Firs Primary School

Long Term Science Plan

Reviewed: September 2025

Updated: September 2024

Year 1 Cycle A

Enchanted Woodland

Outstanding Science; Year 1: Plants

- Identifying_Bulbs_And_Seeds
- Identifying_Garden_Plants
- Identifying_Trees
- Identifying_Wild_Plants
- Labelling_A_Plant
- Labelling_Different_Plants
- Parts_Of_A_Plant
- Plants_In_Our_Local_Area

Unit Learning Objectives:

- ***I can identify some common garden plants.***
- ***I can identify some common trees/plants from their shapes, leaves and seeds.***
- ***I know the difference between deciduous and ever-green trees (classifying)***
- ***I can label the main parts of different plants.***
- *I can explain what the different parts of a flowering plant do (optional)*
- *I can match bulbs and seeds to fully-grown plants (optional)*

Investigation types covered:

- *I can identify plants in our local area and observe how they change over time *(see guidance)*
- *I can group plants based on parts that are the same*

Scientists within the Curriculum:

Year 2 Cycle A

Enchanted Woodland

Outstanding Science; Year 2: Plants

- Comparing_Plants
- Growing_Plants
- Parts_Of_A_Plant
- Plant_Life_Cycles
- Plant_Reproduction
- What_Do_Bulbs_Need_To_Start_Growing
- What_Do_Plants_Need_To_Grow_Well
- What_Do_Seeds_Need_To_Germinate

Unit Learning Objectives:

- ***I can investigate what plants need to stay healthy***
- ***I can record how the height of a plant changes over time (observation over time)***
- ***I can label the main parts of a plant and explain their function.***
- ***I can sequence the different stages in a plant's life.***
- *I can observe what happens when a plant does not get enough water, light and the correct temperature (optional)*

Investigation types covered:

- Growing plants – Observation over time
- Recording the height of plants over a period of time

Scientists within the Curriculum:

LKS2 Cycle A

Gods and Mortals

Outstanding Science; Year 4: Electricity

- Conductors_And_Insulators
- Electrical_Circuits
- Electrical_Components
- Electrical_Machines
- Electrical_Switches
- Electricity_And_Safety
- Working_Circuits

Unit Learning Objectives:

- ***I can investigate which objects are conductors and which are insulators.***
- ***I can create a simple electrical circuit.***
- ***I can identify electrical components and their symbols.***
- ***I can identify machines which need electricity to work. Research***
- ***I can explain how an electrical switch works.***
- ***I can predict whether a circuit will work and how it can be fixed.***
- ***I can explain the relevance of Hertha Ayrton***
- *I can identify situations where electricity can be dangerous (optional)*

Investigation types covered:

- Conductors and Insulators – Identifying, grouping and classifying.
- Electrical Circuits – Pattern Seeking
- Electrical machines - Identifying, grouping and classifying.
- Electrical Switches – Pattern Seeking
- Working Circuits – Problem solving

Scientists within the Curriculum:

Hertha Ayrton

UKS2 Cycle A

A Child's War

Outstanding Science; Year 5: Forces

- Air_Resistance
- Force_Meters
- Gears
- Gravity_And_Weight
- Investigating_Friction
- Investigating_Levers
- Investigating_Pulleys
- Water_Resistance

Unit Learning Objectives:

- ***I can investigate the effects of air resistance.***
- ***I can explain why objects fall to earth (Isaac Newton)***
- ***I can identify when objects are experiencing high or low water resistance.***
- ***I can investigate the effects of friction on different materials.***
- ***I can explain how a lever and pulley work***
- ***I can use a force meter to identify which object has the most friction (comparative and fair test)***
- *I can explain how a gear train works (optional).*

Investigation types covered:

- -Air resistance – Comparative and Fair testing and Pattern seeking
- -Gravity and weight - Pattern seeking
- -Investigating friction - Comparative and Fair testing
- -Investigating levers - Comparative and Fair testing and Pattern seeking
- -Investigating pulleys - Comparative and Fair testing and Pattern seeking

Scientists within the Curriculum:

Isaac Newton

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Plant	Match	Bulb
Garden	Group	Seed
Leaves	Wild	Plant names
Fruit	Reproduce	Tree names
Flower	Attracts	Summer
Food		Root
Sunlight		Stem
Insects		Trunk
Water		Petals
		Branch
		Soil

Golden Nuggets:

- **Name a variety of common plants**
- **Understand the difference between deciduous and evergreen trees**
- **Identify the basic features of plants**

Further guidance and Cross-curricular links:

Children will have the opportunity to go on a 'woodland fieldtrip in geography; they should be supported to identify some of the plants and trees studies in the classroom in the Outstanding Science lessons. Other plants and trees found should also be recorded (e.g. sketches or photos,) to be identified once back in the classroom).

*If children investigate how plants change over time, this will be a long standing project that will link into the seasons and need to be revisted in due course.

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Soil	Compare	Bulb
Water	Fair	Roots
Light	Test	Nutrients
Plant	Variable	Stem
Water	Measure	Seed
Warmth	Anchor	Pollen
Leaves	Support	Germination
Flower	Growth	Reproduce
Food	Flowering	Pollination
Fruit	Scent	Pollinating
Insect	Energy	Lifecycle
	Conclusion	Nectar
		Dormant

Golden Nuggets:

- Know the difference between seeds/ bulbs and adult plants
- Know that plants need water, light and temperature to grow correctly

Further guidance and Cross-curricular links:

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Machine	Symbol	Conductor
Electricity	Components	Insulator
Switch	Chemicals	Circuit
Dangerous	Generate	Cell
Wires	Appliance	Circuit-diagram
Bulb	Break	Filament
Light	Complete	Power station
Buzzer	Prediction	Substation
Ring	Observation	Mains-electricity
On	Conduct	
Off	Socket	Short-circuit
Buzz		
Metal		
Water		
Battery		
Cable		

Golden Nuggets:

- **Construct / identify a simple series circuit**
- **Identify the parts of a circuit**
- **Recognise common conductors and insulators**

Further guidance and Cross-curricular links:

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Wind	Relationship	Air resistance
Lift	Representative	Water resistance
Weight	Effectiveness	Bar chart
Low	Predict	Line graph
High	Measure	Table
Easy	Energy	Average
Difficult	Calibrate	Mean
Smooth	Rotate	Bean
Slide	Diagram	Fulcrum
	Estimate	Pivot
	Orbit	Force meter
		Gravity
		Newtons (N)
		Pulley
		Force
		Gear
		Gear train
		Friction

Golden Nuggets:

- **Explain how gravity works**
- **Explain what air resistance, water resistance and Friction are (how do they work)**
- **Understand mechanisms can be used to give a small force a great effect**

Further guidance and Cross-curricular links:

Street Detective

Year 1 and Year 2 to complete: Outstanding Science (Year 1: Seasonal Change)

- Daylight_Graph
- Dressing_For_The_Season
- Hours_Of_Daylight
- Ordering_The_Seasons
- Plants_Through_The_Seasons
- Seasonal_Events
- Types_Of_Weather
- Weather_And_The_Seasons

Unit Learning Objectives:

- ***I can create a pictogram of the number of hours of daylight in different seasons*** ***Observation over time***
- ***I can explain how much daylight we get in different seasons.***
- ***I can describe different types of weather.***
- ***I can explain what the weather is like in different seasons.***
- ***I can research key botanists within history***
- ***I can classify different plants/trees in different seasons*** *recommended for year 2)*
- *I can place the months and seasons in order (optional – could be covered elsewhere)(*
- *I can explain why we need to wear different clothes in different seasons (optional – year 2 recommended)*

Investigation types covered: Daylight graph – Observation over time

Year 2 – classify plant stages from different seasons

Scientists within the Curriculum:

Georgia Amson-Bradshaw *– She is NOT a scientist but is an author who has published quite a few books relating to Eco and sustainability and may be worth perusing with some of her books. There are interesting relevant topics that are written specifically for children and may be worth drawing attention to in how authors are still as relevant as the scientists.*

Marianne North
Jane Colden

Urban Pioneers

Outstanding Science; Year 3: Plants

- Life_Cycle_Of_A_Flowering_Plant
- Plant_Anatomy
- Plant_Functions
- Pollination_Methods
- Room_For_Growth
- Seed_Dispersal_Methods
- The_Needs_Of_Different_Plants
- Water_Transport_In_Plants

Unit Learning Objectives:

- ***I can describe the lifecycle of a flowering plant.***
- ***I can identify and describe parts of different flowering plants.***
- ***I can explain different methods of pollination and dispersal in flowering plants.***
- ***I can investigate the needs of different plants.****(see note)*
- ***I can investigate how water is transported in plants.*** ***Observation over time***
- ***I can research key botanists within history (George Washington Carver).***

Investigation types covered:
Water transport in plants – Observation over time.

Scientists within the Curriculum:
George Washington Carver – Improving crops
Marianne North
Jane Colden

Frozen Kingdom

Outstanding Science; Year 6: Living things and their Habitats

- Carl_Linnaeus
- Evolutionary_Taxonomy
- Identifying_Arthropods_Using_A_Key
- Identifying_Trees_Using_A_Key
- Invertebrates_In_The_Local_Environment
- Trees_In_The_Local_Environment
- Vertebrates_And_Invertebrates (1)

Unit Learning Objectives:

- ***I can explain how Linnaeus developed a classification system.*** ***Research***
- ***I can use taxonomy to explain how organisms are related to each other.***
- ***I can classify animals as vertebrates or invertebrates.***
- ***I can identify familiar arthropods using a classification key.*** ***classification***
- *I can identify some common British trees using a classification key (optional – could be linked to arthropods)*
- *I can identify invertebrates in the local environment (optional)*
- *I can identify trees and classify in the local environment (optional)*

Investigation types covered:
Unit - Identifying, grouping and classifying.

Scientists within the Curriculum:
Carl Linnaeus and Alfred Wallace

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Plant	Overcast	Season
Day	Describe	Spring
Night	Explain	Summer
Light		Autumn
Dark		Winter
Sun		Pictogram
Rain		Seasonal
Cloud		Weather
Lose		Names of months
Leaves		
Grow		
Snow		
Thunder		
Lightning		
Hot		
Cold		

Golden Nuggets:

- observe changes across the four seasons
- describe weather associated with the seasons

Further guidance and Cross-curricular links:

Please note, although years 1 and 2 learn the same areas of learning, year 2 should be looking at these lessons in more depth. For example, your teacher's judgment may suggest year 2 don't need to be explicitly taught the seasons but they could be taught some of the optional lessons to further develop their understanding around the core areas.

https://www.hachetteschools.co.uk/book/boom-science-seasons/ - Author relating to science books
https://www.hachette.co.uk/contributor/georgia-amson-bradshaw/

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Flower	Identify	Lifecycle
Growth	Functions	Germination
Plant	Competition	Dormant
Seed	Method	Ovary
Water	Dispersal	Pollen
Warmth	Transported	Stamen
Unchanging	Moisture	Stigma
Adult	Nutrients	Carbon-dioxide
Roots	Reproduce	Seed dispersal
Male	Offspring	Wind-Dispersal
Female	Variable	Gravity-Dispersal
Same	Predict	Water-Dispersal
Different	Observe	Animal-Dispersal
Trunk	Evolve	Sap
Branch	Scent	Nectar
Leaf		Tuber
Fruit		Photosynthesis
Bulb		

Golden Nuggets:

- Identify and describe the functions of a plant
- Know the requirements of a plant (air, light, water, nutrients, space)
- Understanding that pollination is the process of reproduction

Further guidance and Cross-curricular links:

Years 1 and 2 will cover plants in their cycle. This is more in-depth, looking at the correct use of terminology when describing parts of a flower. It is worth looking and comparing different flowers and plants to see how they are similar and how they differ.

When looking at the needs of a different plant, the following should be discussed:
air, light, water, nutrients, space

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Animal	Grouping	Linnaen
Vegetable	Classifying	Taxonomy
Rock	Identify	Mineral
Plant	Kingdom	Binomial
Bird	Rank	Evolve
Fish	Domain	Latin
Insect	Class	Mammal
Worm	Order	Amphibian
Brain	Species	Reptile
Chestnut	Segmented	Mollusc
Birch	Moult	Fossil
Oak	Ancestor	Arthropod
Sycamore	Evolve	Tetrapod
Hazel	Reproduce	Phylum
Family		Arachnid
Legs		Crustacean
		Myriapod
		Exoskeleton
		Invertebrate
		Vertebrate
		Spine
		Classification key
		Nervous system
		Simple leaves
		Compound leaves
		Lobed leaves
		Pinnately lobed
		Palmately lobed
		Genus
		Habitat

Golden Nuggets:

- Use a classification key correctly
- Identify what makes a 'living thing'

Further guidance and Cross-curricular links:

The lessons on identifying trees and invertebrates in the local environment are likely to be more effective in early A1, Su1 or Su2 half terms. If Frozen Kingdom is taught in winter (A2 or Sp1), these lessons could be moved and delivered during the Darwin's Delights topic, and carried out during the rivers geography fieldtrip, as children will pass many trees and habitats on their outing.

Muck, Mess and Mixtures

Outstanding Science; Year 1: Animals including humans

- The_Five_Senses
- The_Human_Body

Unit Learning Objectives:

- ***I can explain what part of the body is to do with which sense.***
- ***I can label the main parts of the human body.***
- *Additional opportunities to learn: (including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth) through games, actions, songs and rhymes.*

Investigation types covered (optional):

-Catch the Penny! – Comparative testing

-Do You Hear What I Hear? -

-Mystery Smells -

-Tasting - With Your Nose? – Comparative testing

Scientists within the Curriculum:

Muck, Mess and Mixtures

Outstanding Science; Year 2: Animals including humans

- Exercise
- Food_Hygiene
- Healthy_Eating
- Stages_Of_A_Human_Life
- What_Do_Humans_Need_To_Survive

Unit Learning Objectives:

- ***I can investigate how exercise produces changes in the body Pattern seeking***
- ***I can explain how the different food groups help us to stay healthy.***
- ***I can sequence the different stages of a human life.***
- ***I can explain what humans need to survive.***
- ***I can explain why it is important to be clean when eating food***

Investigation types covered:

-Observation over time (exercise investigation)
-Grouping (what do humans need to survive?)
-Observation over time and comparative testing (egg shell investigation)

Scientists within the Curriculum:

Predator

Outstanding Science; Year 4: Living things and their Habitats

- Creating_A_Classification_Key
- Grouping_Animals
- Grouping_Organisms
- Habitats_Throughout_The_Year
- Identifying_Familiar_Organisms
- Identifying_Invertebrates
- The_Effects_Of_Deforestation
- Vertebrates_And_Invertebrates

Unit Learning Objectives:

- ***I can create a classification key for a group of organisms from the local environment. Classify***
- ***I can group animals according to whether they are fish, birds, amphibians, reptiles or mammals.***
- ***I can group organisms in different ways.***
- ***I can investigate how a habitat changes throughout the year.***
- ***I can use a classification key to identify familiar organisms.***
- ***I can explain the reasons for deforestation and its negative effects.***
- ***I can investigate deforestation and Gerald Durell***
- ***I can identify whether an animal is a vertebrate or an invertebrate.***

Investigation types covered:

-Unit – Identifying, grouping and classifying.
-Habitats Throughout the Year – Observation over time.
-The Effects of Deforestation - research

Scientists within the Curriculum:
Gerald Durrell and Conservation- see notes

Revolution

Outstanding Science; Year 6: Animals including humans

- Alcoholic_Drinks
- Blood
- Diet_And_Exercise
- Investigating_Heart_Rate
- The_Benefits_Of_Exercise
- The_Effects_Of_Smoking
- The_Human_Circulatory_System
- The_Human_Heart

Unit Learning Objectives:

- ***I can describe the functions of blood and blood vessels.***
- ***I can explain how diet and exercise affect body weight.***
- ***I can investigate the effect of exercise on heart rate. Pattern seeking***
- ***I can identify the main parts of the human relating to the circulatory system***
- ***I can explain how the human heart works using Daniel Hale Williams experience***
- ***I can describe the ways in which nutrients and water are transported***
- *I can research the preferred forms of exercise in our class (optional)*
- *I can describe the effects of smoking and drugs .(optional – providing this is clearly covered in PSHE)*

Investigation types covered:

-Investigating heart rate – Observation over time.

Scientists within the Curriculum:
Daniel Hale Williams

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Sight	Question	Senses
Sound	Answer	
Smell	Observe	
Taste	Predict	
Touch	Identify	
Eyes	Test	
Nose		
Tongue		
Ears		
Body		
Other body parts		

Golden Nuggets:

- Identify and name the basic parts of the human body
- identify the 5 senses

Further guidance and Cross-curricular links:

Senses Investigations ('Catch the penny', 'Do you hear what I hear?', 'Mystery smells' and 'Tasting – with your nose')
https://kidshealth.org/en/kids/experiment-main.html

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Body	Exercise	Heart
Baby	Predict	Muscle
Child	Diagram	Breathe
Adult	Growing	Sweat
Toddler	Changing	Carbohydrates
Teenager	Healthy	Micro-organisms
Food	Dairy	Acid
Eating	Fats	
Milk	Sugars	
Meat	Hygiene	
Eggs	Mouldy	
Fish	Problem	
Food names	Solution	
Dirty	Record	
Toothpaste	Observe	
	Protect	
	Damage	
	Test	

Golden Nuggets:

- notice that animals, including humans, have offspring which grow into adults
- Know the basic needs of animals inc humans, for survival (water, food and air)
- describe the importance for humans of exercise and eating the right amount of food Know what keeps humans healthy - hygiene.

Further guidance and Cross-curricular links:

Egg Shell/healthy teeth investigation
https://www.science-sparks.com/how-to-keep-teeth-healthy/

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Animal	Identify	Classification
Plant	Group	key
Minibeast	Erode	Dichotomous
Flowering	Erosion	key
Insect		Organism
Season		Habitat
Gills		Invertebrates
Milk		Vertebrates
Fur		Deforestation
Scales		Tetrapod
Soil		Mammal
Spine		Oviparous
		Viviparous
		Aquatic
		Herbivore
		Reptile
		Predator
		Amphibian
		Taxonomy
		Oxygen
		Antennae
		Exoskeleton
		Agriculture
		Extinct

Golden Nuggets:

- Know that environments can change which may be dangerous
- I can use a classification key to organise living things into different groups

Further guidance and Cross-curricular links:

https://www.twinkl.co.uk/resource/tp2-s-196-planit-science-year-4-scientists-and-inventors-lesson-1-madagascar-in-danger-lesson-pack

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Brain	Long/short	Alcohol
Water	term	Ethanol
Diet	Indirect	Alcohol by volume (ABV)
Exercise	Dependence	Liver
Fat	Percentage	Digestive system
Sugar	Volume	Pregnant
Gain	Energy	Red blood cells
Lose	Starving	White blood cells
Weight	Inhale	Plasma
Food	Addictive	Oxygen
Breathing	Reproductive	Carbon Dioxide
Cigarette	Conceive	Carbon Monoxide
Heart	Contract	Haemoglobin
Pump	Valves	Immune system
Blood		Virus
Left/Right		Bacteria
		Platelet
		Clot
		Lungs
		Pie Chart
		Calories
		Obesity
		Heart rate
		Radial artery
		Pulse
		Line Graph
		Bar chart
		Tally Chart
		Aerobic
		Nicotine
		Tar
		Tobacco
		Heart attack
		Stroke
		Cancer
		Passive smoking
		Pulmonary
		Systemic
		Circulation
		Arteries
		Veins
		Arterioles
		Venules
		Capillaries
		Atrium
		Ventricle
		Aorta

Golden Nuggets:

- **Name the main parts of the circulatory system**
- **Identify the functions of the main areas associated with the heart (heart, blood vessels and blood)**
- **List ways to keep your heart healthy**

Further guidance and Cross-curricular links:

Investigation: Dissecting Sheep's Heart
https://www.instructables.com/id/Heart-Dissection/
Investigation vocabulary: diagram, label, explanation, dissect, valves, ventricles, atrium

Near and Far

Outstanding Science; Year 1: Animals including humans

- Animal_Bodies
- Animal_Body_Groups
- Animal_Diet
- Animals_And_Their_Food
- Grouping_Animals
- Identifying_Mammals

Unit Learning Objectives:

- ***I can identify carnivores, herbivores and omnivores.***
- ***I can match animals to what they eat.***
- ***I can place animals in the fish, amphibian, reptile, bird and mammal groups.(classify)***
- ***I can identify some mammals.***
- *I can label the main parts of animals' bodies (optional)*
- *I can group animals by their body type (optional)*

Investigation types covered:

Scientists within the Curriculum:
Jane Goodall

Near and Far
(Double Unit: Animals and living)

Outstanding Science; Year 2: Animals including humans

- Animals_And_Their_Offspring
- Life_Cycles
- What_Do_Animals_Need_To_Survive

Outstanding Science; Year 2: Living Things and their Habitats

- Adaptations
- Animals_And_Their_Habitats
- Food_Chains
- Food_Sources
- Investigating_Micro-habitats
- Naming_Animals_And_Plants

Unit Learning Objectives:

- ***I can match the young of different animals to their adult form.***
- ***I can sequence and describe the life cycle of different animals.***
- ***I can explain what animals need to survive.***
- ***I can explain how some animals are adapted to their habitats.***
- ***I can match animals to their habitats.***
- ***I can create and describe a food chain.***
- ***I can show different sources of food using a food chain.***
- ***I can identify and name some animals and plants in local micro-habitats.***
- ***I can name common animals and plants.***

Investigation types covered:

Scientists within the Curriculum:
Maria Sibylla

Tribal Tales
(Double Unit: Light and Sound)

Outstanding Science; Year 4: Sound

- Distance_And_Volume
- How_We_Hear_Things
- Investigating_Pitch
- Investigating_Volume
- Making_A_String_Instrument
- Pitch_And_Volume
- Sound_And_Distance
- Sound_Insulation

Outstanding Science; Year 3: Light

- Forming_Shadows
- Investigating_Shadow_Size
- Light_Sources
- Light_Sources_And_Reflectors
- Light_Sources_In_Our_School
- Making_A_Sundial
- Sun_Safety
- Transparent_Translucent_Opaque

Unit Learning Objectives:

- ***I can investigate the realtionship between distance and volume.***
- ***I can explain how sounds are made and how we hear things through a medium to the ear.***
- ***I can place different sounds in order of pitch. Pattern seeking***
- ***I can investigate the patterns between volume and sound based on vibrations produced***
- ***I can explain how shadows are formed.***
- ***I know that light is reflected from surfaces***
- ***I can investigate how moving a light source changes the size of an object's shadow Pattern seeking***
- ***I can identify light sources and how they are needed in order to see things***
- ***I can explain how the sun can be dangerous and ways we can protect ourselves.***
- ***I can research Garret Morgan's design***
- *I can identify whether an object is a light source or a reflector (optional)*
- *I can make a sundial and explain how it works (optional)*

Darwin's Delights

Outstanding Science; Year 6: Evolution and Inheritance

- Animal_Adaptations
- Charles_Darwin
- Heredity
- Natural_Selection
- Plant_Adaptations
- The_Evolution_Game
- The_Fossil_Record

Unit Learning Objectives:

- ***I can explain how some animals are adapted to their environment Pattern seeking *(see notes)***
- ***I can explain how Darwin developed the theory of natural selection Research***
- ***I can identify features that individuals have inherited from their parents.***
- ***I can explain the process of evolution by natural selection.***
- ***I can explain how some plants are adapted to their environment.***
- ***I can explain what the fossil record tells us about the past.***
- *I can model the process of natural selection (optional)*

Investigation types covered:
Darwin's Finches and Bird Adaptations - Research

Scientists within the Curriculum:
Charles Darwin, Gregor Mendel, Thomas Hunt Morgan, Barbara Mcclintock,

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Wing	Label	Skeleton
Beak	Match	Mammal
Fin	Group	Prey
Paw	Identify	Carnivore
Claw		Herbivore
Tail		Omnivore
Fur		Amphibian
Feathers		Reptile
Eggs		Scales
Meat		Gills
Plants		Mane
Water		Snout
Fly		Hoof
Swim		Live young
Bird		Give birth
Fish		

Golden Nuggets:

- Know there are the following animals: fish, amphibians, reptiles, birds and mammals
- Understand the difference between carnivore, herbivore and omnivore

Further guidance and Cross-curricular links:

Cross-curricular links with geography could be developed by investigating which animals are native to Brazil, and then grouping these animals into the groups used in the Outstanding Science lessons e.g. mammal, bird, amphibian.

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Adult	Reproduce	Live young
Egg	Young	Give birth
Chick	Offspring	Lifecycle
Chicken	Change	Spawn
Frog	Research	Pupa
Caterpillar	Diagram	Tadpole
Food	Source	Food chain
Air	Sequence	Habitat
Water	Adaptation	Micro-habitat
Shelter	Adapt	Prey
Warmth	Group	Polar
	Survive	Forest
	Protection	Desert
		Antarctic
		Coastal
		City
		Rainforest
		Organism
		Consumer
		Producer
		Omnivore
		Carnivore
		Herbivore

Golden Nuggets:

- notice that animals, including humans, have offspring which grow into adults
- Know the basic needs of animals inc humans, for survival (water, food and air)
- describe the importance for humans of exercise and eating the right amount of food
- Know what keeps humans healthy - hygiene.

Further guidance and Cross-curricular links:

Other Investigation types covered:

- Distance and Volume – Pattern seeking
- Investigating pitch – pattern seeking
- Investigating volume – pattern seeking
- Pitch and Volume - Pattern seeking and
- Sound and distance – Pattern seeking
- Sound Insulation – Pattern seeking and comparative/fair testing

- Investigating Shadow Size – Pattern seeking
- Light sources – Identifying, grouping and classifying
- Light Sources and Reflectors - Identifying, grouping and classifying

Scientists within the Curriculum:

Garrett Morgan – traffic lights

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Sound	Distance	Line graph
Ear	Volume	Vibration
Wobbling	Relationship	Sound wave
Loud	Fair test	Outer ear
Loudness	Variable	Ear canal
Loudest	Measure	Ear drum
Quiet	Electrical	Middle ear
Soft	Signals	Inner Ear
Softest	Pattern	Hammer
Shadow	Method	Anvil
Light	Accuracy	Stirrup
Block	Prediction	Cochlea
Eyes	Observation	Auditory Nerve
Sun	Investigate	Brain
Star	Prediction	Pitch (High/Low)
Sunburn	Measurement	Mean
Clothing	Surface	Mode
Shade	Reflect	Median
Sun screen/cream	Reflector	Average
Skin	Rotation	Bar Chart
	Damage	Table
		Light source
		Light rays
		Opaque
		Bar chart
		Venn diagram
		Tally Chart
		Bar Chart
		Sundial
		Earth
		Orbit
		Hydrogen
		Helium
		Translucent
		Transparent
		Skin cancer

Golden Nuggets:

- **Know that sounds are made through vibration**
- **Understand the difference between volume, pitch and sound**

- **Know light is reflected from all surfaces**
- **Know that light from the sun can be dangerous**
- **Recognise shadows are formed when an opaque object blocks the light**

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Animal	Survival	Adaptation
Rocks	Advantage	Environment
	Reproduction	Organism
	Population	Evolution
	Offspring	Inheritance
	Inherit	Mutation
	Sexually	Natural-selection
	Traits	Fossils
		Sedimentary
		Palaeontologist
		Heredity
		Extinction
		Ancestry
		Hybrid

Golden Nuggets:

- Understand how fossils tell us about the past
- Understand what evolution is
- Know characteristics can be inherited through genetics

Further guidance and Cross-curricular links:

Learn about Darwin's Finches and research how other types of birds have adapted to suit their environments.
Resource on One Drive:

Whole School - Documents › Curriculum Planning › Subject Resources and Planning Support Science › Resources › UKS2 Darwin's Delights

** Beak investigation – pattern seeking to find which beak is the best

Land Ahoy

Outstanding Science; Year 1: Everyday Materials

- Choosing_Materials
- Floating_And_Sinking
- Grouping_Materials
- Identifying_Materials
- Investigating_The_Best_Material
- Naming_Materials
- Objects_And_Materials
- Objects_And_Their_Properties

Unit Learning Objectives:

- ***I can group objects and materials by their properties.***
- ***I can identify the materials that some objects are made from.***
- ***I can name some everyday materials. Research***
- ***I can tell the difference between an object and a material.***
- ***I can explain some properties of objects and materials.***

Investigation types covered:

Unit - Identifying, Grouping and Classifying
Floating and Sinking – Fair testing and pattern seeking
Investigating the Best Material - Fair testing

Scientists within the Curriculum:

Land Ahoy

Outstanding Science; Year 2: Uses of Everyday Materials

- Changing_Shape
- Choosing_The_Right_Material
- Grouping_Objects_By_Material
- Identifying_Materials
- Inventors_Of_New_Materials
- Materials_And_Their_Uses
- Properties_Of_Materials
- Properties_Of_Metals

Unit Learning Objectives:

- ***I can investigate how I can change the shape of different objects.***
- ***I can identify the best material for _____. Comparative and fair testing***
- ***I can group objects by the material they are made from. classify***
- ***I can identify the materials from which different objects are made.***
- ***I can explain how inventors have made new materials.***
- ***I can investigate the properties of different materials.***
- ***I can investigate and compare the properties of different metal objects.***

Investigation types covered:

Unit - Identifying, Grouping and Classifying
Changing Shape – Pattern finding
Properties of Materials – Pattern finding
Properties of Metals – Pattern finding

Scientists within the Curriculum:

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Same	Test	transparent
Different	Compare	Opaque
Float	Fair	
Sink	Group	
metal	Properties	
plastic	Object	
rubber	Material	
fabric	Purpose	
stone	Waterproof	
brick	Absorb	
paper	Absorbent	
glass	Ceramic	
wood	Leather	
soft	Flexible	
hard		
light		
heavy		
bendy		
stiff		
rough smooth		
warm		
cold		
stretchy shiny		
dull		
pretty		

Golden Nuggets:

- Know the difference between an object and material
- Name a variety of everyday materials
- Describe the properties of these materials

Further guidance and Cross-curricular links:

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Squash	Predict	Transparent
Bend	Test	Opaque
Twist	Deform	Insulating
Stretch	Material	Reflective
Rubber	Properties	Inventor
Change	Flexible	Magnet
leather	Rigid	
plastic	Waterproof	
metal	Absorbent	
rubber	Fragile	
paper	Brittle	
card	Suitable	
wood	Rot	
glass	Rust	
stone		
fabric		
Tough		
Light		
Heavy		
Strong		
Smooth		
Rough		
Float		
Sink		

Golden Nuggets:

- Identify the importance of the materials (e.g. water proof, smooth and why this is important)
- Know that materials can be shaped in different ways

Further guidance and Cross-curricular links:

Year 1 Cycle B

Bright Lights. Big City

Outstanding Science; Year 1: Everyday Materials

- Identifying_Materials
- Naming_Materials
- Objects_And_Materials
- Objects_And_Their_Properties
- Investigating_The_Best_Material
- Choosing_Materials
- Floating_And_Sinking
- Grouping_Materials

Unit Learning Objectives:

- *I can name some everyday materials.*
- *I can tell the difference between an object and a material.*
- *I can explain some properties of objects and materials.*
- *I can identify the materials that some objects are made from.*
- *I can investigate whether an object floats or sinks.*
- *I can group objects and materials by their properties.*
- *I can choose a good material for a purpose.*
- *I can investigate the best material for a purpose.*

Investigation types covered: Classifying, Comparative and fair test

- *To group and classify everyday materials that objects are made from*
- To record which items sink and float the quickest (fair test)

Additional

- To group materials based on a characteristic
- To observe which item is the best for a purpose (Fair testing)

Year 2 Cycle B

Bright Lights. Big City

Outstanding Science; Year 2: Uses of Everyday Materials

- Changing_Shape
- Choosing_The_Right_Material
- Grouping_Objects_By_Material
- Identifying_Materials
- Inventors_Of_New_Materials
- Materials_And_Their_Uses
- Properties_Of_Materials
- Properties_Of_Metals

Unit Learning Objectives:

- *I can investigate the properties of different materials.*
- *I can group objects by the material they are made from.*
- *I can investigate and compare the properties of different metal objects.*
- *I can identify the materials from which different objects are made.*
- *I can explain how inventors have made new materials.*
- *I can explain how materials are useful in different situations.*
- *I can suggest suitable materials for new situations. (link to inventor of a new materials – Dunlop, McAdam and Macintosh)*
- *I can investigate how I can change the shape of different objects.*

Investigation types covered: Classifying, Pattern Seeking

- To group and classify objects based on their properties
- To find patterns using the material's properties (Pattern finding)
- To group objects by the material they are made from

LKS2 Cycle B

Heroes and Villains

Note – Children will need to understand how to create an electrical circuit and fix any errors prior to starting the cross curricular DT unit (simple circuits and switches), so it is recommended that the science lessons are covered before beginning the DT unit).

Outstanding Science; Year 4: Electricity

- Conductors_And_Insulators
- Electrical_Circuits
- Electrical_Components
- Electrical_Machines
- Electrical_Switches
- Electricity_And_Safety
- Working_Circuits

Unit Learning Objectives:

- *I can investigate which objects are conductors and which are insulators.*
- *I can create a simple electrical circuit.*
- *I can identify electrical components and their symbols.*
- *I can identify machines which need electricity to work.*
- *I can explain how an electrical switch works.*
- *I can identify situations where electricity can be dangerous.*
- *I can predict whether a circuit will work and how it can be fixed.*

Investigation types covered:

- Conductors and Insulators – Identifying, grouping and classifying.
- Electrical Circuits – Pattern Seeking
- Electrical machines - Identifying, grouping and classifying.
- Electrical Switches – Pattern Seeking
- Working Circuits – Problem solving

UKS2 Cycle B

Stargazers (double unit – Light and Earth and Space)

Outstanding Science; Year 6: Light

- How_We_See_Things
- Investigating_Shadows
- Making_A_Periscope
- Objects_And_Their_Shadows
- Positioning_A_Rear-view_Mirror
- Reflecting_Light
- The_Human_Eye
- The_Light_Spectrum

Outstanding Science; Year 5: Earth and Space

- Comparing_The_Planets
- Day_And_Night
- Earth_Sun_And_Moon
- Making_A_Sundial
- Planet_Facts
- The_Formation_Of_The_Solar_System
- The_Lunar_Cycle
- The_Solar_System

Unit Learning Objectives:

- *I can explain how we see light sources and non-light sources.*
- *I can label the main parts of the human eye and explain their functions.*
- *I can explain how white light is made up of a spectrum of colours (link to Isaac Newton)*
- *I can explain how the shape of an object is determined and the size based on movement of an object/ light source*
- *I can use my knowledge of reflection to place mirrors to make light follow a path.*
- *I can make a periscope and explain how it works. (optional extra)*
- *I can calculate the best position for a rear-view mirror. (optional extra)*
- *I can research and compare the different planets in the solar system.*
- *I can explain how the solar system was formed. (reference to Henrietta Swan Leavitt)*
- *I can explain how the Earth and other planets in the solar system move. (reference to Nicolaus Copernicus)*

Scientists within the Curriculum:

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Same	Test	Absorbent
Different	Compare	transparent
Float	Fair	Opaque
Sink	Group	Flexible
metal	Properties	
plastic	Object	
rubber	Material	
fabric	Purpose	
stone	Waterproof	
brick	Absorb	
paper	Ceramic	
glass	Leather	
wood		
soft		
hard		
light		
heavy		
bendy		
stiff		
rough smooth		
warm		
cold		
stretchy shiny		
dull		
pretty		

Golden Nuggets:

- Understand that an object is made using a material
- Identify the following materials (wood, plastic, glass, metal, water and rock)
- Describe an object according to its physical properties
- Compare and group materials based on their properties

Further guidance and Cross-curricular links:

Scientists within the Curriculum:

John Dunlop, John McAdam, Charles Macintosh, Charles Goodyear (inventors of new materials)

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Squash	Predict	Transparent
Bend	Test	Opaque
Twist	Deform	Insulating
Stretch	Material	Reflective
Rubber	Properties	Inventor
Change	Flexible	Magnet
leather	Rigid	
plastic	Waterproof	
metal	Absorbent	
rubber	Fragile	
paper	Brittle	
card	Suitable	
wood	Rot	
glass	Rust	
stone		
fabric		
Tough		
Light		
Heavy		
Strong		
Smooth		
Rough		
Float		
Sink		

Golden Nuggets:

- Identify materials that can be squashed, bent, twisted and stretched and understand the meaning of these terms
- Identify the properties of a given material or object
- Compare the properties of different materials and note how they are the same or different

Further guidance and Cross-curricular links:

https://www.outstandingscience.co.uk/index.php?action=view_page&page=view_unit&unit=2d#:~:text=Children%20learn%20about%20three%20inventors,John%20McAdam%2C%20and%20Charles%20Macintosh.

Lessons 2 to 6: 'Focused Tasks' from Design and Technology Progression and Coverage Document: 'Simple Circuits and Switches'.

The following online resources could be used as an introduction/recap to creating circuits:
https://www.andythelwell.com/blobz/guide.html

There is also an example lesson plan on 'Making Switches' on the One Drive:

Subject Resources and Planning Support › Science › Resources › Heroes and Villains

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Machine	Symbol	Conductor
Electricity	Components	Insulator
Switch	Chemicals	Circuit
Dangerous	Generate	Cell
Wires	Appliance	Circuit-diagram
Bulb	Break	Filament
Light	Complete	Power station
Buzzer	Prediction	Substation
Ring	Observation	Mains-electricity
On	Conduct	Short-circuit
Off	Socket	
Buzz		
Metal		
Water		
Battery		
Cable		

Golden Nuggets:

- Identify appliances that use electricity
- Identify whether a material is a conductor or insulator.
- Identify electrical components from their symbols; bulb, battery/cell, wire, switch
- Explain why a circuit will or will not work and how to fix it

Further guidance and Cross-curricular links:

- *I can explain how day and night are caused.*
- *I can explain how the moon moves.*
- *I can identify the different phases of the moon.*

Investigation types covered: Comparative and fair test, Research

- To create a model of the solar system using research (using a range of sources)
- *To predict how shadows can move and change size (comparative and Fair test)*

-Positioning a rear-view mirror – Problem solving
-Reflecting Light – Problem Solving

Scientists within the Curriculum:

Ali Javan (gas light), Isaac Newton, Willebrord Snell (refraction), Lewis Latimer (covered in DT) Patricia Bath (laser eye),

Thomas Edison/ Lewis Latimer (covered in Year 5/6 DT) , Garrett Morgan (inventor of traffic light), Alhazen,

Mae Jemison, Nicolaus Copernicus, Katherine Johnson, Galileo Galilei, Mary Somerville, Valentina Tereshkova, Maggie Aderin-Pocock, Johannes Kepler, Henrietta Swan Leavitt, Edwin Hubble, Vera Rubin, Wang Zhenyi, Cecila Payne Gaposchkin, Annie Easley

Further guidance and Cross-curricular links:

Book: 100 scientists who made history
Mae Jemison – comprehension
https://www.famousscientists.org/
https://scientificwomen.net/field/astronomy-1

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Light	Source	Protractor
Darkness	Reflect	Cornea
Eyes	Predict	Iris
Brain	Measure	Lens
Mirror	Angle	Retina
Torch	Surface	Optic nerve
Shadow	Fair	Pupil
White	Test	Spectrum
Colours	Obstacles	Incident ray
Planet	Orbit	Reflected ray
Sun	Diameter	Opaque
Moon	Rotate	Line graph
Day	Axis	Periscope
Night	Origin	Terrestrial planet
Gas	Energy	Gas Giant
Full	Reaction	Ice Giant
Half	Spherical	Dwarf planet
	Cycle	Mercury
		Venus
		Earth
		Mars
		Jupiter
		Satum
		Uranus
		Neptune
		Solar System
		Sundial
		Gnomon
		Hydrogen
		Helium
		Gravity
		Waxing
		Waning
		Lunar
		Crescent
		Gibbous
		Geocentric
		Heliocentric
		Astronomer

Golden Nuggets:

- Understand light appears to travel in straight lines
- Understand how a shadow is formed
- Describe the movement of Earth and moon
- Understand the Sun, Earth and moon are approximately spherical bodies
- Explain night and day (Earth's rotation, time zones etc)

Superheroes

Outstanding Science; Year 1: Animals including humans

Short unit (split across 2 topics)

The_Five_Senses
The_Human_Body

Unit Learning Objectives:

- *I can label the main parts of the human body.*
- *I can explain which part of the body is linked to which sense.*
- *I can research why Linda Brown Book was an important person*

Investigation types covered: Comparative and fair test

-Catch the Penny! – Comparative testing

-Do You Hear What I Hear? - Research

-Mystery Smells - - Research

-Tasting – With Your Nose? – Comparative testing

Scientists within the Curriculum:

Linda Brown Buck

Superheroes

Outstanding Science; Year 2: Animals including humans

Exercise
Food_Hygiene
Healthy_Eating
Stages_Of_A_Human_Life
What_Do_Humans_Need_To_Survive

Unit Learning Objectives:

- *I can explain what humans need to survive.*
- *I can explain why it is important to be clean when eating food.*
- *I can investigate how exercise produces changes in the body*
- *I can explain how the different food groups help us to stay healthy.*
- *I can sequence the different stages of a human life.*

Investigation types covered: Observation over time

- To observe what happens when you exercise (obs over time)
- To observe what happens to an egg shell over time (obs over time)

Scientists within the Curriculum:

Marie Maynard Daly, Joan Beauchamp Procter

Tremors

Outstanding Science; Year 3: Rocks

Animals_And_Their_Fossils
How_Fossils_Are_Formed
Investigating_Rocks
Investigating_Soils
Observing_Rocks
Rocks_And_Their_Properties
Soil_Composition
Testing_Rock_Hardness

Outstanding Science; Year 4: States of Matter

Changing_State
Investigating_Melting_Points
Researching_Melting_Points
Solids_Liquids_And_Gases
Thermal_Insulators

Unit Learning Objectives:

- *I can investigate and describe the properties of rocks*
- *I can match rocks to their properties and suggest uses for them (links to Florence Bascom)*
- *I can test and compare rocks based on their hardness.*
- *I can examine what a soil sample is made from.*
- *I can investigate what soils are made from.*
- *I can make predictions how fossils were formed, then describe the process in which they were formed (links to Mary Anning)*
- *I can explain why Mary Anning/ Florence Bascom was a significant scientist.*
- *I can explain how materials change state.*
- *I can investigate the melting and boiling points of different materials.*
- *I can group substances according to whether they are solids, liquids or gases.*
- *I can investigate how effective different materials are as thermal insulators.*

Alchemy Island

Outstanding Science; Year 5: Properties and Changes of Materials

Investigating_Hardness
New_Materials
Properties_Of_Materials
Reversible_And_Irreversible_Changes
Separating_Mixtures
Separating_Solutions
Soluble_Materials
Uses_Of_Materials

Unit Learning Objectives:

- *I can investigate the hardness of materials and place them in order of hardness.*
- *I can group materials according to their properties.*
- *I can explain why materials are used for different purposes. Link to Stephanie Kwolek – Kevlar Vest*
- *I can identify if a change is easily reversible and how to reverse it.*
- *I can investigate which materials are soluble in water.*
- *I can suggest ways in which different mixtures can be separated.*
- *I can explain how to recover a substance from a solution.*

Investigation types covered: Observation over Time

--Separating solutions

- To observe what happens over time when different items are used to separate different mixtures

Additional

-New materials – practical or research based

-Properties of Materials

- To classify materials based on a range of properties

-Reversible and Irreversible Changes – practical

- To group and classify which reactions can be reversed and those that are irreversible

-Separating mixtures – Problem solving

Investigating hardness

- To measure how hard an object is (comp and fair test)

Scientists within the Curriculum:

Joseph Priestley (discovered gases inc oxygen), Joseph Black (heat), Francis Bacon (observation), James Watt (steam – industrial revolution), Stephanie Kwolek (kevlar vest), Leo Baekeland (properties for different purposes),

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Sight	Question	Senses
Sound	Answer	
Smell	Observe	
Taste	Predict	
Touch	Identify	
Eyes	Test	
Nose		
Tongue		
Ears		
Body		
Other body parts		

Golden Nuggets:

- Identify the 5 senses
- Name the main parts of the body

Further guidance and Cross-curricular links:

Senses Investigations ('Catch the penny', 'Do you hear what I hear?', 'Mystery smells' and 'Tasting – with your nose')
https://kidshealth.org/en/kids/experiment-main.html

PTC strips (phenylthiocarbamide) can be used for a taste testing experiment – a strip of paper that tastes different to everyone (sweet, bitter neutral depending on your taste buds)

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Body	Exercise	Heart
Baby	Predict	Muscle
Child	Diagram	Breathe
Adult	Growing	Sweat
Toddler	Changing	Carbohydrates
Teenager	Healthy	Micro-organisms
Food	Dairy	Acid
Eating	Fats	
Milk	Sugars	
Meat	Hygiene	
Eggs	Mouldy	
Fish	Problem	
Food names	Solution	
Dirty	Record	
Toothpaste	Observe	
	Protect	
	Damage	
	Test	

Golden Nuggets:

- Understand the term offspring
- Understand the basic needs of animals inc humans for survival (water, food and air)
- Describe how to keep healthy (e.g. exercise)

Further guidance and Cross-curricular links:

Egg Shell/healthy teeth investigation
https://www.science-sparks.com/how-to-keep-teeth-healthy/

Investigation types covered: Comparative and fair test

Testing rock hardness

- To identify which rock is harder by observing and measuring

Additional

Observing rocks / investigating rocks

- To group and classify a range of rocks based on different properties

Investigating soils

- To group and classify a range of soils based on different properties

Soil composition

- To observe what changes there are to soil over a period of time (obs over time)

Scientists within the Curriculum:

Mary Anning (palaeontologist), Florence Bascom, Inge Lehmann (geologist),

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Alive	Purpose	Organism
Dead	Crystals	Paleontologist
Living	Grain	Extinct
Rock	Regular	Extant
Stone	Irregular	Fossil
Smooth	Habitat	Sedimentary
Rough	Sample	Sediment
Shiny	Observe	Metamorphic
Dull	Predict	Igneous
Heavy	Fair	Chalk
Light	Test	Slate
Sharp	Compressed	Granite
Flat	Decay	Diamond
Round	Porous	Sandstone
Jagged	Absorb	Humus
Dark	Solid	Venn diagram
Light	Liquid	State
Soil	Gas	Boiling point
Minibeast	Temperature	Celsius
Water	Rigid	Particles
Float	Flexible	Water vapour
Sink		Thermal insulator
Hot		Thermal conductor
Boil		
Cold		
Water		
Melt		
Ice		
Hard		

Golden Nuggets:

Further guidance and Cross-curricular links:

Book: 100 scientists who made history

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Squash	Compress	Evaporate
Hard/ness	Prediction	Condense
Change	Observation	Magnet
Shape	Mixture	Magnetism
Material	Decant	Electrical
Inventor	Sieve	Thermal
Battery	Filter	Conductivity
Bulb	Advantage	Insulator
Wires	Disadvantage	Solution
Change	Transparency	Solvent
Mix	Reversible	Solute
Dissolve	Irreversible	Variable
Burn	Dissolve	Line graph
Freeze	Fair	
Boil	Measure	
Bake	Flexible	
Melt	Waterproof	
Soft		
Hard		

Golden Nuggets:

- Identify properties of materials (hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets)
- Know some materials will dissolve in liquid (forming a solution)
- Understand reversible, irreversible and new substances

Further guidance and Cross-curricular links:

Paws, Claws and Whiskers

Outstanding Science; Year 1: Animals including humans

Longer unit (split across 2 topics)

- Animal_Bodies
- Animal_Body_Groups
- Animal_Diet
- Animals_And_Their_Food
- Grouping_Animals
- Identifying_Mammals

Unit Learning Objectives:

- *I can label the main parts of animals' bodies.*
- *I can group animals by their body type.*
- *I can identify carnivores, herbivores and omnivores.*
- *I can match animals to what they eat.*
- *I can place animals in the fish, amphibian, reptile, bird and mammal groups.*
- *I can identify some mammals.*
- *I can know how scientists have helped us understand the world of animals (links to Maria Merian) (optional)*

Investigation types covered: Classifying

- To group and classify animals based on a criterion

Scientists within the Curriculum:

Maria Sibylla Merian (illustrator and collector of insects)

Paws, Claws and Whiskers

Outstanding Science; Year 2: Animals including humans

- Animals_And_Their_Offspring
- Life_Cycles
- What_Do_Animals_Need_To_Survive

Outstanding Science; Year 2: Living Things and their Habitats

- Adaptations
- Animals_And_Their_Habitats
- Food_Chains
- Food_Sources
- Investigating_Micro-habitats
- Naming_Animals_And_Plants

Unit Learning Objectives:

- *I can explain what animals need to survive.*
- *I can match the young of different animals to their adult form.*
- *I can sequence and describe the life cycle of different animals.*
- *I can create and describe a food chain showing different sources of food*
- *I can identify and name some animals and plants in local micro-habitats.*
- *I can explain how some animals are adapted to their habitats (links to Joan Procter who created realistic zoos)*

Investigation types covered: Classifying

- I can research which offspring links to which animal and observe what features they have

Scientists within the Curriculum:

Joan Beauchamp Procter, Rachel Carson (ocean habitats – keeping safe)

Burps, Bottoms and Bile

Outstanding Science; Year 4: Animals including humans

(Double Unit)

- Digestive_System_Organs
- Looking_After_Our_Teeth
- The_Human_Digestive_System
- Tooth_Structure
- Types_Of_Teeth

Outstanding Science: Year 3: Animals including humans

- Food_Groups
- Muscles_For_Moving
- The_Human_Skeleton

Unit Learning Objectives:

- *I can identify the different types of human teeth and explain their functions.*
- *I can explain how we can look after our teeth.*
- *I can explain how many portions of food from different food groups we should eat in a day*
- *I can identify and locate the main organs of the human digestive system.*
- *I can explain how the human digestive system works.*
- *I can explain how muscles work.*
- *I can explain the function of the human skeleton and identify its bones.*

Investigation types covered: Research

Practical digestive system investigation

- To research the main organs of the digestive system

Additional

- To classify and group items into different food groups

Scientists within the Curriculum:

Gerty Cori,

Pharaohs

Outstanding Science; Year 6: Electricity

- Comparing_Circuits
- Electrical_Cells
- Electrical_Components
- Electrical_Symbols
- Functioning_Circuits
- Making_A_Burglar_Alarm
- Making_A_Wire_Loop_Game
- Making_Traffic_Lights

Unit Learning Objectives:

- *I can investigate the effect of changing the number of bulbs and the voltage of cells in a circuit.*
- *I can use symbols to create circuit diagrams to represent electrical circuits.*
- *I can predict whether an electrical circuit will function and suggest ways of improving it.*
- *I can create an electrical burglar alarm and explain how it functions.*
- *I can create a wire loop game and explain how it works.*
- *I can create a set of electrical traffic lights and explain how they function.*
- *I can explain why Alessandro Volta's and Adre-Marie Ampere's discovery was revolutionary (optional)*

Investigation types covered: Pattern Seeking

- Functioning Circuits – Problem solving
  To identify patterns when the voltage is kept the same and more components are added. (pattern seeking)
- To identify patterns when the components are kept the same and the voltage is increased/decreased (pattern seeking)

Scientists within the Curriculum:

Alessandro Volta, Adre-Marie Ampere, Michael Faraday, Edith Clarke (first female electrical engineer), Nikola Tesla,

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Wing	Label	Skeleton
Beak	Match	Mammal
Fin	Group	Prey
Paw	Identify	Carnivore
Claw		Herbivore
Tail		Omnivore
Fur		Amphibian
Feathers		Reptile
Eggs		Scales
Meat		Gills
Plants		Mane
Water		Snout
Fly		Hoof
Swim		Live young
Bird		Give birth
Fish		

Golden Nuggets:

- Identify a fish, amphibian, reptile, bird and mammal from a selection of pictures
- Know what a; carnivore, herbivore and omnivore are
- Understand how to group an animal e.g. through a sorting box or a Venn diagram

Further guidance and Cross-curricular links:

Children could research the diets of some of the big cats studied in the geography unit – what is their prey?

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Adult	Reproduce	Live young
Egg	Young	Give birth
Chick	Offspring	Lifecycle
Chicken	Change	Spawn
Frog	Research	Pupa
Caterpillar	Diagram	Tadpole
Food	Source	Food chain
Air	Sequence	Habitat
Water	Adaptation	Micro-habitat
Shelter	Adapt	Prey
Warmth	Group	Polar
	Survive	Forest
	Protection	Desert
		Antarctic
		Coastal
		City
		Rainforest
		Organism
		Consumer
		Producer
		Omnivore
		Carnivore
		Herbivore

Golden Nuggets:

- Understand what a habitat is
- Know that not all habitats are the same
- Understand how animals obtain food – simple food chain

Further guidance and Cross-curricular links:

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Eat	Digestion	Digestive system
Mouth	Oral	Oesophagus
Tongue	Acid	Small intestine
Teeth	Expel	Large intestine
Stomach	Permane	Bacteria
Sugar	nt	Micro-organisms
Toothache	Contract	Starch
Dentist	Relax	Cavity
Toothbrush	Protect	Nerves
Toothpaste	Support	Pulp
Speak	Energy	Dentine
Grind	Portions	Enamel
Chew		Incisor
Rip		Molar
Cut		Canines
Bone		Saliva
Bend		Bolus
Elbow		Chyme
Move		Faeces
Skull		Rectum
Jaw		Colon
Bones		Deciduous
Bread		Milk teeth
Cereal		Muscles
Potatoes		Joint
Fruit		Biceps
Vegetables		Triceps
Meat		Endoskeleton
Fish		Spine
Milk		Vertebrae
Cheese		Radius
Dairy		Ulna
Fat		Tibia
Sugar		Fibula
		Pelvis
		Femur
		Humerus
		Carbohydrates
		Vitamins
		Minerals
		Calcium
		Protein
		Pictogram
		Vegetarian
		Vegan

Golden Nuggets:

- Know what nutrition is and that it comes from food
- Know that humans/ some animals have skeletons
- Know that skeletons and muscles are used for support, protection and movement

- Identify the main parts of the digestive system
- Describe simple functions of the digestive system
- Identify different types of teeth and know they have different functions

Further guidance and Cross-curricular links:

Practical digestive system investigation *– resource on One Drive:*

Curriculum Planning › Subject Resources and Planning Support › Science ›

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Bulb	Circuit	Circuit
Bright/	Predicted	diagram
Brightness	Observed	Cells
Battery	Component	Voltage
Wire	Resistance	Kinetic energy
Heat	Function	Electromagnet
Light	Energy	Insulator
Sound	Horizontal	Conductor
Switch	Vertical	Electrons
Buzzer	Symbol	Current
Picture	Advantage	Filament
Traffic light	Contacts	Chemical
Accident		Right-angle
		Crocodile clip
		Mains
		electricity
		LED
		Generator
		Incandescent
		bulb

Golden Nuggets:

- Understand what voltage is/identify the voltage within a circuit
- Use circuit symbols in a diagram

Further guidance and Cross-curricular links:

Scented Garden

Outstanding Science; Year 1: Plants

- Identifying_Bulbs_And_Seeds
- Identifying_Garden_Plants
- Identifying_Trees
- Identifying_Wild_Plants
- Labelling_A_Plant
- Labelling_Different_Plants
- Parts_Of_A_Plant
- Plants_In_Our_Local_Area

Unit Learning Objectives:

- *I can identify some common deciduous and evergreen trees from their shapes, leaves and seeds.*
- *I can identify some common wild plants.*
- *I can identify plants in our local area.*
- *I can label the main parts of a flowering plant.*
- *I can explain what the basic parts of a flowering plant do.*
- *I know why David Attendborough is an important ambassador for science.*
- *I can match bulbs and seeds to fully-grown plants. (optional extension)*
- *I can identify some common garden plants. (optional extension)*

Investigation types covered: Observation over time

- To observe how parts of the plant grow over time

Scientists within the Curriculum:

David Attenborough (ambassador of science – promotes), Mary Agnes Chase (illustrator / botanist), Majory Stoneman Douglas,

Scented Garden

Outstanding Science; Year 2: Plants

- Comparing_Plants
- Growing_Plants
- Parts_Of_A_Plant
- Plant_Life_Cycles
- Plant_Reproduction
- What_Do_Bulbs_Need_To_Start_Growing
- What_Do_Plants_Need_To_Grow_Well
- What_Do_Seeds_Need_To_Germinate

Unit Learning Objectives:

- *I can investigate the needs of different plants.*
- *I can investigate what seeds need to germinate*
- *I can investigate what bulbs need to start growing again.*
- *I can label the main parts of a plant and explain their function.*
- *I can sequence the different stages in a plant's life (link to Mary Agnes Chase)*
- *I can record how the height of a plant changes over time.*

Investigation types covered: Comparative and fair test

Comparing plants

- To guess what happens when a plant doesn't have something it needs to grow (comparative and fair test)

Additional

Growing plants

- To observe how plants change over time

What do bulbs/plants/seeds need

- To compare colours/measurements of plants placed in different locations (Pattern Seeking)

Scientists within the Curriculum:

David Attenborough (ambassador of science – promotes) Mary Agnes Chase (illustrator / botanist), Majory Stoneman Douglas,

Traders and Raiders

Outstanding Science; Year 3: Forces and Magnets

- Magnetic_Materials
- Magnetic_Metals
- Magnetic_Poles
- Magnetism_At_A_Distance
- Magnetism_Through_Materials
- Magnets_On_Different_Surfaces
- Using_Magnets

Unit Learning Objectives:

- *I can predict and investigate how magnets interact with each other.*
- *I can investigate how magnetic forces act at a distance using North and South poles.*
- *I can investigate how magnetic forces act through different materials.*
- *I can investigate how magnets can make things move on different surfaces.*
- *I can investigate/or compare and group which materials are magnetic.*
- *I can describe the functions of magnets in different situations.*

Investigation types covered: Pattern Seeking

Magnetic Poles

- To identify basic patterns when using the different poles on a magnet (pattern seeking)

Additional

Magnetism at a distance

- To measure how far a magnet can be away from an object while using different materials (Comparative and fair testing)

Magnets on different surfaces

- To predict what will happen to a magnet on different surfaces (comparative and fair testing)

Scientists within the Curriculum:

Anders Celsius (aurora borealis – Earth's magnetic field), Carl Friedrich Gauss (magnetometer), Raymond Damadian and Dr. Paul Lauterbur (MRI),

Peasants, Princes and Pestilence

(Double Unit)

Outstanding Science; Year 5: Animals including humans

- Child_Development
- Child_Responsibility
- Foetal_Development
- Gestation_Periods
- Men_And_Women
- Old_Age
- Puberty
- Timeline_Of_A_Human_Life

Outstanding Science; Year 5: Living things and their Habitats

- Amphibian_Life_Cycles
- Animal_Reproduction
- Bird_Life_Cycles
- Comparing_Animal_Life_Cycles
- Flowering_Plant_Reproduction
- Insect_Life_Cycles
- Investigating_Vegetative_Reproduction
- Mammal_Life_Cycles

Unit Learning Objectives:

- *I can create a timeline showing and describing the development of a child into an adult*
- *I can discuss when a child should be allowed to perform different activities.*
- *I can compare the gestation periods of different mammals.*
- *I can explain how animals reproduce sexually and identify the life cycle of an animal*
- *I can compare the lifecycles of mammals, amphibians, insects and birds.*
- *I can describe how flowering plants reproduce.*
- *I can investigate whether a new plant will grow from cuttings. (investigation)*

Investigation types covered: Classifying

Scientists within the Curriculum:

Beatrix Potter (fungi), Elsie Wakefield, Harriet Margaret Louise Bolus,

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Plant	Match	Bulb
Garden	Group	Seed
Leaves	Wild	Plant names
Fruit	Reproduce	Tree names
Flower	Attracts	Autumn
Food		Root
Sunlight		Stem
Insects		Trunk
Water		Petals
		Branch
		Soil

Golden Nuggets:

- Know what deciduous and evergreen trees look like
- List the basic parts of a flower/tree
- Know why the main parts of a flower/ tree are important e.g. roots/stem/petal

Further guidance and Cross-curricular links:

Geography fieldwork visit to local park to observe seasonal changes to plants and trees in the local area.

Observe – simply draw images of how the flower grows – identifying the key parts of a flower as it grows

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Soil	Compare	Bulb
Water	Fair	Roots
Light	Test	Nutrients
Plant	Variable	Stem
Water	Measure	Seed
Leaves	Anchor	Pollen
Flower	Support	Germination
Food	Growth	Reproduce
Fruit	Flowering	Pollination
Insect	Scent	Pollinating
Warmth	Energy	Lifecycle
	Conclusion	Nectar
		Dormant

Golden Nuggets:

- Understand the difference between a bulb/ seed and a fully-grown plant
- Understand plant's needs; water, light and a suitable temperature

Further guidance and Cross-curricular links:

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Metal	Fair	Magnet
Move	Test	Magnetic
	Predict	Carroll
	Measure	Diagram
	Label	Venn
	Diagram	Diagram
	Set	Iron
	Attract	Nickel
	Repel	Cobalt
	Effect	North pole
	Force	South pole
	Distance	Particles
	Surface	Magnetic repulsion
		Electromagnet

Golden Nuggets:

- Know magnets attract and repel (using knowledge of the two poles - N and S)
- Know magnets attract some objects
- Know that magnets work from a short distance and may work through materials

Further guidance and Cross-curricular links:

https://nationalmaglab.org/magnet-academy/history-of-electricity-magnetism/pioneers/ -Scientists who studied magnets

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Baby	Development	Foetus
Child	Odour	Embryo
Adult	Reproduction	Zygote
Teenager	Moody	Gestation
Human	Self-conscious	Premature
Old	Aggressive	Line Graph
Age	Responsibility	Puberty
Months	Aquatic	Muscles
Years	Juvenile	Acne
Weeks	Metamorphosis	Genitals
Weight	Regenerate	Penis
Male	Social	Erection
Female	Colony	Semen
Changes	Solitary	Sperm
Hair	Organism	Nipples
Smell	Clone	Breasts
Fat	Fair test	Pelvis
Thoughts	Inherit	Menstruate
Feelings	Survive	Vagina
Men	Individual	Period
Women	Nurse (verb)	Cycle
Frog		Viviparous
Salamander		Egg cell
Tail		Sperm cell
Limbs		Womb
Insect		Mammal
Flower		
Seed		
Leaves		
Stem		
Roots		
Flowers		
Tubers		
Bulbs		
Milk		
Gender		
Egg		

Golden Nuggets:

- Describe the changes as humans develop to old age
- Know that different life cycles are different between; mammals, amphibians, insects and birds
- Describe the reproduction process in some plants/animals

Further guidance and Cross-curricular links:

Covered as Part of Sexual education (PSHE)

- *I can explain how a human fetus develops.*
- *I can describe differences between the bodies of men and women.*
- *I can describe the changes involved with puberty.*

https://www.kew.org/read-and-watch/celebrating-women-international-womens-day

Dinosaurs – Year 1 and Year 2 to complete:

Outstanding Science; Year 2: Living Things and their Habitats

Alive_Dead_And_Never_Alive

Living_And_Non-living

Unit Learning Objectives:

- *I can identify and describe the difference between; alive, dead, and things that have never been alive.*
- *I can group things according to whether they are alive, dead, or have never been alive.*
- *I understand dinosaurs live in an environment that meets it's needs*
- *To research which types of fossil did Mary Anning discover? (Year 2)*

Investigation type: Research

- To research what a dinosaur needs to survive
- To research different fossils linked to Mary Anning

Scientists within the Curriculum:

Mary Anning,

Blue Abyss

Outstanding Science: Year 4: States of Matter

The_Water_Cycle

Making_A_Solar_Still

Investigating_Evaporation_Rates

Outstanding Science; Year 3: Animals including humans

Animals_And_Their_Food

Animals_And_Their_Skeletons

Food_Chains

Food_Webs

Types_Of_Skeleton

Unit Learning Objectives:

- *I can investigate how temperature affects evaporation rates.*
- *I can make a solar still and explain how it works..*
- *I can explain the water cycle (links to Bernard Palissy)*
- *I can identify which type of skeleton an animal has.*
- *I can match animals to their food.*
- *I can match animals to their skeletons*
- *I can create a food chain and explain what it shows.*
- *I can create a food web and explain what it shows.*

Investigation types covered: Observation over time

- To observe how materials change state

Additional

- I can group animals and decide which skeleton belongs to which animal

Scientists within the Curriculum:

Robert Boyle (gases), Bernard Palissy (theory of modern water cycle), Joseph Priestly (gases), Joseph Black (heat), Antonie Lavoisier (gases and combustion), John Dalton

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Living	Classify	Frill
Dead	Group	Plates
Alive	Sort	Fossil
Never alive	Identify	
Horns	Classify	
Wings	Group	
Nose	Sort	
Claws	Research	
Tail		

Golden Nuggets:

Year 1

- Understand how to group something using a grouping box or a Venn diagram
- Identify something that is 'dead, living and never alive'

Year 2

- Use a simple grouping system
- Understand the difference between 'dead, living and never alive'
- Know that most living things live in habitats

Further guidance and Cross-curricular links:

- Children should research dinosaurs to find the answer to the question – Did all dinosaurs have the same body parts?
- Children should investigate what types of fossil can be found in Britain (sketching and labelling different types) https://www.nhm.ac.uk/discover/fantastic-fossils.html
- Links should be made to learning in history – which types of fossil did Mary Anning discover?

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Food	Diet	Producers
Plants	Energy	Consumers
Sunlight	Protect	Herbivores
Move	Support	Carnivores
Bony	Temperature	Omnivores
Snow		Organism
Rain		Food chain
Hail		Food web
Ocean		Ecosystem
River		Photosynthesis
Water		Skeleton
Cools		Endoskeleton
Warms		Exoskeleton
Rises		Hydroskeleton
Falls		Evaporation
Clouds		Condensation
Melt		Transpiration
Sea water		Precipitation
Fresh water		Water cycle
Heat		Vapour
Ice		Particles
		Melting point
		Celsius
		Solar still

Golden Nuggets:

- Understand the terms evaporation, condensation and precipitation and use them to label a diagram of the water cycle.
- Understand that the water cycle is affected by changes in temperature e.g. as a result of climate change.
- Give examples of animals with different types of skeleton.
- Identify the producers and consumers in a food chain and identify whether some of the animals studies are herbivores, carnivores or omnivores.

Further guidance and Cross-curricular links:

See Geography Progression and Coverage document for links to learning about the Water Cycle and associated fieldtrip. Make a mini water cycle model - https://www.science-sparks.com/make-a-mini-water-cycle/

In order to benefit from cross-curricular links teachers are advised to adapt the lessons on food chains, webs and animal skeletons to include aquatic animals. More information on aquatic food chains can be found at:

- https://www.timeforkids.com/k1/ocean-food-chain/
- https://kids.britannica.com/students/assembly/view/90131
- https://education.nationalgeographic.org/resource/marine-food-chain

There is also a lesson plan and resources for teaching about marine food chains on the One Drive:

Curriculum Planning › Subject Resources and Planning Support › Science › Resources › LKS2 Blu

Ongoing Scientific skills for Key Stage 1	Ongoing Scientific skills for Lower Key Stage 2	Ongoing Scientific skills for Upper Key Stage 2
▪ Ask simple questions ▪ Observe closely and make statements about what they can see ▪ Perform simple tests ▪ Identify and classify ▪ Gather and record answers and begin to answer simple questions	▪ Asking relevant questions to find answers ▪ Setting up simple practical enquiries, comparative and fair tests ▪ Making systematic and careful observations ▪ Take accurate measurements using standard units, using a range of equipment ▪ Gathering, recording, classifying and presenting data in a variety of ways ▪ Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables ▪ Simple conclusions, make predictions for new values ▪ Suggest improvements and raise further questions ▪ Identifying differences, similarities or changes ▪ Using straightforward scientific evidence to answer questions	▪ Planning different types of scientific enquiries ▪ Recognising and controlling variables ▪ Taking measurements, using a range of scientific equipment, with increasing ▪ Accuracy and precision, taking repeat readings ▪ Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs ▪ Using test results to make predictions to set up further comparative and fair tests ▪ Identify relationships and explanations of and degree of trust in results ▪ Identifying scientific evidence that has been used to support or refute ideas or arguments.

Cycle A			
Year 1	Year 2	Year 3/4	Year 5/6
Classifying	Observation over time	Research	Comparative and fair test
Observation over time	Observation over time Classifying	Observation over time	Research Classifying
Comparative and fair test	Pattern Seeking	Classifying	Observation over time
Classifying	Research	Pattern Seeking	Research Pattern Seeking
Research	Comparative and fair test		

Cycle B			
Year 1	Year 2	Year 3/4	Year 5/6
Classifying	Classifying	Classifying	Comparative and fair test
Comparative and fair test	Observation over time	Observation over time	Research
Classifying	Classifying	Research	Observation over time
Observation over time	Comparative and fair test	Pattern Seeking	Pattern Seeking
Research	Research	Comparative and fair test	Classifying
Comparative and fair test	Pattern Seeking		

Firs Primary School Subject Curriculum and Progression

Science

	Early Years	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
National Curriculum	**Understanding the World ELG** (The Natural World ELG) Children at the expected level of development will: -Explore the natural world around them, making observations and drawing pictures of animals and plants -Know some similarities and differences between the natural world around them and contrasting environments,	**1. Plants**					
		a) identify and name a variety of common wild and garden plants, including deciduous and evergreen trees b) identify and describe the basic structure of a variety of common flowering plants, including trees c) understand how to take care of the flora in the local environment to preserve local biodiversity.	d) Observe, describe and experience how seeds and bulbs grow into mature plants e) find out, describe and experience how plants need water, light and a suitable temperature to grow and stay healthy f) Using imaginative and creative methods, pupils should consider how changes to these conditions might happen in the world around them and the impacts this might have over time.	g) Begin to understand the ecological importance of plants in relation to sustaining life on Earth and exploring how we are all interconnected. h) identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers i) explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how the needs of plants in the local area may vary from plant to plant e.g. chalk streams, woodlands, wetlands. j) Investigate and experience the way in which water is transported within plants *k)* explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal			
		2. Animals, Including Humans					

	drawing on their experiences and what has been read in class -Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter	a) identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals b) identify and name a variety of common animals that are carnivores, herbivores and omnivores c) describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) d) identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. e) Have opportunities to practice taking care of animals in their local environment (e.g. feeding birds or planting bee friendly flower gardens).	f) notice that animals, including humans, have offspring which grow into adults g) find out about and describe the basic needs of animals, including humans, for survival (water, food and air) h) Become aware of the shared nature of the needs of humans and animals. i) describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	j) identify that animals, including humans and animals found in the local environment, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat k) identify that humans and some other animals have skeletons and muscles for support, protection and movement	l) describe the simple functions of the basic parts of the digestive system in humans m) identify the different types of teeth in humans and their simple functions n) construct and interpret a variety of food chains, identifying producers, predators and prey including those in the local environment with emphasis on the interconnectedness of life on Earth.	*o)* describe the changes as humans develop to old age p) Form predictions about how human life will progress if changes are/are not made in response to the climate crisis.	q) identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood r) recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function s) describe the ways in which nutrients and water are transported within animals, including humans
		3. Living Things and Their Habitats						

			a) explore and compare the difference between things that are living, dead, and things that have never been alive b) identify that most living things live in habitats to which they are suited and describe how different habitats provide the basic needs of different kinds of animals and plants, and how they depend on each other c) identify and name a variety of plants and animals in their habitats, including micro-habitats d) describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food		e) recognise that living things can be grouped in a variety of ways f) explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment g) recognise that environments can change and that this can sometimes pose dangers to living things using examples. h) Recognise the impact of climate change on one or more environments (one near and one far) and the living things that live there. i) Learn some of the ways we can combat climate change on an individual and global level, and experience ways to care for the local environment, including their school grounds.	j) describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird k) describe the life process of reproduction in some plants and animals l) describe how some plants and animals have/have not adapted to the changing climate m) Understand how choices made by consumers in the UK impact on habitats in other countries.	n) describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals o) give reasons for classifying plants and animals based on specific characteristics
		4. Evolution and Inheritance					
							a) recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago b) recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents c) identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution d) Evaluate the impact of some human lifestyle choice on all living things.

		5. Light and Sound					
				a) recognise that they need light in order to see things and that the dark is the absence of light b) notice that light is reflected from surfaces c) recognise that light from the sun can be dangerous and that there are ways to protect their eyes d) recognise that shadows are formed when the light from a light source is blocked by a solid object e) find patterns in the way that the size of shadows changes	f) identify how sounds are made, associating some of them with something vibrating g) recognise that vibrations from sounds travel through a medium to the ear h) find patterns between the pitch of a sound and features of the object that produced it i) find patterns between the volume of a sound and the strength of the vibrations that produced it j) recognise that sounds get fainter as the distance from the sound source increases		k) recognise that light appears to travel in straight lines l) 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 m) 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 n) use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them o) Recognise that white surfaces (e.g. snow) reflect more light than dark surfaces.
		6. Electricity					

					a) identify common appliances that run on electricity b) construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers c) 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 d) recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit e) recognise some common conductors and insulators, and associate metals with being good conductors f) Begin to learn about where electricity comes from, including renewable sources.		g) Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit h) 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 i) use recognised symbols when representing a simple circuit in a diagram. j) Identify the application of electricity and evaluate methods of harnessing different types of energy conducive to a green environment.
		7. Forces and Magnets					

				a) compare how things move on different surfaces b) notice that some forces need contact between two objects, but magnetic forces can act at a distance c) observe how magnets attract or repel each other and attract some materials and not others d) compare and group together a variety of everyday materials on the basis on whether they are attracted to a magnet, and identify some magnetic materials e) describe magnets as having two poles f) predict whether two magnets will attract or repel each other, depending on which poles are facing		g) explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object h) identify the effects of air resistance, water resistance and friction, that act between moving surfaces i) recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect	
		8. Seasonal Change and Earth and Space					

		a) observe changes across the four seasons in local habitats. b) observe and describe weather associated with the seasons and how day length varies, through hands on experience.				c) describe the movement of the Earth, and other planets, relative to the Sun d) describe the movement of the Moon relative to the Earth e) describe the Sun, Earth and Moon as approximately spherical bodies f) use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky g) Describe changes in seasons based on human activity over time. h) Understand some of the benefits of the Earth's atmosphere in protecting and supporting life on Earth. i) Recognise the importance of our planet's position in the solar system – the habitable (or Goldilocks) zone.	
		9. Materials, Properties and Changes of Materials, and States of Matter					

		a) distinguish between an object and the material from which it is made b) identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock c) describe the simple physical properties of a variety of everyday materials d) compare and group together a variety of everyday materials on the basis of their simple physical properties e) imagine new materials using their creative skills. f) Develop awareness of the benefits and drawbacks of materials such as plastics for humans and the world around us. g) Be aware how common materials such as plastic can lead to plastic pollution and threaten habitats and eco systems.	h) identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses i) find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching j) Consider how and why materials have changed over time e.g. how shopping bags have become biodegradable. k) Continue to develop awareness of the benefits and drawbacks of materials such as plastics for humans and the world around us.	l) compare and group together different kinds of rocks on the basis of their appearance and simple physical properties m) describe in simple terms how fossils are formed when things that have lived are trapped within rock and consider geological time creatively through this. n) recognise that soils are made from rocks and organic matter o) Linked with work in geography, pupils should explore different kinds of rocks and soils, including those in the local environment and how they support life.	p) compare and group materials together, according to whether they are solids, liquids or gases q) observe that some materials change state when they are heated or cooled and experience how this happnes, and measure or research the temperature at which this happens in degrees Celsius (°C) r) identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature, linking this to what they know about weather and climate change.	s) compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets t) know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution u) use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating v) give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic w) demonstrate that dissolving, mixing and changes of state are reversible changes x) explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda y) Identify how materials change over time, including those that do/do not biodegrade and relate this knowledge to impacts of waste plastic across the world.	

		10. Working Scientifically					
		a) ask simple questions and recognise that they can be answered in different ways b) observe closely, using simple equipment c) perform simple tests d) gather and record data to help in answering questions e) identify and classify f) use their observations and ideas to suggest answers to questions		g) ask relevant questions and use different types of scientific enquiries to answer them h) set up simple practical enquiries, comparative and fair tests i) make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers j) record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables k) gather, record, classify and present data in a variety of ways to help in answering questions l) identify differences, similarities or changes related to simple scientific ideas and processes m) report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions n) use straightforward scientific evidence to answer questions or to support their findings o) use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions		p) plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary q) take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate r) record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs s) identify scientific evidence that has been used to support or refute ideas or arguments t) report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations u) use test results to make predictions to set up further comparative and fair tests	
Non-Statutory Progression in Scientific Enquiry Skills							
		Scientific Attitudes					
		• Identifies obvious risks and takes appropriate steps to protect themselves and others.		○ Identifies risks and hazards and ensures safe use of all tools, equipment and procedures.		○ Anticipates some risks and hazards	
		Skills and attributes of scientifically literate citizens					
		• Talks about science, showing developing understanding of risks and benefits, and listens to the views of others. • Demonstrates awareness of the importance of respecting living things and the environment and of managing the Earth's resources responsibly. • Demonstrates a developing understanding of science in the world around them. Explores the ways in which people use science and science skills as part of their job		• Expresses informed views of scientific issues, both orally and in writing, and respects the views of others. • Makes connections between science and their own health and wellbeing. • Demonstrates awareness of their own impact on the world. • Demonstrates awareness of how people use science in their everyday lives and in a variety of jobs and careers. • Discusses science topics in real-life contexts including those appearing in the media.		• Presents a reasoned argument based on evidence, demonstrating understanding of underlying scientific concepts, and engages with the views of others. • Demonstrates understanding of the relevance of science to their future lives and the role of science in an increasing range of careers and occupations. • Demonstrates increased awareness of creativity and inventiveness in science, the use of technologies in the development of sciences and the impact of science on society. • Expresses informed views about scientific and environmental issues based on evidence	