Science

Scientific Knowledge and Conceptual Understanding: Year 4 Expectations

Please Note: There should be plenty of opportunities throughout the year for children to use the school/local environment to observe and identify how a habitat changes. This could include a focus on the relationships between the plants and animals within a habitat. This could be done through an ongoing/monthly nature journal to observe, record and review over a period of time.

Environment – Living Things and Their Habitats

- 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.
  - Use and make identification keys for plants and animals.

Animals – Teeth, Eating and Digestion

- 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 *(NB Link with types of teeth and eating in this unit but this concept could be developed further in the yr4 Environment / habitats unit).*
  - Describe how teeth and gums have to be cared for in order to keep them healthy.

Material Properties and Changes – States of Matter

- 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.
  - Solids, liquids and gases can be identified by their observable properties.
  - Solids have a fixed size and shape (the size and shape can be changed but it remains the same after the action).
  - Liquids can pour and take the shape of the container in which they are put.
  - Liquids form a pool not a pile.
  - Solids in the form of powders can pour as if they were liquids but make a pile not a pool.
  - Gases fill the container in which they are put.
  - Gases escape from an unsealed container.
  - Gases can be made smaller by squeezing/pressure.
  - Liquids and gases can flow.

Sound

Vibrations

- 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 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.
  - Recognise that sounds can be made in a variety of ways (pluck, bang, shake, blow) using a variety of things (instruments, everyday materials, body).
  - Sounds travel away from their source in all directions.
  - Vibrations may not always be visible to the naked eye.

Pitch

- Find patterns between the pitch of a sound and features of the object that produced it.
  - Sounds can be high or low pitched.
  - The pitch of a sound can be altered.
  - Pitch can be altered either by changing the material, tension, thickness or length of vibrating objects or changing the length of a vibrating air column.

Muffling/blocking sounds

- Recognise that vibrations from sounds travel through a medium to the ear.
  - Sounds are heard when they enter our ears (although the structure of the ear is not important key learning at this age phase).
  - Sounds can travel through solids, liquids and air/gas by making the materials vibrate.
  - Sound travel can be reduced by changing the material that the vibrations travel through.
  - Sound travel can be blocked.

Electricity

- 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.
  - Electricity can be dangerous.
  - Electricity sources can be mains or battery.
  - Batteries 'push' electricity round a circuit and can make bulbs, buzzers and motors work.
  - Faults in circuits can be found by methodically testing connections.
  - Drawings, photographs and diagrams can be used to represent circuits (although standard symbols need not be introduced until UKS2).