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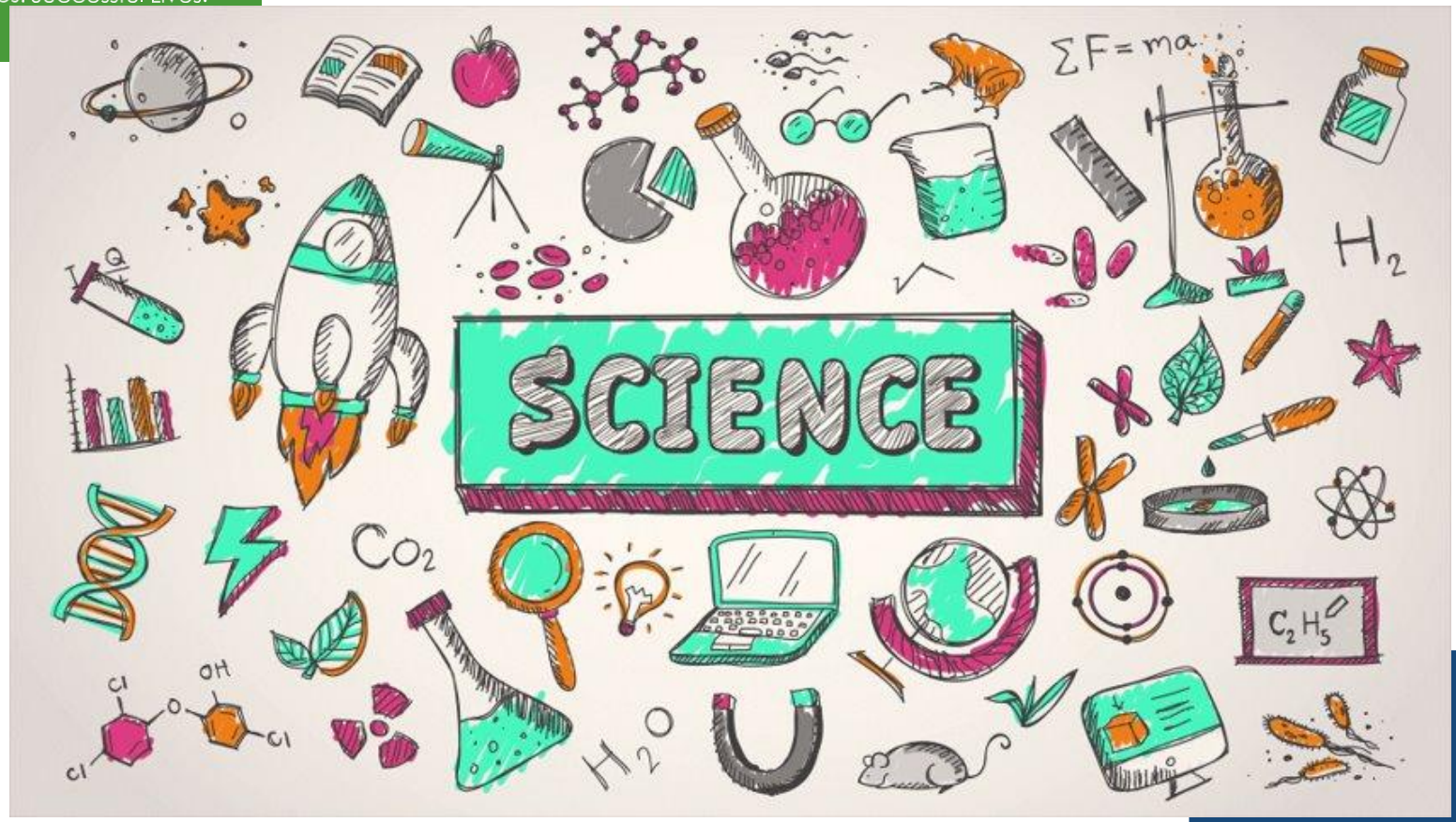

Science
Subject in the Spotlight

Ravenfield Primary Academy

Aim

I am a scientist!

Aims

- Science Intent
- Science Planning
- Science in EYFS
- Structure of a Science lesson
- STEM

I am a scientist!

Intent

At Ravenfield Primary Academy, we recognise the importance of Science in everyday life. Science teaching at Ravenfield Primary Academy aims to give all children an understanding of the world around them whilst acquiring specific skills and knowledge to support them in thinking scientifically and understanding scientific processes in the disciplines of biology, chemistry and physics.

Timetable

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When is Science taught?

Science is taught weekly in Key Stage 1 and Key Stage 2.

EYFS is delivered depending on the unit.

Planning

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How do we plan Science at Ravenfield?

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Y1	Everyday materials		Plants		Animals including humans	
	Seasonal changes					
Y2	Materials	Animals including humans		Living things and their habitats	Plants	
Y3	Rocks	Forces and magnets	Animals including humans	Light	Plants	
Y4	States of matter		Living things and their habitats	Sound	Animals including humans	Electricity
Y5	Properties and changes of material		Living things and their habitats	Animals including humans	Earth and Space	Forces
Y6	Animals including humans	Living things and their habitats	Light	Evolution and inheritance	Working Scientifically	Electricity

Planning

How do we plan Science at Ravenfield?

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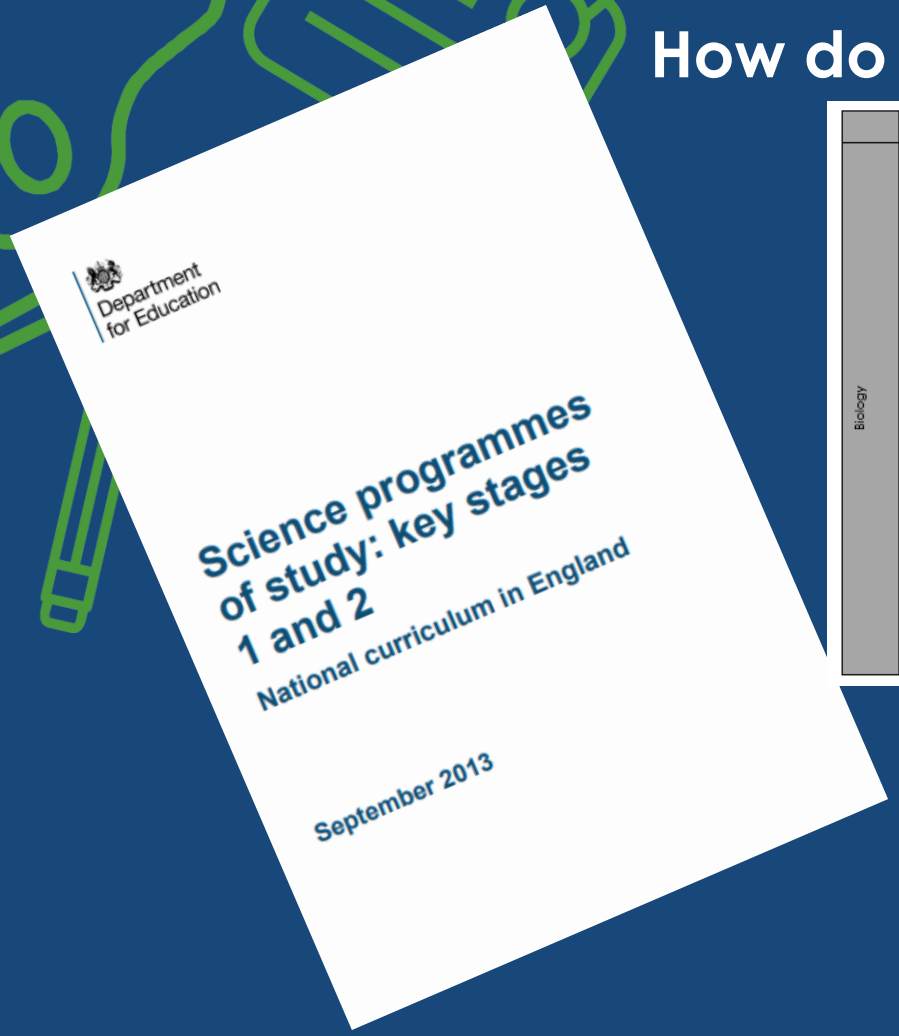


		EYFS 3-4	EYFS Reception	Year 1	Year 2	Year 3	Year 4	Year 5	
Biology	Plants	DM - Plant seeds and care for growing plants *(Show and explain the concepts of growth, change and decay with natural materials.)* DM - Understand the key features of the life cycle of a plant *(plant seeds and bulbs so children observe growth and decay over time)*	DM - Explore the natural world around them. *(After close observation, draw pictures of the natural world, including plants.)* DM - Describe what they see, hear and feel whilst outside. *(Name and describe some plants children are likely to see, encouraging children to recognise familiar plants whilst outside.)* ELG - Explore the natural world around them, making observations and drawing pictures of plants.	Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common flowering plants, including trees. *(roots, stem/trunk, leaves and flowers.)*	Observe and describe how seeds and bulbs grow into mature plants. Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. Investigate the way in which water is transported within plants. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.			
	Plants Vocabulary	Plant, seed, bulb, grow, mould, rot, life cycle, dead/die	Natural world, root, stem, leaf, flower, decay, petal	*Review all previous vocabulary where applicable.* New Vocabulary: Tree, deciduous, evergreen, shoot, trunk, branches, bud, blossom, petals, fruit.	*Review all previous vocabulary where applicable.* New Vocabulary: Germination, growth, survival, reproduction, water, light, temperature.	*Review all previous vocabulary where applicable.* New Vocabulary: Air, nutrients, pollination, seed formation, seed dispersal, reproduce, fertiliser, transported.			

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
	Asking simple questions and recognising that they can be answered in different ways.		**Asking relevant questions and using different types of scientific enquiries to answer them.**		**Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.**		
Thinking of ideas. Finding new ways to do things.	Use everyday language and begin to use simple scientific words to ask or answer a scientific question.	Suggest ideas, ask simple questions and know that they can be answered/investigated in different ways.	Use ideas to pose questions, independently, about the world around them. Answer posed questions with support and scaffolds.	Suggest relevant questions and know that they could be answered in a variety of ways. Answer scientific questions using straight forward specific evidence.	Raise different types of scientific questions, and hypotheses. Plan a range of science enquiries, including comparative and fair tests.	Pose/select the most appropriate line of enquiry to investigate scientific questions.	Decide how to measure the dependent variable. List all the variables that could affect the dependent variable. Select important control variables. Identify how to control each control variable. Write a scientific description of the observation, using key words. Suggest a hypothesis for the observation.
	Performing simple tests.		**Setting up simple practical enquiries, comparative and fair tests.**		Hypothesise, plan and carry out comparative and fair tests, making systematic and careful observations.		Think up a hypothesis Identify control variables. Control the variables.
Testing their ideas. Checking how well their activities are going. Changing strategy as needed.	Follow instructions to complete a simple test individually or in a group.	Complete steps in the correct order when performing a simple test and begin to recognise when something is unfair.	Discuss enquiry methods and describe a fair test. Make decisions about what to observe during an investigation.	Make decisions about different enquiries, including recognising when a fair test is necessary and begin to identify variables.			
	Observing closely, using simple equipment.		**Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.**		**Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.**		
Showing curiosity about objects, events and people. Using senses to explore the world around them. Paying attention to details.	Observe objects, materials and living things and describe what they see. Use simple, non-standard measurements in a practical task.	Observe something closely and describe changes over time. Use simple equipment, such as hand lenses or egg timers to take measurements, make observations and carry out simple tests.	Take accurate measurements using standard units. Begin to clearly explain what you can see using scientific language.	Make systematic and careful observations to explore change over time. Take accurate measurements using standard units and a range of equipment, including thermometers and data loggers.	Take measurements using a range of scientific equipment with increasing accuracy and precision.	Choose the most appropriate equipment in order to take measurements, explaining how to use it accurately. Decide how long to take measurements for, checking results with additional readings.	Plan a method.
	Identifying and classifying.		**Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.**		**Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.**		
Planning, making decisions about how to approach a task, solve a problem and reach a goal. Making links and noticing patterns in their experiences.	Sort and group objects, materials and living things, with help, according to simple observational features.	Decide, with help, how to group materials, living things and objects, noticing changes over time and beginning to see patterns.	Talk about criteria for grouping, sorting and categorising, beginning to see patterns and relationships. Gather, record and use data in a variety of ways to answer a simple question.	Gather and record data in a specific way to help in answering questions.	Record data and results of increasing complexity using scientific diagrams, labels, classification keys, tables, bar and line graphs and models.	Choose the most effective approach to measure, record and report results, linking to mathematical knowledge and use accurate scientific language.	Plot appropriate graphs to display results Draw a line of best fit to identify data trends Draw scientific diagrams to convey key information
			Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.				

Planning

Science in EYFS

The EYFS curriculum is split into the following areas:

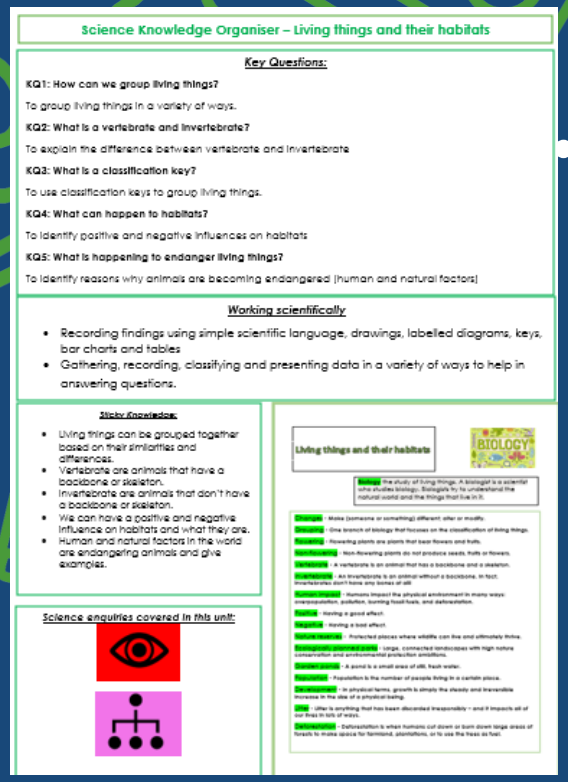
- Communication and Language
- Physical Development
- Personal, Social and Emotional Development
- Literacy
- Maths
- Understanding the World
- Expressive Arts and Design

Process

Science units:

- Each unit will have a knowledge organiser
- Children will complete a knowledge harvest (prior intended knowledge)
- Unit of lessons

End of unit will redo the knowledge harvest



Science Knowledge Organiser – Living things and their habitats

Key Questions:

KQ1: How can we group living things?

To group living things in a variety of ways.

KQ2: What is a vertebrate and invertebrate?

To explain the difference between vertebrate and invertebrate

KQ3: What is a classification key?

To use classification keys to group living things.

KQ4: What can happen to habitats?

To identify positive and negative influences on habitats

KQ5: What is happening to endanger living things?

To identify reasons why animals are becoming endangered (human and natural factors)

Working scientifically

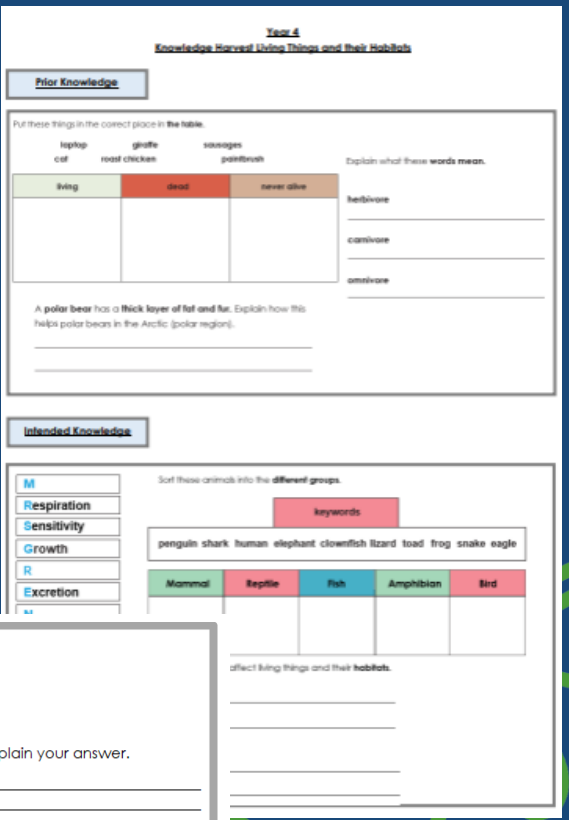
- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables
- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.

Sticky Knowledge:

- Living things can be grouped together based on their similarities and differences.
- Vertebrate are animals that have a backbone or skeleton.
- Invertebrate are animals that don't have a backbone or skeleton.
- We can have a positive and negative influence on habitats and what they are.
- Human and natural factors in the world are endangering animals and give examples.

Science enquiries covered in this unit:

Living things and their habitats



Year 4

Knowledge Harvest: Living Things and their Habitats

Prior Knowledge

Put these things in the correct place in the table.

laptop, giraffe, sausages, cat, roast chicken, paintbrush

living	dead	never alive

Explain what these words mean.

herbivore

carnivore

omnivore

A polar bear has a thick layer of fat and fur. Explain how this helps polar bears in the Arctic (polar region).

Intended Knowledge

M
Respiration
Sensitivity
Growth
R
Excretion

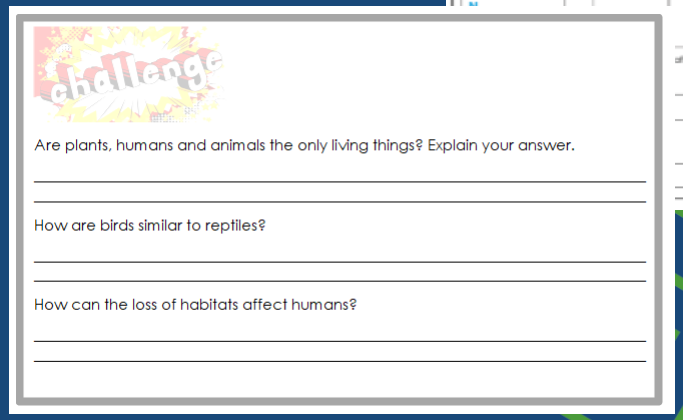
Sort these animals into the different groups.

keywords

penguin shark human elephant clownfish lizard toad frog snake eagle

Mammal	Reptile	Fish	Amphibian	Bird

affect living things and their habitats.



challenge

Are plants, humans and animals the only living things? Explain your answer.

How are birds similar to reptiles?

How can the loss of habitats affect humans?

Structure

Teaching sequence

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Sharp start – Input – Practice – Review

Sharp start	*Input*	*Practice*	*Review*
Revisiting prior lessons – question Explorify	Modelling Providing information for task	Applying – practical, written etc.	Quiz Explorify Other activities to check learning

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What does a lesson look like?

Sharp Start

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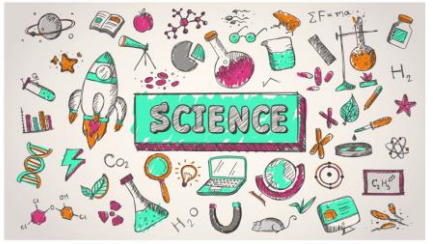
Sharp start – Input – Practice – Review

Sharp start	Input	Practice	Review
Revisiting prior lessons – question Explorify	Modelling Providing information for task	Applying – practical, written etc.	Quiz Explorify Other activities to check learning

Explorify

I am a scientist!



What is Science?

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Science is the process of learning about the natural world through observation and experimentation.

Biology

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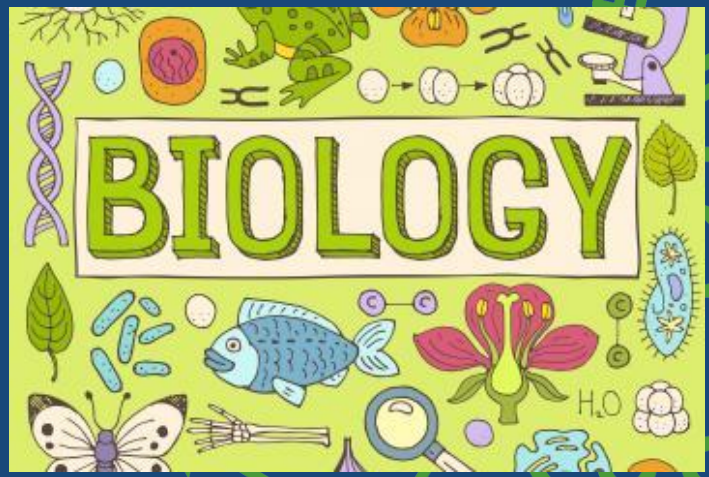
Biology the study of living things. A biologist is a scientist who studies biology. Biologists try to understand the natural world and the things that live in it.



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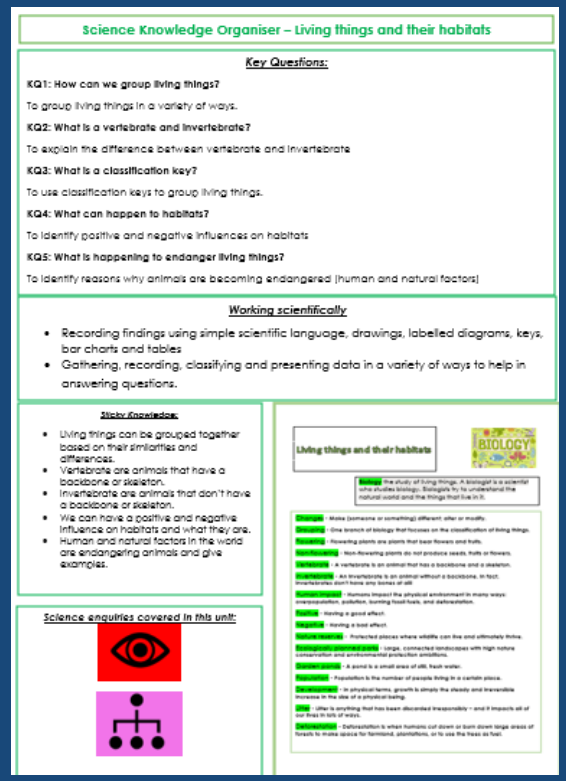
Tuesday 20th January

KQ1



Science Knowledge Organiser – Living things and their habitats

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Science enquiries covered in this unit:

Living things and their habitats

BIOLOGY

Biology the study of living things. A biologist is a scientist who studies biology. Biologists try to understand the natural world and the things that live in it.

Changes – Make (someone or something) different; alter or modify.

Grouping – One branch of biology that focuses on the classification of living things.

Flowering – Flowering plants are plants that bear flowers and fruits.

Non-flowering – Non-flowering plants do not produce seeds, fruits or flowers.

Vertebrate – a vertebrate is an animal that has a backbone and a skeleton.

Invertebrate – An invertebrate is an animal without a backbone. In fact, invertebrates don't have any bones at all!

Human impact – Humans impact the physical environment in many ways: overpopulation, pollution, burning fossil fuels, and deforestation.

Positive – Having a good effect.

Negative – Having a bad effect.

Nature reserves – Protected places where wildlife can live and ultimately thrive.

Ecological corridors – Large, connected landscapes with high nature conservation and environmental protection ambitions.

Garden ponds – A pond is a small area of still, fresh water.

Population – Population is the number of people living in a certain place.

Development – In physical terms, growth is simply the steady and irreversible increase in the size of a physical being.

Litter – Litter is anything that has been discarded irresponsibly – and it impacts all of our lives in lots of ways.

Deforestation – Deforestation is when humans cut down or burn down large areas of forests to make space for farmland, plantations, or to use the trees as fuel.

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Input

- Explains new vocabulary and its meaning
- Provide the new information needed
- Model the task

Sharp start – Input – Practice – Review

Sharp start	Input	Practice	Review
Revisiting prior lessons – question Explorify	Modelling Providing information for task	Applying – practical, written etc.	Quiz Explorify Other activities to check learning

Practice

Apply

Practical or written task

Sharp start – Input – Practice – Review

Sharp start	Input	Practice	Review
Revisiting prior lessons – question Explorify	Modelling Providing information for task	Applying – practical, written etc.	Quiz Explorify Other activities to check learning

Review

Review/plenary

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Quiz

Explorify

Feedback

Sharp start – Input – Practice – Review

Sharp start	Input	Practice	Review
Revisiting prior lessons – question Explorify	Modelling Providing information for task	Applying – practical, written etc.	Quiz Explorify Other activities to check learning

STEM

- AMRC
- STEM day – If you were an engineer, what would you do' – links to national competition
- Science week
- Maker school

Lessons

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Nursery	Understanding the world – people who help us in the community
Reception	STEM provision activities: - Magnet exploration - Bridge building - Snowflake building - Colour mixing – patterns
Year 1	Structure of a flowering plant
Year 2	Are things living, dead or never been alive?
Year 3	Do our bones affect what we do?
Year 4	Vertebrates and invertebrates
Year 5	Life cycle of mammals
Year 6	How colour is reflected

Lessons

I am a scientist!

Thank you so much for the support you've already given. Your encouragement makes a real difference in your child's learning journey. We truly value your continued involvement, and we hope you enjoy this glimpse into their classroom experience today.