



## Science Knowledge Progression Map

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<p><b>Year 3</b></p>	<p><b>Skeletons</b> Identify that humans and some other animals have skeletons and muscles for support, protection and movement. <b>L.O. Identify and name bones in the human body</b> <b>L.O. Functions of the skeleton</b> <b>L.O. Identify and name bones in a range of animals</b> <b>L.O. Animals with and without a spine</b> <b>L.O. Are all skeletons the same?</b></p> <p><b>Movement</b> Identify that humans and some other animals have skeletons and muscles for support, protection and movement. <b>L.O. Joints</b> <b>L.O. How we move</b></p> <p><b>Nutrition and Diet</b> Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. <b>L.O. Food groups</b> <b>L.O. Understand the five food groups</b> <b>L.O. Balanced diets</b> <b>L.O. Compare diets</b> <b>L.O. Animal diets</b></p>	<p><b>Food Waste</b> <b>L.O. What is food waste?</b> <b>L.O. How can we reduce our food waste?</b></p> <p><b>Rocks</b> Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. <b>L.O. Identify rocks</b> <b>L.O. Group rocks</b> <b>L.O. Test rocks</b> <b>L.O. Local rock survey</b></p>	<p><b>Fossils</b> Describe in simple terms how fossils are formed when things that have lived are trapped within rock. <b>L.O. Explore fossils</b> <b>L.O. Fossil formation</b></p> <p><b>Soils</b> Recognise that soils are made from rocks and organic matter. <b>L.O. Explore soil</b> <b>L.O. The importance of soil</b> <b>L.O. Plan a soil experiment</b> <b>L.O. Investigate a soil experiment</b> <b>L.O. Evaluate a soil experiment</b></p>	<p><b>Light</b> Recognise that they need light in order to see things and that dark is the absence of light Notice that light is reflected from surfaces Recognise that light from the sun can be dangerous and that there are ways to protect their eyes Recognise that shadows are formed when the light from a light source is blocked by an opaque object Find patterns in the way that the size of shadows change <b>L.O. Light sources</b> <b>L.O. The Sun</b> <b>L.O. How we see</b> <b>L.O. Shadows</b> <b>L.O. Opaque, translucent or transparent</b> <b>L.O. Plan shadow experiment</b> <b>L.O. Investigate shadow experiment</b> <b>L.O. Evaluate shadow experiment</b></p>	<p><b>Plants (A)</b> Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. Investigate the way in which water is transported within plants. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. <b>L.O. Parts of a plant and their functions</b> <b>L.O. Plant dissection</b> <b>L.O. Plan plant growth</b> <b>L.O. The stem and water transportation</b> <b>L.O. Looking at seeds</b> <b>L.O. Reproductive parts in plants</b> <b>L.O. Pollination</b> <b>L.O. Seed dispersal</b> <b>L.O. Life cycles of plants</b></p>	<p><b>Forces</b> Compare how things move on different surfaces. <b>L.O. Explore forces</b> <b>L.O. Friction</b> <b>L.O. Plan friction experiment</b> <b>L.O. Investigate friction experiment</b></p> <p><b>Magnets</b> Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance. Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. Observe how magnets attract or repel each other and attract some materials and not others. Describe magnets as having 2 poles and predict whether 2 magnets will attract or repel each other, depending on which poles are facing. <b>L.O. Magnets</b> <b>L.O. Magnetic and non-magnetic materials</b> <b>L.O. Investigate metals</b> <b>L.O. North and south poles (attract and repel)</b></p> <p><b>Plants (B)</b> Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. <b>L.O. Findings (Plant growth)</b></p> <p><b>Biodiversity</b> <b>L.O. What is biodiversity?</b> <b>L.O. How can we increase biodiversity in our local area?</b></p>

<p><b>Year</b> <b>4</b></p>	<p><b>Group and Classify Living Things</b> 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. <b>L.O. Group animals</b> <b>L.O. Vertebrates and invertebrates</b> <b>L.O. Classification keys (animals)</b> <b>L.O. Group plants</b> <b>L.O. Classification key (plants)</b></p> <p><b>Data Collection A</b> Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. . <b>L.O. Data collection A</b> <b>L.O. Analyse data</b></p>	<p><b>States of Matter</b> 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. <b>L.O. Explore solids, liquids and gases</b> <b>L.O. Think differently - solids, liquids and gases</b> <b>L.O. Change states</b> <b>L.O. Use equipment</b> <b>L.O. Plan melting experiment</b> <b>L.O. Investigate melting experiment</b> <b>L.O. The water cycle</b> <b>L.O. Plan evaporation experiment</b> <b>L.O. Investigate evaporation experiment</b> <b>L.O. Evaluate evaporation experiment</b></p>	<p><b>Sound</b> 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. <b>L.O. Vibrations</b> <b>L.O. The ear</b> <b>L.O. Investigate sounds</b> <b>L.O. Explore volume</b> <b>L.O. Explore pitch</b> <b>L.O. Plan volume experiment</b> <b>L.O. Investigate volume experiment</b> <b>L.O. Evaluate volume experiment</b></p> <p><b>Data Collection B</b> Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. <b>L.O. Data collection B</b> <b>L.O. Analyse data</b></p>	<p><b>Electricity</b> 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. <b>L.O. Common appliances that use electricity</b> <b>L.O. Build and draw series circuits</b> <b>L.O. What has gone wrong?</b> <b>L.O. Conductors and insulators</b> <b>L.O. Conductivity within a circuit</b></p> <p><b>Energy</b> <b>L.O. What is energy?</b> <b>L.O. How can we reduce our energy usage?</b></p>	<p><b>Data Collection C</b> Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. <b>L.O. Data collection C</b> <b>L.O. Analyse data</b> <b>L.O. Make conclusions</b></p> <p><b>Habitats</b> 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. <b>L.O. Living things and their habitats</b> <b>L.O. Classification keys (animals)</b> <b>L.O. Classification keys (plants)</b> <b>L.O. Human impact on habitats</b></p> <p><b>Deforestation</b> <b>L.O. What is deforestation?</b> <b>L.O. What are the impacts of deforestation on habitats?</b></p>	<p><b>Digestive System</b> Comparing the teeth of carnivores and herbivores and suggesting reasons for differences (non-statutory). Identify the different types of teeth in humans and their simple functions. Describe the simple functions of the basic parts of the digestive system in humans. <b>L.O. Teeth – carnivores, herbivores and omnivores</b> <b>L.O. Human teeth</b> <b>L.O. Layers of the teeth</b> <b>L.O. Plan tooth decay experiment</b> <b>L.O. The digestive system</b> <b>L.O. The digestive system model</b> <b>L.O. Findings from tooth decay experiment</b></p> <p><b>Food Chains</b> Construct and interpret a variety of food chains, identifying producers, predators and prey. <b>L.O. What is a food chain?</b> <b>L.O. Interpret food chains</b> <b>L.O. Draw food chains</b> <b>L.O. What would happen if?</b></p>
---------------------------------	--	--	--	---	--	---

<p><b>Year</b> <b>5</b></p>	<p><b>Forces</b> Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. Explain that unsupported objects fall towards the Earth because of gravity acting between the Earth and the falling object. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. <b>L.O. Friction</b> <b>L.O. Air resistance</b> <b>L.O. Plan parachute experiment</b> <b>L.O. Investigate parachute experiment</b> <b>L.O. Evaluate parachute experiment</b> <b>L.O. Plan water resistance experiment</b> <b>L.O. Investigate water resistance experiment</b> <b>L.O. Explore gravity</b> <b>L.O. Use small forces for greater effects</b></p>	<p><b>Space</b> Describe the Sun, Earth and Moon as approximately spherical bodies. Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky. Describe the movement of the Moon relative to the Earth. <b>L.O. The Solar System</b> <b>L.O. The planets</b> <b>L.O. Modelling</b> <b>L.O. Motion of the Earth and planets</b> <b>L.O. The Solar System – ideas over time</b> <b>L.O. Planet Earth</b> <b>L.O. Night and day</b> <b>L.O. The Moon</b></p> <p><b>Global Warming</b> <b>L.O. What is global warming?</b> <b>L.O. What are the impacts of global warming on living things?</b></p>	<p><b>Properties of Materials</b> 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. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic <b>L.O. Test materials - magnetism, transparency and hardness</b> <b>L.O. Test materials - electrical conductivity</b> <b>L.O. Plan insulating heat experiment</b> <b>L.O. Investigate insulating heat experiment</b> <b>L.O. Evaluate insulating heat experiment</b> <b>L.O. Uses of everyday materials – plastic, wood and metal</b></p>	<p><b>Animals including Humans</b> Describe the changes as humans develop to old age <b>L.O. The human life cycle</b> <b>L.O. Babies and children</b> <b>L.O. Adolescence and puberty</b> <b>L.O. Adults and the elderly</b> <b>L.O. Gestation periods of mammals</b> <b>L.O. Gestation periods and lifespan</b></p> <p><b>Life Cycles</b> Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. <b>L.O. Life cycles of mammals</b> <b>L.O. Life cycles of amphibians (frogs)</b> <b>L.O. Life cycles of insects</b> <b>L.O. Life cycles of birds</b></p>	<p><b>Reproduction A</b> Describe the life process of reproduction in some plants and animals. <b>Sexual reproduction in mammals</b> <b>Reproductive parts in plants</b> <b>Pollination</b> <b>Asexual reproduction</b> <b>Plan clone plants</b> <b>Plant clone plants</b></p> <p><b>Plastic Pollution</b> Identifying scientific evidence that has been used to support or refute ideas or arguments. <b>L.O. What is plastic pollution?</b> <b>L.O. What are the impacts of plastic pollution on the planet?</b></p>	<p><b>Reversible and irreversible changes</b> Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Demonstrate that dissolving, mixing and changes of state are reversible changes. 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. <b>L.O. Dissolving</b> <b>L.O. Separate materials – filtering and sieving</b> <b>L.O. Solutions and evaporating</b> <b>L.O. Reversible changes</b> <b>L.O. Irreversible changes – burning</b> <b>L.O. Irreversible changes – acid</b></p> <p><b>Reproduction B</b> Describe the life process of reproduction in some plants and animals. <b>L.O. Findings – clone plants</b> <b>L.O. Interpret data</b></p>
---------------------------------	---	---	--	--	--	---

<p><b>Year 6</b></p>	<p><b>Living Things and their habitats</b> Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics.</p> <p><b>L.O. Conditions for life</b> <b>L.O. Group organisms</b> <b>L.O. Classify animals</b> <b>L.O. Classify plants</b> <b>L.O. Microorganisms</b> <b>L.O. Classify organisms</b> <b>L.O. Carl Linnaeus</b></p>	<p><b>Electricity</b> Use recognised symbols when representing a simple circuit in a diagram. 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. Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</p> <p><b>L.O. Construct and draw series circuits using symbols</b> <b>L.O. Complete and incomplete circuits</b> <b>L.O. Variations within circuits</b> <b>L.O. Plan voltage experiment</b> <b>L.O. Investigate voltage experiment</b> <b>L.O. Evaluate voltage experiment</b></p> <p><b>Renewable Energy</b> <b>L.O. What is renewable energy?</b> <b>L.O. Using renewable energy</b></p>	<p><b>Light</b> 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. 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. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. Recognise that lights appears to travel in straight lines.</p> <p><b>L.O. How we see</b> <b>L.O. Light and straight lines</b> <b>L.O. Shadow formation</b> <b>L.O. Plan shadow experiment</b> <b>L.O. Investigate shadow experiment</b> <b>L.O. Evaluate shadow experiment</b> <b>L.O. Refraction</b> <b>L.O. Explore light</b></p> <p><b>Light Pollution</b> <b>L.O. What is light pollution?</b> <b>L.O. How can we reduce light pollution?</b></p>	<p><b>The Circulatory System</b> Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Describe the ways in which nutrients and water are transported within animals, including humans.</p> <p><b>L.O. The circulatory system</b> <b>L.O. Blood</b> <b>L.O. The heart</b> <b>L.O. Blood flow in the heart</b> <b>L.O. Oxygenated and deoxygenated blood</b> <b>L.O. Dissection of the heart</b></p> <p><b>Diet, drugs and lifestyle</b> Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</p> <p><b>L.O. Diet</b> <b>L.O. Drugs</b> <b>L.O. Cigarettes</b> <b>L.O. Plan heart rate experiment</b> <b>L.O. Investigate heart rate experiment</b> <b>L.O. Evaluate heart rate experiment</b></p>	<p><b>Variation</b> Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p> <p><b>L.O. Variation</b> <b>L.O. Inheritance and characteristics</b></p> <p><b>Adaptations</b> Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p><b>L.O. Animal adaptations</b> <b>L.O. Plant adaptations</b> <b>L.O. Evolution</b> <b>L.O. Charles Darwin</b> <b>L.O. Natural selection</b> <b>L.O. Darwin's finches</b></p>	<p><b>Fossils</b> Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p> <p><b>L.O. Fossil formation</b> <b>L.O. Explore fossils</b> <b>L.O. Mary Anning</b></p> <p><b>Themed Projects (ready for Year 7)</b> <b>Project 1 - Melting points</b> <b>Project 2 - Thermal conductivity</b></p>
----------------------	---	---	--	--	--	---