



# Pear Tree Primary School

## Science Curriculum Planning KS2 Years Five & Six Being Our Best Selves End points

Year Five Topic	End Points	Key Vocabulary
Living things and their habitats	<p>I can explain that as part of their life cycle, plants and animals reproduce. Most animals reproduce sexually. This involves two parents where the sperm from the male fertilises the female egg. Animals, including humans, have offspring which grow into adults. In humans and some animals, these offspring will be born live, such as babies or kittens, and then grow into adults. In other animals, such as chickens or snakes, there may be eggs laid that hatch to young which then grow to adults. Some young undergo a further change before becoming adults e.g. caterpillars to butterflies. This is called a metamorphosis.</p> <p>I can explain plants reproduce both sexually and asexually. Bulbs, tubers, runners and plantlets are examples of asexual plant reproduction which involves only one parent. Gardeners may force plants to reproduce asexually by taking cuttings. Sexual reproduction occurs through pollination, usually involving wind or insects.</p>	Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings
Animals, including humans	<p>I can explain that when babies are young, they grow rapidly. They are very dependent on their parents. As they develop, they learn many skills.</p> <p>I can explain that at puberty, a child's body changes and develops primary and secondary sexual characteristics. This enables the adult to reproduce.</p>	Puberty – the vocabulary to describe sexual characteristics
Properties and changes of materials	<p>I can explain that materials have different uses depending on their properties and state (liquid, solid, gas). Properties include hardness, transparency, electrical and thermal conductivity and attraction to magnets.</p>	Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve,

	<p>I can explain that some materials will dissolve in a liquid and form a solution while others are insoluble and form sediment.</p> <p>I can explain that mixtures can be separated by filtering, sieving and evaporation.</p> <p>I can explain some changes to materials such as dissolving, mixing and changes of state are reversible, but some changes such as burning wood, rusting and mixing vinegar with bicarbonate of soda result in the formation of new materials and these are not reversible.</p>	<p>reversible/non-reversible change, burning, rusting, new material</p>
Earth and space	<p>I can explain that the Sun is a star. It is at the centre of our solar system.</p> <p>I can explain there are 8 planets (can choose to name them, but not essential). These travel around the Sun in fixed orbits. Earth takes 365<math>\frac{1}{4}</math> days to complete its orbit around the Sun.</p> <p>I can explain the Earth rotates (spins) on its axis every 24 hours. As Earth rotates half faces the Sun (day) and half is facing away from the Sun (night). As the Earth rotates, the Sun appears to move across the sky.</p> <p>I can explain the Moon orbits the Earth. It takes about 28 days to complete its orbit.</p> <p>I can explain the Sun, Earth and Moon are approximately spherical.</p>	<p>Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, solar system, rotates, star, orbit, planets</p>
Forces	<p>I can explain a force causes an object to start moving, stop moving, speed up, slow down or change direction.</p> <p>I can explain gravity is a force that acts at a distance. Everything is pulled to the Earth by gravity. This causes unsupported objects to fall.</p> <p>I can explain air resistance, water resistance and friction are contact forces that act between moving surfaces. The object may be moving through the air or water, or the air and water may be moving over a stationary object.</p> <p>I can explain a mechanism is a device that allows a small force to be increased to a larger force. The pay back is that it requires a greater movement. The small force moves a long distance and the resulting large force moves a small distance, e.g. a crowbar or bottle top remover.</p> <p>I can explain pulleys, levers and gears are all mechanisms, also known as simple machines.</p>	<p>Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears</p>

Year Six Topic	End Point	Key Vocabulary
Living things and their habitats	<p>I can explain that living things can be formally grouped according to characteristics. Plants and animals are two main groups but there are other living things that do not fit into these groups e.g. micro-organisms such as bacteria and yeast, and toadstools and mushrooms. Plants can make their own food whereas animals cannot.</p> <p>I can explain animals can be divided into two main groups: those that have backbones (vertebrates); and those that do not (invertebrates). Vertebrates can be divided into five small groups: fish; amphibians; reptiles; birds; and mammals. Each group has common characteristics. Invertebrates can be divided into a number of groups, including insects, spiders, snails and worms.</p> <p>I can explain plants can be divided broadly into two main groups: flowering plants; and non-flowering plants.</p>	Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering, non-flowering
Animals, including humans	<p>I can explain the heart pumps blood in the blood vessels around to the lungs. Oxygen goes into the blood and carbon dioxide is removed. The blood goes back to the heart and is then pumped around the body. Nutrients, water and oxygen are transported in the blood to the muscles and other parts of the body where they are needed. As they are used, they produce carbon dioxide and other waste products. Carbon dioxide is carried by the blood back to the heart and then the cycle starts again as it is transported back to the lungs to be removed from the body. This is the human circulatory system.</p> <p>I can explain diet, exercise, drugs and lifestyle have an impact on the way our bodies function. They can affect how well our heart and lungs work, how likely we are to suffer from conditions such as diabetes, how clearly we think, and generally how fit and well we feel. Some conditions are caused by deficiencies in our diet e.g. lack of vitamins.</p>	Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle
Evolution and inheritance	<p>I can explain all living things have offspring of the same kind, as features in the offspring are inherited from the parents. Due to sexual reproduction, the offspring are not identical to their parents and vary from each other.</p> <p>I can explain plants and animals have characteristics that make them suited (adapted) to their environment. If the environment changes rapidly, some variations</p>	Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils

	<p>of a species may not suit the new environment and will die. If the environment changes slowly, animals and plants with variations that are best suited survive in greater numbers to reproduce and pass their characteristics on to their young. Over time, these inherited characteristics become more dominant within the population. Over a very long period of time, these characteristics may be so different to how they were originally that a new species is created. This is evolution.</p> <p>I can explain fossils give us evidence of what lived on the Earth millions of year ago and provide evidence to support the theory of evolution. More recently, scientists such as Darwin and Wallace observed how living things adapt to different environments to become distinct varieties with their own characteristics.</p>	
Light	<p>I can explain light appears to travel in straight lines, and we see objects when light from them goes into our eyes. The light may come directly from light sources, but for other objects some light must be reflected from the object into our eyes for the object to be seen.</p> <p>I can explain objects that block light (are not fully transparent) will cause shadows. Because light travels in straight lines the shape of the shadow will be the same as the outline shape of the object.</p>	
Electricity	<p>I can explain adding more cells to a complete circuit will make a bulb brighter, a motor spin faster or a buzzer make a louder sound. If you use a battery with a higher voltage, the same thing happens. Adding more bulbs to a circuit will make each bulb less bright. Using more motors or buzzers, each motor will spin more slowly and each buzzer will be quieter. Turning a switch off (open) breaks a circuit so the circuit is not complete and electricity cannot flow. Any bulbs, motors or buzzers will then turn off as well.</p> <p>I can explain how you can use recognised circuit symbols to draw simple circuit diagrams.</p>	<p>Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage</p>

**Working scientifically skills**  
**Year 5 & 6**  
**End points**

**Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary**

- I can independently ask scientific questions. This may be stimulated by a scientific experience or involve asking further questions based on my developed understanding following an enquiry.
- Given a wide range of resources I can decide for myself how to gather evidence to answer a scientific question. I can choose a type of enquiry to carry out and justify my choice. I can recognise how secondary sources can be used to answer questions that cannot be answered through practical work.
- I can select from a range of practical resources to gather evidence to answer my questions. I can carry out fair tests, recognising and controlling variables. I can decide what observations or measurements to make over time and for how long. I can look for patterns and relationships using a suitable sample.

**Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate**

- I can select measuring equipment to give the most precise results e.g. ruler, tape measure or trundle wheel, force meter with a suitable scale.
- During an enquiry, I can make decisions e.g. whether I need to: take repeat readings (fair testing); increase the sample size (pattern seeking); adjust the observation period and frequency (observing over time); or check further secondary sources (researching); in order to get accurate data (closer to the true value).

**Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs**

- I can decide how to record and present evidence. I can record observations e.g. using annotated photographs, videos, labelled diagrams, observational drawings, labelled scientific diagrams or writing. I can record measurements e.g. using tables, tally charts, bar charts, line graphs and scatter graphs. I can record classifications e.g. using tables, Venn diagrams, Carroll diagrams and classification keys.
- I can present the same data in different ways in order to help with answering the question.

**Identifying scientific evidence that has been used to support or refute ideas or arguments**

- I can answer my own and others' questions based on observations I have made, measurements I have taken or information I have gained from secondary sources. When doing this, I can discuss whether other evidence e.g. from other groups, secondary sources and my scientific understanding, supports or refutes their answer.
- I can talk about how my scientific ideas change due to new evidence that I have gathered.
- I can talk about how new discoveries change scientific understanding.

**Reporting and presenting 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**

- In my conclusions, I can: identify causal relationships and patterns in the natural world from my evidence; identify results that do not fit the overall pattern; and explain my findings using my subject knowledge.
- I can evaluate, for example, the choice of method used, the control of variables, the precision and accuracy of measurements and the credibility of secondary sources used.
- I can identify any limitations that reduce the trust I have in my data.
- I can communicate my findings to an audience using relevant scientific language and illustrations.

**Using test results to make predictions to set up further comparative and fair tests**

- I can use the scientific knowledge gained from enquiry work to make predictions I can investigate using comparative and fair tests.