

Willow Year A Autumn 1	Prior Knowledge	Knowledge to be explicitly taught	How the knowledge will be built on
Substantive Knowledge	<p>Light is not explicitly taught in the curriculum until year 3. Children who are only with you in this year need to also understand:</p> <ul style="list-style-type: none"> <li>• Recognise that they need light in order to see things and that dark is the absence of light</li> <li>• Notice that light is reflected from surfaces</li> <li>• Recognise that light from the sun can be dangerous and that there are ways to protect their eyes</li> <li>• Recognise that shadows are formed when the light from a light source is blocked by a solid object</li> <li>• Find patterns in the way that the size of shadows changes.</li> </ul>	<p>Set up simple comparative and fair tests e.g. Which ramp makes the toy roll furthest  Set up a fair test with different variables e.g. the best conditions for a plant to grow.  Can explain to a partner why a test is a fair one.  To make simple predictions drawing on own knowledge e.g. I think the plant needs light because plants grow outside  Ask simple and relevant questions and recognise that they can be answered in different ways including use of scientific language from the national curriculum  Make careful observations and, where appropriate, take accurate measurements using standard units.  Gather and record data to help in answering questions including from secondary sources of information using drawings, labelled diagrams, block graphs or tables.  Communicate his/her Ideas, what he/she does and what he/she finds out In a variety of ways e.g. simple written reports or write ups.  Use observations and ideas to suggest answers to questions noticing similarities, differences and patterns  Use straightforward scientific evidence to answer questions or to support findings</p>	<p>In Oak:  Light (Year 6)  Learning to lead to making a periscope</p> <ul style="list-style-type: none"> <li>• Recognise that light appears to travel in straight lines</li> <li>• 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</li> <li>• 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</li> <li>• Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</li> </ul>
Disciplinary Knowledge		<p>Light year 3 inc seasonal change in day length</p> <ul style="list-style-type: none"> <li>• Recognise that they need light in order to see things and that dark is the absence of light</li> <li>• Notice that light is reflected from surfaces</li> <li>• Recognise that light from the sun can be dangerous and that there are ways to protect their eyes</li> <li>• Recognise that shadows are formed when the light from a light source is blocked by a solid object</li> <li>• Find patterns in the way that the size of shadows changes.</li> </ul>	
VOCAB		<p>oral and written explanations, conclusion, predictions, criteria, classify, changes, data, contrast, evidence, improve, secondary sources,, construct, i – relevant question equipment – thermometer, data – gather, standard units, record, classify, present record – drawings, labelled diagrams, bar charts, tables</p>	
Learning Objective	<ol style="list-style-type: none"> <li>1. LO: to recognise that they need light in order to see things</li> <li>2. LO: to recognise that dark is the absence of light</li> <li>3. LO: to notice that light is reflected from surfaces</li> <li>4. LO: to recognise that light from the sun can be dangerous and that there are ways to protect their eyes</li> <li>5. LO: to recognise that shadows are formed when the light from a light source is blocked by a solid object</li> <li>6. LO: to find patterns in the way that the size of shadows changes.</li> </ol>		

Willow Year A Autumn 2	Prior Knowledge	Knowledge to be explicitly taught	How the knowledge will be built on
Substantive Knowledge	Everyday materials is covered in Maple	Set up simple comparative and fair tests e.g. Which ramp makes the toy roll furthest Set up a fair test with different variables e.g. the best conditions for a plant to grow. Can explain to a partner why a test is a fair one. To make simple predictions drawing on own knowledge e.g. I think the plant needs light because plants grow outside Ask simple and relevant questions and recognise that they can be answered in different ways including use of scientific language from the national curriculum Make careful observations and, where appropriate, take accurate measurements using standard units. Gather and record data to help in answering questions including from secondary sources of information using drawings, labelled diagrams, block graphs or tables. Communicate his/her Ideas, what he/she does and what he/she finds out In a variety of ways e.g. simple written reports or write ups. Use observations and ideas to suggest answers to questions noticing similarities, differences and patterns Use straightforward scientific evidence to answer questions or to support findings	States of matter is covered in Sycamore
Disciplinary Knowledge		Everyday materials year 2 Year 3's from woodpeckers to inc magnetic materials and magnets <ul style="list-style-type: none"> <li>• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> <li>• Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</li> </ul>	
VOCAB		wood, plastic, glass, paper, metal, rock, hard, soft, rough, smooth, shiny, dull, bendy, stiff, brick, fabric, elastic, foil, property, solid, waterproof, absorbent, opaque, transparent, squash, bend, flexible, twist, stretch push, pull, roll, slide, bounce	
Learning Objective	<ol style="list-style-type: none"> <li>1. LO: to everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard</li> <li>2. LO: to identify the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> <li>3. LO: to compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> <li>4. LO: to find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</li> <li>5. LO: to find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</li> </ol>		

Willow Year A Spring 1	Prior Knowledge	Knowledge to be explicitly taught	How the knowledge will be built on
Substantive Knowledge	In Maple <ul style="list-style-type: none"> <li>• Notice that animals, including humans, have offspring which grow into adults</li> <li>• Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</li> <li>• Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</li> </ul>	Ask simple and relevant questions and recognise that they can be answered in different ways including use of scientific language from the national curriculum Group information according to common factors e.g. plants that grow in woodlands/plants that grow in gardens e.g. Venn Diagrams with bisecting sets Use observations and ideas to suggest answers to questions noticing similarities, differences and patterns	In Sycamore Animals inc humans teeth (Year 4) <ul style="list-style-type: none"> <li>• Identify the different types of teeth in humans and their simple functions</li> </ul> Sound stringed instruments (year 4) Identify how sounds are made, associating some of them with something vibrating <ul style="list-style-type: none"> <li>• Recognise that vibrations from sounds travel through a medium to the ear</li> </ul>
Disciplinary Knowledge	<ul style="list-style-type: none"> <li>• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</li> <li>• Identify and name a variety of common animals that are carnivores, herbivores and omnivores</li> </ul>	Animals inc humans (how animals grow, staying healthy) (year 2) <ul style="list-style-type: none"> <li>• Notice that animals, including humans, have offspring which grow into adults</li> <li>• Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</li> <li>• Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</li> </ul>	<ul style="list-style-type: none"> <li>• Find patterns between the pitch of a sound and features of the object that produced it</li> <li>• Find patterns between the volume of a sound and the strength of the vibrations that produced it</li> <li>• Recognise that sounds get fainter as the distance from the sound source increases</li> </ul>
VOCAB	<ul style="list-style-type: none"> <li>• Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</li> <li>• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</li> </ul>	food chain, prey, predator, camouflage, protection exercise, hygiene, balanced diet, off spring	
Learning Objective	<ol style="list-style-type: none"> <li>1. To name common animals offspring</li> <li>2. To notice the changes in humans from offspring to adult.</li> <li>3. To find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</li> <li>4. To describe the importance for humans of exercise.</li> <li>5. To describe the importance for humans of hygiene</li> <li>6. To describe the importance for humans of eating the right amounts of different types of food.</li> </ol>		

Willow Year A Spring 2	Prior Knowledge	Knowledge to be explicitly taught	How the knowledge will be built on
Substantive Knowledge	In Maple they learn about everyday materials and compare their physical properties.	<p>Set up simple comparative and fair tests e.g. Which ramp makes the toy roll furthest</p> <p>Set up a fair test with different variables e.g. the best conditions for a plant to grow.</p> <p>Can explain to a partner why a test is a fair one.</p> <p>To make simple predictions drawing on own knowledge e.g. I think the plant needs light because plants grow outside</p> <p>Ask simple and relevant questions and recognise that they can be answered in different ways including use of scientific language from the national curriculum</p> <p>Make careful observations and, where appropriate, take accurate measurements using standard units.</p> <p>Gather and record data to help in answering questions including from secondary sources of information using drawings, labelled diagrams, block graphs or tables.</p> <p>Communicate his/her Ideas, what he/she does and what he/she finds out In a variety of ways e.g. simple written reports or write ups.</p> <p>Use observations and ideas to suggest answers to questions noticing similarities, differences and patterns</p> <p>Use straightforward scientific evidence to answer questions or to support findings</p>	In Sycamore they talk about Earth in space.
Disciplinary Knowledge		<p>Rocks and soils- EXT enquiry questions (see NC) year 3</p> <ul style="list-style-type: none"> <li>• Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</li> <li>• Describe in simple terms how fossils are formed when things that have lived are trapped within rock</li> <li>• Recognise that soils are made from rocks and organic matter</li> </ul>	
VOCAB		soils, organic matter, fossil, crystals, sandstone, granite, marble, pumice absorbent, crumble sedimentary, layer, sediment igneous, magma, lava, gas bubbles (tiny holes/spaces) metamorphic, change, squeeze, pressure	
Learning Objective			<ol style="list-style-type: none"> <li>1. To carefully observe different rocks (Observing rocks, including those used in buildings and gravestones, and exploring how and why they might have changed over time; using a hand lens or microscope to help them to identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them.)</li> <li>2. To compare and group different rocks</li> <li>3. To research and discuss the different kinds of living things in fossils</li> <li>4. To understand how fossils are formed.</li> <li>5. To explore and compare different soils</li> <li>6. To know that soils are made from rocks and organic matter (investigate what happens when rocks are rubbed together or what changes occur when they are in water)</li> </ol>

Willow Year A Summer 1	Prior Knowledge	Knowledge to be explicitly taught	How the knowledge will be built on
Substantive Knowledge	Maple science skills can be seen on the skills progression	<p>Set up simple comparative and fair tests e.g. Which ramp makes the toy roll furthest</p> <p>Set up a fair test with different variables e.g. the best conditions for a plant to grow.</p> <p>Can explain to a partner why a test is a fair one.</p> <p>To make simple predictions drawing on own knowledge e.g. I think the plant needs light because plants grow outside</p> <p>Ask simple and relevant questions and recognise that they can be answered in different ways including use of scientific language from the national curriculum</p> <p>Make careful observations and, where appropriate, take accurate measurements using standard units.</p> <p>Gather and record data to help in answering questions including from secondary sources of information using drawings, labelled diagrams, block graphs or tables.</p> <p>Communicate his/her Ideas, what he/she does and what he/she finds out In a variety of ways e.g. simple written reports or write ups.</p> <p>Use observations and ideas to suggest answers to questions noticing similarities, differences and patterns</p> <p>Use straightforward scientific evidence to answer questions or to support findings</p>	Sycamore science skills can be seen on the skills progression
Disciplinary Knowledge		<ol style="list-style-type: none"> <li>1. Which bag is the strongest?</li> <li>2. How can I make my boat move quickest across the water tray?</li> <li>3. Do woodlice prefer the light or the dark?</li> <li>4. Which paper towel is best for mopping up?</li> <li>5. How to make raisins dance – experiment with different clear fizzy drinks.</li> </ol>	
VOCAB		oral and written explanations, conclusion, predictions, criteria, classify, changes, data, contrast, evidence, improve, secondary sources,, construct, i – relevant question equipment – thermometer, data – gather, standard units, record, classify, present record – drawings, labelled diagrams, bar charts, tables	
Learning Objective		<ol style="list-style-type: none"> <li>1. Which bag is the strongest?</li> <li>2. How can I make my boat move quickest across the water tray?</li> <li>3. Do woodlice prefer the light or the dark?</li> <li>4. Which paper towel is best for mopping up?</li> <li>5. How to make raisins dance – experiment with different clear fizzy drinks.</li> </ol>	

Willow Year A Summer 2	Prior Knowledge	Knowledge to be explicitly taught	How the knowledge will be built on
Substantive Knowledge	Plants year 2 – what plants need to grow how seeds grow into plants Observe and describe how seeds and bulbs grow into mature plants <ul style="list-style-type: none"> <li>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</li> </ul>	Ask simple and relevant questions and recognise that they can be answered in different ways including use of scientific language from the national curriculum Make careful observations and, where appropriate, take accurate measurements using standard units. Group information according to common factors e.g. plants that grow in woodlands/plants that grow in gardens e.g. Venn Diagrams with bisecting sets Use observations and ideas to suggest answers to questions noticing similarities, differences and patterns	Living things and their habitats, classify plant Effects of ecology parks and deforestation Year 4 <ul style="list-style-type: none"> <li>Recognise that living things can be grouped in a variety of ways</li> <li>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</li> <li>Recognise that environments can change and that this can sometimes pose dangers to living things.</li> </ul>
Disciplinary Knowledge		Plants year 3 – review year 1 and 2 learning. How water is transported, seeds. Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers <ul style="list-style-type: none"> <li>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</li> <li>Investigate the way in which water is transported within plants</li> <li>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</li> </ul>	
VOCAB		air, water, transportation, nutrients, soil, reproduction, seed formation, seed dispersal, pollination environment,	
Learning Objective	<ol style="list-style-type: none"> <li>LO: to know how water is transported, seeds.</li> <li>LO: to identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</li> <li>LO: to 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</li> <li>LO: to investigate the way in which water is transported within plants</li> <li>LO: to explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</li> <li>LO: to explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</li> </ol>		