Living things and their habitats

Statutory requirements

Pupils should be taught to:

♣ recognise that living things can be grouped in a variety of ways

♣ explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment

♣ recognise that environments can change and that this can sometimes pose dangers to living things.

Notes and guidance (non-statutory) Pupils should use the local environment throughout the year to raise and answer questions that help them to identify and study plants and animals in their habitat. They should identify how the habitat changes throughout the year. Pupils should explore possible ways of grouping a wide selection of living things that include animals and flowering plants and non-flowering plants. Pupils could begin to put vertebrate animals into groups such as fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects. Note: Plants can be grouped into categories such as flowering plants (including grasses) and non-flowering plants, such as ferns and mosses. Pupils should explore examples of human impact (both positive and negative) on environments, for example, the positive effects of nature reserves, ecologically planned parks, or garden ponds, and the negative effects of population and development, litter or deforestation.

Pupils might work scientifically by: using and making simple guides or keys to explore and identify local plants and animals; making a guide to local living things; raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched.

Year Group = 4

Opportunities to promote curiosity:

AFL Questions:

- 5 different animals – How could you group them? Is there another way?
- Food chain – what would happen if X was removed?
- Picture of pond/park – How have humans improved/impacted this area?
- Platypus picture – how would you classify? What are the benefits of using a classification key?
- Groups of animals – similarities and differences.
- How are different animals adapted to suit their environments? Why is this important for their survival?
- How does a change in environment impact on the survival of a species? Why?
- Can you think of any examples of how humans are negatively impacting on the survival of a species in the modern world? What can be done to reverse the damage?

Animals, including humans

Statutory requirements

Pupils should be taught to:

♣ describe the simple functions of the basic parts of the digestive system in humans

♣ identify the different types of teeth in humans and their simple functions

♣ construct and interpret a variety of food chains, identifying producers, predators and prey.

Notes and guidance (non-statutory)

Pupils should be introduced to the main body parts associated with the digestive system, for example, mouth, tongue, teeth, oesophagus, stomach and small and large intestine and explore questions that help them to understand their special functions.

Pupils might work scientifically by: comparing the teeth of carnivores and herbivores, and suggesting reasons for differences; finding out what damages teeth and how to look after them. They might draw and discuss their ideas about the digestive system and compare them with models or images.

Year Group = 4

Opportunities to promote curiosity:

Fake poo – What can we tell from this?

Human cranium (skull) with teeth.

AFL Questions:

- Look at teeth. Who have they come from? What did they eat? What evidence is there to prove this?
- Food chain with missing links. What could go here? Explain your reasoning. What could not go here? Why?
- Vocabulary match – explore meaning, predator/prey etc.
- How are x and y linked in the digestive system?
- Why is a food chain necessary for the function of living things as a whole? What would happen if there was an insufficient number of predators at the top of the food chain?

States of matter

Statutory requirements

Pupils should be taught to:

♣ compare and group materials together, according to whether they are solids, liquids or gases

♣ observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)

♣ identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

Notes and guidance (non-statutory)

Pupils should explore a variety of everyday materials and develop simple descriptions of the states of matter (solids hold their shape; liquids form a pool not a pile; gases escape from an unsealed container). Pupils should observe water as a solid, a liquid and a gas and should note the changes to water when it is heated or cooled.

Notes and guidance (non-statutory)

Note: Teachers should avoid using materials where heating is associated with chemical change, for example, through baking or burning. Pupils might work scientifically by: grouping and classifying a variety of different materials; exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice-cream for a party). They could research the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid. They might observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of temperature on washing drying or snowmen melting.

Year Group = 4

Opportunities to promote curiosity:

Bag of air. What's inside?

Warm/cold water. Hot or not when feeling both

Cheerios to show state of matter

Water cycles in a bag

AFL Questions:

- What are particle patterns in solids, liquids and gases?
- Prove air is around us in 3 different ways.
- Is touching an accurate an accurate way of measuring temperature? Why?
- Where would snowmen melt the quickest? 3 different pics.
- What's missing in a water cycle diagram?

Sound

Statutory requirements

Pupils should be taught to:

♣ identify how sounds are made, associating some of them with something vibrating

♣ recognise that vibrations from sounds travel through a medium to the ear

♣ find patterns between the pitch of a sound and features of the object that produced it

♣ find patterns between the volume of a sound and the strength of the vibrations that produced it

♣ recognise that sounds get fainter as the distance from the sound source increases.

Notes and guidance (non-statutory)

Pupils should explore and identify the way sound is made through vibration in a range of different musical instruments from around the world; and find out how the pitch and volume of sounds can be changed in a variety of ways.

Pupils might work scientifically by: finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. They might make earmuffs from a variety of different materials to investigate which provides the best insulation against sound. They could make and play their own instruments by using what they have found out about pitch and volume.

Year Group = 4

Opportunities to promote curiosity:

Sound circus – carousel of sound activities

Musical instruments – how is the sound produced?

Tuning forks in water

AFL Questions:

- Pitch/volume difference. What factors affect the pitch or volume of a sound?
- How can you change pitch of cardboard tube/bottle of water?
- Which is louder? How could you test this?

- How is sound created?
- How can you muffle sound?
- If you go further away from the source of a sound, what happens? Why?

Electricity

Statutory requirements

Pupils should be taught to:

♣ identify common appliances that run on electricity

♣ construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers

♣ 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

♣ recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit

♣ recognise some common conductors and insulators, and associate metals with being good conductors.

Notes and guidance (non-statutory)

Pupils should construct simple series circuits, trying different components, for example, bulbs, buzzers and motors, and including switches, and use their circuits to create simple devices. Pupils should draw the circuit as a pictorial representation, not necessarily using conventional circuit symbols at this stage; these will be introduced in year 6. Note: Pupils might use the terms current and voltage, but these should not be introduced or defined formally at this stage. Pupils should be taught about precautions for working safely with electricity.

Pupils might work scientifically by: observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit.

Year Group = 4

Opportunities to promote curiosity:

Anna Hinch visit (NHS resources)

Build own circuits

Light tubes for human circuits

AFL Questions:

- Will this circuit work? Why/why not?
- Before beginning any experiment involving electricity, what steps should you take to ensure you will be safe?
- What does this symbol show?
- What is the difference between a conductor and an insulator? Can you think of situations where either one would be the most beneficial? What about a scenario when you would need materials with both properties?
- Which materials conduct electricity – from a range. Why? How could you investigate this?
- Do you need a socket for electricity?