

# Science progression of knowledge & key ideas – Cycle 1

Greater depth Cycle 1 – Blue Cycle 2 – Pink/purple

Highlighted areas of focus that have been taught at greater depth to inform for next year as part of a 2 year rolling plan. The areas of greater focus is alternated each year .

Everything is covered but be mindful of the National Curriculum requirements and your year groups also, when planning your areas.

Year	Autumn	Spring	Summer
R	<p>Focus on seasonal changes throughout the year</p> <p>All about me</p> <hr/> <p>Houses and homes</p>	<p>Castles and Characters</p> <hr/> <p>Dinosaurs</p>	<p>Colour</p> <hr/> <p>Animals</p>
1	<p>Set up longitudinal study</p> <p>Ongoing seasonal changes to focus on in Autumn, Spring &amp; Summer terms. Observe changes across the four seasons Observe and describe weather associated With the seasons and how day length varies throughout the year</p> <p><b>Animals: How animals survive (KS1)</b></p> <ul style="list-style-type: none"> <li>•There are many different animals with different characteristics</li> <li>•Animals need food to survive</li> <li>•Animals need a variety of food to help them grow, repair their bodies, be active and stay healthy.</li> <li>•Animals move in order to survive.</li> </ul>	<p><b>Materials and their properties (KS1)</b></p> <p><b>TOYS</b></p> <ul style="list-style-type: none"> <li>•There are different materials</li> <li>•Materials have describable properties</li> <li>•Different materials have different properties.</li> <li>•Materials can be changed by physical force (twisting, bending, squashing and stretching)</li> </ul>	<p><b>Growing plants (KS1)</b></p> <hr/> <p><b>Habitats and how the seasons affect them</b></p> <ul style="list-style-type: none"> <li>• Some things are living, some were once living but now dead and some things have never lived</li> <li>• There is variation between all living things</li> <li>• Different animals and plants live in different places</li> </ul>

	<p>Different animals move in different ways to help them survive.</p> <ul style="list-style-type: none"> <li>•Exercise keeps animal’s bodies in good condition and increases survival chances.</li> <li>•Animals have senses to help individuals survive. When animals sense things they are able to respond</li> </ul>	<p><b>Materials and their properties (KS1)</b> <b>BUILDINGS</b></p> <ul style="list-style-type: none"> <li>•There are different materials</li> <li>•Materials have describable properties</li> <li>•Different materials have different properties.</li> <li>•Materials can be changed by physical force (twisting, bending, squashing and stretching)</li> </ul>	<ul style="list-style-type: none"> <li>• Living things are adapted to survive in different habitats.</li> <li>• Environmental change can affect the plants and animals that live there</li> </ul> <p><b>Conclude longitudinal study</b></p>
<p>2</p>	<p><b>Set up longitudinal study</b></p> <p><b>Materials and their properties (KS1)</b> <b>CLOTHES</b></p> <ul style="list-style-type: none"> <li>•There are different materials</li> <li>•Materials have describable properties</li> <li>•Different materials have different properties.</li> <li>•Materials can be changed by physical force (twisting, bending, squashing and stretching)</li> </ul> <hr/> <p><b>Animals: Simple animal life time lines (KS1)</b></p> <ul style="list-style-type: none"> <li>•All animals eventually die.</li> <li>•Animals reproduce new animals when they reach maturity.</li> <li>•Animals grow until they reach maturity and then don’t grow any larger</li> </ul>	<p><b>Plant reproduction (KS1)</b></p> <ul style="list-style-type: none"> <li>•Flowering plants make seeds to reproduce and make more plants. Some plants die after producing seeds and others live for many generations.</li> </ul> <hr/> <p><b>How plants make their food (3&amp;4)</b></p> <ul style="list-style-type: none"> <li>•Plants make their own food in their leaves to provide them with energy, grow, repair, and reproduce.</li> <li>•Leaves absorb sunlight and carbon dioxide through leaves.</li> <li>•Plants have roots to provide support and to draw moisture from the soil, through stems to take water to the rest of the plant.</li> <li>•The plant makes its food from water and carbon dioxide, using sunlight as energy, in the green parts of plants (mainly leaves)</li> </ul>	<p><b>Pushes, pulls and their effects ( Forces)</b></p> <ul style="list-style-type: none"> <li>•Things can move in different ways.</li> <li>•Pushing and pulling can make things move or stop.</li> <li>•Pushing and pulling can change the shape of things.</li> <li>•Pushing and pulling can make things move faster or slower.</li> <li>•Bigger pushes and pulls have bigger effects. Pushing and pulling can make things move faster or slower.</li> </ul> <p><b>Not statutory in KS1 but have been advised to cover. Can link this with materials from Autumn term.</b></p> <hr/> <p><b>Magnets and their effects 3&amp;4)</b></p> <ul style="list-style-type: none"> <li>•Magnets exert attractive forces on some materials.</li> <li>•Magnets exert attractive and repulsive forces on each other.</li> <li>•Magnets exert non-contact forces, which work through some materials.</li> <li>•Magnetic forces are affected by the magnets strength.</li> </ul>

			<ul style="list-style-type: none"> <li>•Magnetic forces are affected by the mass of the object being attracted.</li> <li>•Magnetic forces are affected by the distance between magnet and object</li> </ul> <p><b>Conclude longitudinal study</b></p>
<p>3 / 4</p>	<p style="text-align: center;">Set up longitudinal study</p> <p><b>Light (3&amp;4)</b></p> <ul style="list-style-type: none"> <li>•There must be light for us to see. Without light it is dark.</li> <li>•Light comes from a source.</li> <li>•We need light to see things even shiny things.</li> <li>•Transparent materials let light through them and opaque materials don't let light through.</li> <li>•Beams of light bounce off some materials (reflection).</li> <li>•Shiny materials reflect light beams better than non-shiny materials</li> </ul> <hr/> <p><b>Electrical circuits (3&amp;4)</b></p>	<p><b>Solids, liquids and gases (3&amp;4)</b></p> <ul style="list-style-type: none"> <li>•Materials can be divided into solids, liquids and gases.</li> <li>•Solids, liquids and gases are described by observable properties</li> <li>•Heating causes solids to melt into liquids and liquids to evaporate to gases</li> <li>•Cooling causes gases to condense to liquids and liquids to freeze to solids</li> <li>•The temperatures at which given substances change state are always the same.</li> </ul> <hr/> <p><b>Solutions (3&amp;4)</b> <b>Mixtures and separating them</b></p> <ul style="list-style-type: none"> <li>•Materials change state by heating and cooling.</li> </ul>	<p><b>Animals; Skeletons and movement (3&amp;4)</b></p> <ul style="list-style-type: none"> <li>•Many animals have skeletons to support their bodies and protect vital organs.</li> <li>•Muscles are connected to bones and move them when they contract.</li> <li>•Movable joints connect bones</li> </ul> <p><b>Feeding relationships and the environment (3&amp;4)</b></p> <ul style="list-style-type: none"> <li>•Living things can be divided into groups based upon their characteristics. Explore and use classification keys to help group.</li> <li>•Different food chains occur in different habitats.</li> <li>•Environmental change affects different habitats differently.</li> <li>•Human activity significantly affects the environment.</li> </ul>

• Electricity powers many common appliances

- A source of electricity (mains or battery) is needed for electrical devices to work.
- Electricity sources push electricity round a circuit.
- A complete circuit is needed for electricity to flow and devices to work.
- More batteries will push the electricity round the circuit faster.
- Devices work harder when more electricity goes through them
- Some materials allow electricity to flow easily and these are called conductors. Materials that don't allow electricity to flow easily are called insulators.

• Some changes can be reversed and some can't.

• When two or more substances are mixed and remain present the mixture can be separated.

### Rocks and soils (added) (3)

- Comparing and grouping different kinds of rocks on basis of their appearance and simple physical properties
- Describe in simple terms how fossils are formed
- Recognise that soils are made from rocks and organic matter

• Different organisms are affected differently by environmental change.

Digestive system and teeth (added)

---

### How plants reproduce (3&4)

- Flowering plants have evolved specific parts to carry out pollination, fertilisation and seed growth.
- Seed dispersal improves chances of enough seeds germinating and growing to mature plants and reproducing.
- Seeds and bulbs need the right conditions to germinate. They contain a food store for the first stages of growth (i.e. until the plant is able to produce its own food)

Conclude longitudinal study

5  
/  
6

### Set up longitudinal study

#### Making new substances (5&6)

- All matter (including gases) has mass.
- Heating can sometimes cause materials to change permanently. When this happens, a new substance is made. These changes are not reversible.
- Sometimes mixed substances react to make a new substance. These changes are usually irreversible

#### Earth and space

- Stars, planets and moons have so much mass they attract other things, including each other due to a force called gravity. Gravity works over a distance.
- Stars produce vast amounts of heat and light. All other objects are lumps of rock, metal or ice and can be seen because they reflect the light of stars.
- Objects with larger masses exert bigger gravitational forces
- Objects like planets, moons and stars spin
- Smaller mass objects like planets orbit large mass objects like stars

#### Controlling electrical circuits (5&6)

- Batteries are a store of energy. This energy pushes electricity round the circuit. When the battery's energy is gone it stops pushing. Voltage measures the 'push'.

#### Animals: Respiration (5&6)

- Oxygen is breathed into the lungs where it is absorbed by the blood.
- The heart pumps blood around the body.
- Muscles need oxygen to release the energy from food to do work: Oxygen is taken into the blood in the lungs, the heart pumps blood through blood vessels to the muscles, the muscles take the oxygen and nutrients from the blood

#### Evolution and natural selection (5&6)

- Fossils provide evidence that living things have changed over time.
- Environmental change can affect how well an organism is suited to its environment.
- Over time the characteristics that are most suited to the environment become increasingly common.

#### Life cycles (5&6)

- Different types of organism have different life cycles.
- Life cycles have evolved to help organisms survive to adulthood.

#### added-(4)

- Describe simple functions of parts of human digestive system

#### Light and how we see. ((5&6)

- Light travels in straight lines.
- Light reflects off all objects (unless they are black). Non-shiny surfaces scatter the light so we don't see a single beam.
- Animals see light sources when light travels from the source into their eyes.
- Animals see objects when light is reflected off that object and enters their eyes

#### How sound is made, travels and can be changed (5&6)

- Sound travel can be blocked.
- Sound spreads out as it travels.
- Changing the shape, size and material of an object will change the sound it produces.
- Sound is produced when an object vibrates.
- Changing the way an object vibrates changes its sound.
- Sound moves through all materials by making them vibrate.
- Bigger vibrations produce louder sounds and smaller vibrations produce quieter sounds.
- Faster vibrations (higher frequencies) produce higher pitched sounds.

#### Forces that oppose motion (5&6)

•Current is how much electricity is flowing round a circuit.

- The greater the current flowing through the device the harder it works
- When current flows through wires, heat is released. The greater the current the more heat is released.

• Identify types of teeth in humans and their function

Sexual and asexual reproduction

- Some organisms reproduce sexually where offspring inherit information from both parents

Some organisms reproduce asexually by making a copy of a single parent

•Air resistance and water resistance are forces against motion caused by objects having to move air and water out of the way.

- Friction is a force against motion caused by two surfaces rubbing against each other
- Some objects require large forces to make them move; gears, pulley and levers can reduce the force needed to make things move.

**Conclude longitudinal study**
