investigate how volume can be changed.

Vocabulary:
volume, loud, quiet,
vibration,
instrument

Assessment Question: How can you make a sound louder?

LESSON 6

WS

I can plan and carry out a fair test.

SE

I can compare materials based on their ability to reduce sound.

NEW KNOWLEDGE

Children will recap their learning about vibrations, pitch and volume and investigate which materials are best at reducing sound.

ACTIVITY

Children will investigate materials for ear defenders and complete the end of unit assessment.

Vocabulary:
sound, volume,
vibration, material,
reduce

Assessment Question: Why are ear defenders useful?

Science MTP - Year 4 - Animals including humans

Knowledge Objective	Working Scientifically	Scientific Enquiry
I can describe the simple functions of the digestive system in humans.	L1 	L1 
I can identify different teeth in humans and name their functions.	L2 	L2 
I know how to keep my teeth healthy	L3 	L3 
I can identify and compare teeth of carnivores, herbivores and omnivores.	L4 	L4 
I can construct and interpret a variety of food chains identifying producers, predators and prey.	L5  	L5  
I can identify animal habitats in the locality and observe what they eat.	L6 	L6 

Our Scientific Enquiry Skills

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Our Working Scientifically Skills

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Science MTP - Year 4 - Animals including humans

LESSON 1

WS

I can use models to explain scientific ideas.

SE

I can identify the main parts of the digestive system.

NEW KNOWLEDGE

Children will learn about the main parts of the digestive system and the journey food takes through the body.

ACTIVITY

Children will create a model of the digestive system.

Begin with the **mouth**, followed by the **oesophagus**, then **stomach** then **small** and **large intestine** and then the **anus**.

Vocabulary:
Digestive system, stomach, small intestine, oesophagus, mouth, large intestine, anus

Assessment Question: Where can the oesophagus be found in our body? What is its role?

LESSON 2

WS

I can record my findings using labelled diagrams.

SE

I can identify the different types of human teeth and their functions.

NEW KNOWLEDGE: Discuss with children how it is possible for babies to manage without teeth, and how it impacts their diet at first. Pupils should use mirrors to help them look at their teeth in their mouth.
Children will learn about the different types of teeth and their functions.

ACTIVITY

Children will observe their teeth and identify different tooth types.

Allow some time for careful food sampling to explore which teeth we use for different purposes. Give pupils and apple (incisors for biting), crusty bread (canines for tearing) and sweets (molars for grinding).

Vocabulary:
Teeth, canine, molar, pre-molar, incisor, chew.

Assessment Question: What do we use our incisors for?

LESSON 3

WS

I can set up a fair test and make observations over time.

SE

I can explain how tooth decay can occur.

Recap the functions and quantity of teeth children and adults have in their mouth. Tell pupils that tooth decay occurs when bacteria starts to build up, causing the tooth to rot.

Look at the ingredients in toothpaste, what does each part do for our teeth?

ACTIVITY:

Pupils will set up a **written fair test** into tooth decay using various drinks and eggs. Pupils can make observations over 3–7 days, noticing any changes to the egg's shell (which acts as the enamel).

Toothpaste experiment. Pupils can either make their own paste or test different ones, assessing their taste, plaque removal and ability to foam. Record results in a table.

Vocabulary:
Decay, fluoride, plaque, enamel, healthy

Assessment Question: Why is it important to keep our teeth clean and healthy?

Science MTP - Year 4 - Animals including humans

LESSON 4

WS

I can make observations and comparisons.

SE

I can explain how teeth help animals eat different foods.

NEW KNOWLEDGE:

Look at the BBC Bitesize article and compare the teeth of different animals.

<https://www.bbc.co.uk/bitesize/articles/z846gdm#:~:text=Carnivores%20and%20herbivores%20have%20different,rip%20the%20meat%20they%20eat>

Compare the foods to the teeth that animals have.

ACTIVITY:

Give pupils images of different skulls, in pairs they can analyse the teeth to try to determine which animal it has come from.

Vocabulary:
Herbivore, omnivore, carnivore, skull, teeth

Assessment Question: Why do herbivores and carnivores have different teeth?

LESSON 5

WS

I can ask questions and use evidence.

SE

I can construct and explain simple food chains.

NEW KNOWLEDGE: Look at the meaning of a food chain. Pose some questions to children, for example, what

would happen if there were a gap in the chain? Share video on food chains

<https://www.theschoolrun.com/what-are-food-chains-and-food-webs>

As a class, sort the producer from the consumer (prey & predator).

ACTIVITY:

Using animal cards, pupils can organise food chains in their books.

Vocabulary:
food chain, producer, consumer, prey, predator

Assessment Question: What's the difference between a producer and consumer?

LESSON 6

WS: I can use

scientific vocabulary to explain my learning.

SE: I can apply my

scientific knowledge to answer questions.

Recap and retell all that has been learned in the topic, pupils should have a breadth of knowledge. They may want to make a poster which allows them to articulate their learning.

ACTIVITY:

Pupils can complete a final assessment quiz on all of their learning in the topic.

Vocabulary:
Digestive system

Assessment Question: What do you know about the digestive system including teeth?

Science MTP - Year 4 - Changing State

Knowledge	Working Scientifically		Scientific Enquiry	
To compare and group materials together, according to whether they are solids, liquids or gases	L1		L1	
	L2		L2	
Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius	L3		L3	
	L4		L4	
Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	L5		L5	
	L6		L6	 

Our Scientific Enquiry Skills

				
Comparative/Fair testing	Research	Observation over time	Pattern seeking	Identifying and classifying

Our Working Scientifically Skills

						
Questioning	Prediction	Setting up tests	Observation and measurement	Recording	Interpreting results	Evaluating

Science MTP - Year 4 - Changing State

LESSON 1

WS

I can observe and compare materials.

SE

I can identify solids, liquids and gases.

NEW KNOWLEDGE:

Pupils should be aware of everyday materials, name their physical properties and group them based on their similarities.

Explore how everything we know is made up of the three states of matter: solid, liquid and gas.

ACTIVITY:

Pupils can complete a sorting diagram for solids, liquids and gases. Provide pupils with images or items or allow exploration of the classroom for this.

Vocabulary:
Solid, liquid, gas,
state, materials,

Assessment Question: What are the three states of matter?

LESSON 2

WS

I can identify similarities and differences.

SE

I can describe the properties of solids, liquids and gases.

NEW KNOWLEDGE:

Give pupils some statements about SL&G, discuss what they agree with and why.

ACTIVITY:

Children investigate how solids, liquids and gases behave and compare their properties.

Vocabulary:
particles, solid,
liquid, gas, property

Assessment Question: How are liquid different to solids?

LESSON 3

WS

I can use a thermometer to take measurements.

SE

I can explain that heating can cause melting.

NEW KNOWLEDGE: Begin a drama activity where the pupils act out being a solid, liquid and gas in a container. Focus the lesson on the process of melting, where heat is applied to change the state from solid to liquid.

ACTIVITY:

Set up a **written fair test** exploring the melting points of different substances. Pupils some make observations and complete predictions, conclusions and evaluations for their fair test. Following this, pupils can plot their results in a bar chart.

Vocabulary:
melt, heat,
temperature,
melting,
thermometer

Assessment Question: What does the process of melting mean?

Science MTP - Year 4 - Changing State

LESSON 4

WS

I can interpret observations using scientific knowledge.

SE

I can explain freezing.

NEW KNOWLEDGE:

Review the previous lesson's knowledge on how materials can change from a solid to a liquid by melting. Ask pupils if they know what the reverse of this is (from liquid back to solid). This is known as cooling.

ACTIVITY:

Pupils will make their own ice-cream using milk, ice, vanilla, salt, ziplock bags and towels. Discuss what needed to happen to the liquid (milk) for it to change state.

Vocabulary:
Freeze, cooling,
liquid, solid,
temperature

Assessment Question: What happens during freezing?

LESSON 5

WS

I can carry out a fair test.

SE

I can explain evaporation and condensation.

NEW KNOWLEDGE:

Introduce the word **condensation** by asking pupils to breathe on a glass and explain what they can see. Introduce the word **evaporation** by asking pupils to make handprints on paper and explain what they can see.

ACTIVITY:

Pupils will be conducting an investigation, setting up a **written fair test** into where the best place to dry washing is. Pupils should comment on the variables they are measuring and the ones they are keeping the same.

Vocabulary:
Evaporation,
condensation, water
vapour, liquid, gas

Assessment Question: What is evaporation? What is condensation?

LESSON 6

WS

I can record scientific ideas using labelled diagrams.

SE

I can explain the stages of the water cycle.

NEW KNOWLEDGE: Pupils can match up the definitions evaporation, condensation and precipitation with their answers.

ACTIVITY:

Pupils will make a model water cycle, using water, cling film and ice. They should also draw and label this process in their books.

Finish off with a final assessment quiz which recaps all the knowledge learnt in this topic.

Vocabulary:
Evaporation,
condensation, water
vapour,
precipitation,
collection, water
cycle

Assessment Question: What happens in the water cycle?

Science MTP - Year 4 - Electricity

Knowledge	Working Scientifically				Scientific Enquiry			
I can identify common appliances that run on electricity	L1		L6		L1		L6	
I can construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers	L5				L5			
I can identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery	L2				L2			
I can recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit	L4				L4			
I can recognise some common conductors and insulators, and associate metals with being good conductors.	L3				L3			

Our Scientific Enquiry Skills

				
Comparative/Fair testing	Research	Observation over time	Pattern seeking	Identifying and classifying

Our Working Scientifically Skills

						
Questioning	Prediction	Setting up tests	Observation and measurement	Recording	Interpreting results	Evaluating

Science MTP - Year 4 - Electricity

LESSON 1

WS

I can record using labelled scientific diagrams.

SE

I can identify the components of a simple circuit.

NEW KNOWLEDGE:

Pupils may have some prior knowledge that some objects need electricity to work. Children will learn that electricity can be supplied by mains electricity or batteries. They will identify the components of a simple circuit. Give pupils a selection of images of objects which are battery operated and those which need electricity from a mains – sort into groups.

ACTIVITY:

Provide children with the equipment needed to make a simple circuit. Let them play around, can they make one? Show pupils some images of circuits, they should predict whether the circuit will work or not dependent on whether it is complete.

Vocabulary:
electricity, circuit,
cell, wire, bulb,
battery

Assessment Question: What components are needed to make a circuit work?

LESSON 2

WS

I can make predictions and test ideas.

SE

I can explain why some circuits work and others do not.

NEW KNOWLEDGE: Recap the learning in the previous lesson on what electricity is and the comparison between battery and mains. Explain that a battery produces electricity. Model how a circuit must be complete creating a large class circle using the energy stick (science cupboard). Children will learn that a circuit must be complete for electricity to flow.

ACTIVITY:

Children will investigate what happens when components are added or removed. Provide children with a cell, wire, bulb, motor, buzzer and switch and explore what they all do. Provide pupils with a simple circuit. Pupils to make predictions for what would happen if more bulbs were added to the circuit or a cell was removed.

Vocabulary:
complete circuit
incomplete circuit
current
electricity

Assessment Question: What happens if a component is removed from a circuit?

LESSON 3

WS

I can carry out a comparative test.

SE

I can identify conductors and insulators.

NEW KNOWLEDGE: Recap common circuit components, can pupils explain their function?

Discuss the difference between a **conductor** which allows electricity to pass through and an **insulator** which doesn't.

ACTIVITY:

Pupils to set up a **written fair test**, finding out which materials are the best at conducting electricity. Results should be recorded in a table.

Vocabulary:
conductor
insulator
material
electricity

Assessment Question: What is the difference between a conductor and an insulator?

Science MTP - Year 4 - Electricity

LESSON 4

WS

I can evaluate and improve my designs.

SE

I can explain how a switch works in a circuit.

NEW KNOWLEDGE: Provide pupils with the equipment to make a simple circuit. Show pupils or share different switches and explore what their purpose may be. Allow pupils to then explore whether there is a specific place a switch must go in a circuit. Feedback after some time.

ACTIVITY:

Provide pupils with conductive materials and some insulators so that they choose the best material. Pupils should make their own switches which could work to operate their simple circuit.

Vocabulary:
switch, open, close,
circuit, conductor

Assessment Question: What does a switch do?

LESSON 5

WS: I can ask scientific questions and use evidence to explain my ideas.

SE: I can identify how electricity is used in everyday life.

NEW KNOWLEDGE: In previous lessons, children have learned how to construct simple circuits, identify electrical components and compare conductors and insulators. In this lesson, children will learn how electricity is used in everyday life. They will explore how electrical appliances help us at home, in school and in the wider world. Children will learn that electricity has changed the way people live and work.

ACTIVITY

Provide children with a range of images showing electrical and non-electrical appliances from home, school and industry. Children will sort and classify the appliances and discuss how electricity helps people complete everyday tasks. Children will then design a room, classroom or home and identify where electricity is used, explaining the purpose of different electrical devices.

Vocabulary:
electricity
appliance
electrical device
circuit
battery
mains electricity

Assessment Question: How has electricity changed the way we live?

LESSON 6

WS

I can communicate scientific ideas clearly.

SE

I can identify renewable sources of electricity.

NEW KNOWLEDGE

Children will learn that electricity can be generated in different ways, including renewable sources. Share video clip with pupils <https://www.youtube.com/watch?v=AmWEs5CTQ3Q> which explores how electricity is generated.

Explore renewable energy and its benefits: solar power, wind turbines, biomass energy and hydraulic energy.

ACTIVITY:

Design a house of the future that is completely powered by renewable energy.
Pupils to complete a mini quiz on the learning in the topic.

Vocabulary:
renewable energy
solar
wind
hydroelectric
electricity

Assessment Question: What is renewable energy?