

# Curriculum Skills and Progression Map

## Science – Physics



### Key Concepts:

Forces and Magnets

Sound

Light

Electricity

Earth and Space

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Organisation of knowledge	Working scientifically	Plants	Animals including humans	Everyday materials	Seasonal changes
Relevant ELG	<p><b>ELG: Listening, Attention and Understanding</b></p> <ul style="list-style-type: none"> <li>- Make comments about what they have heard and ask questions to clarify their understanding.</li> </ul> <p><b>ELG: Fine motor skills</b></p> <ul style="list-style-type: none"> <li>- Use a range of small tools, including scissors, paint brushes and cutlery.</li> </ul> <p><b>ELG: Building Relationships</b></p> <p>Work and play cooperatively and take turns with others.</p>	<p><b>ELG: The Natural World</b></p> <ul style="list-style-type: none"> <li>- Explore the natural world around them, making observations and drawing pictures of plants and animals.</li> <li>- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.</li> </ul> <p><b>ELG: Speaking</b></p> <p>Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary.</p>	<p><b>ELG: The Natural World</b></p> <ul style="list-style-type: none"> <li>- Understand some important processes and changes in the natural world, including the seasons and changing states of matter.</li> </ul> <p><b>ELG: Speaking</b></p> <p>Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary.</p>	<p><b>Vocabulary:</b> seasons, change, senses, touch, sight, hearing, taste, smell, life cycle, roots, leaves, soil, water, floating, sinking.</p>	
KS1 readiness objectives	<p>To feel confident to answer simple questions about observable properties of objects and people, animals and plants around them</p> <p>To compare objects in their environment and talk about similarities and differences</p> <p>To ask questions about the world around them, and seek to find their own answers</p>	<p>To know what a plant is</p> <p>To know what a flower is</p> <p>To know where you see plants</p> <p>To describe different plants and flowers</p>	<p>To know what an animal is</p> <p>To recognise and name a variety of different animals</p> <p>To know the names of different body parts of humans and animals they have experience of</p>	<p>To recognise that different everyday objects are made from different materials</p> <p>To describe how different objects look and feel</p>	<p>To know about different types of weather</p> <p>To observe changes in trees and plants as the seasons progress</p>

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<b>Programmes of study</b> Year 1	Pupils should be taught to: <ul style="list-style-type: none"> <li>• observe changes across the four seasons</li> <li>• observe and describe weather associated with the seasons and how day length varies.</li> </ul>
<b>Progressive objectives</b>	The child can describe seasonal changes. The child can relate weather patterns and day length to seasons.
<b>Assessment opportunities</b>	Can the child answer the Big Question: Can I identify the changes in the seasons and how people and animals adapt to them?
<b>Vocabulary</b>	SEASONAL CHANGES: Summer, winter, autumn, spring, day, daytime, wind, rain, snow, hail, sleet, fog, warm cold

<b>Programmes of study</b> Year 2	NONE IN YEAR 2
<b>Progressive objectives</b>	
<b>Assessment opportunities</b>	
<b>Vocabulary</b>	

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<p><b>Programmes of study</b></p> <p><b>Year 3</b></p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• compare how things move on different surfaces</li> <li>• notice that some forces need contact between two objects, but magnetic forces can act at a distance</li> <li>• observe how magnets attract or repel each other and attract some materials and not others</li> <li>• 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</li> <li>• describe magnets as having two poles</li> <li>• predict whether two magnets will attract or repel each other, depending on which poles are facing.</li> </ul>
<p><b>Progressive objectives</b></p>	<p>The child can compare how an object, such as a toy car, will move on different surfaces.</p> <p>The child can recognise the difference between contact and contact forces.</p> <p>The child can describe how magnets attract or repel each other, and attract magnetic materials.</p> <p>The child can group material on the basis of testing for being magnetic.</p> <p>The child can describe and identify the poles of a magnet.</p> <p>The child can predict outcomes of a particular arrangement of magnets.</p>
<p><b>Assessment opportunities</b></p>	<p>Can the child answer the Big Question:  <b>Forces and Magnets: How do magnets work?</b>  <b>Can I investigate the force the force of friction?</b></p> <p><b>Light:</b>  <b>What are shadows and how are they formed?</b>  <b>How does the sun affect our eyes?</b></p>
<p><b>Vocabulary</b></p>	<p><b>FORCES:</b> force, push, pull, friction, open, surface, magnet, magnetic, attract, repel, magnetic poles, North, South</p> <p><b>LIGHT:</b> light, shadows, energy, emit, reflect, light source, transparent, translucent, opaque</p>

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<p><b>Programmes of study</b></p> <p><b>Year 4</b></p>	<p><b>For SOUND pupils should be taught:</b></p> <ul style="list-style-type: none"> <li>• identify how sounds are made, associating some of them with something vibrating</li> <li>• recognise that vibrations from sounds travel through a medium to the ear</li> <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> <p><b>For ELECTRICITY pupils should be taught:</b></p> <ul style="list-style-type: none"> <li>• identify common appliances that run on electricity</li> <li>• construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</li> <li>• 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</li> <li>• recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</li> <li>• recognise some common conductors and insulators, and associate metals with being good conductors.</li> </ul>
<p><b>Progressive objectives for Sound</b></p>	<p>The child can explain, with reference to vibrations, how an object makes a sound.</p> <p>The child can describe the role of a medium in the transmission of sound.</p> <p>The child can describe the effect of moving further from the source of a sound.</p> <p>The child can explain with reference to a particular object how the pitch of the sound can be changed.</p> <p>The child can explain with reference to a particular object how the volume of the sound can be changed.</p>
<p><b>Progressive objectives for electricity</b></p>	<p>The child can list examples of appliances that run on electricity.</p> <p>The child can construct a simple circuit and name its components.</p> <p>The child can sort materials into conductors and insulators, identifying metals as conductors.</p> <p>The child can predict whether a particular arrangement of components will result in a bulb lighting.</p> <p>The child can predict how the operation of a switch will affect bulbs lighting.</p>
<p><b>Assessment opportunities</b></p>	<p><b>Can the child answer the Big Question:</b></p> <p><b>Sound – How are sounds made and how do they travel?</b></p> <p><b>Electricity – What is electricity and why is it important?</b></p>
<p><b>Vocabulary</b></p>	<p><b>SOUND:</b> vibrate, vibration, vibrating, air, medium, ear, hear, sound, volume, pitch, faint, fainter, loud, louder, string, percussion, woodwind, brass, insulate.</p> <p><b>ELECTRICITY:</b> appliances, electricity, electrical circuit, cell (battery), wire, bulb, buzzer, danger, electrical safety sign, switch, open/closed, Insulators –wood, rubber, plastic, glass, Conductors –metal, water,</p>

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<p><b>Programmes of study</b></p> <p><b>Year5</b></p>	<p><b>For FORCES pupils should be taught:</b></p> <ul style="list-style-type: none"> <li>• explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>• identify the effects of air resistance, water resistance and friction, that act between moving surfaces</li> <li>• recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</li> </ul> <p><b>For EARTH AND SPACE pupils should be taught:</b></p> <ul style="list-style-type: none"> <li>• describe the movement of the Earth, and other planets, relative to the Sun in the solar system</li> <li>• describe the movement of the Moon relative to the Earth</li> <li>• describe the Sun, Earth and Moon as approximately spherical bodies</li> <li>• use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> </ul>
<p><b>Progressive objectives for Forces</b></p>	<p>The child can explain that gravity causes objects to fall towards Earth.  The child can describe how motion may be resisted by air resistance, water resistance or friction.  The child can describe how some devices may turn a smaller force into a larger one.</p>
<p><b>Progressive objectives for Earth and Space</b></p>	<p>The child can draw a diagram or use a model to describe planetary orbits  The child can draw a diagram or use a model to describe the Moon's orbit around the Earth.  The child can describe the Sun, Earth &amp; Moon as spheres.  The child can use a diagram or model to explain why the Sun seems to travel across the sky, and what causes day and night.</p>
<p><b>Assessment opportunities</b></p>	<p><b>Can the child answer the Big Question:</b></p> <p><b>Forces- What are the effects of gravity, water resistance, air resistance and friction?</b></p> <p><b>Earth and Space – What makes our Solar System and what causes day and night?</b></p>
<p><b>Vocabulary</b></p>	<p><b>FORCES - As previous year (3) plus:</b> gravity, air resistance, water resistance, effect, move, accelerate, decelerate, stop, change direction, brake, mechanism, pulley, gear, spring, theory of gravitation, Galileo Galilei, Isaac Newton</p> <p><b>EARTH AND SPACE –</b> day, night, light, dark, sunrise, sunset, dusk, Earth, moon, moons, reflect, sun, star, spherical, rotation, Earth's axis, solar system, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune,(Pluto as a dwarf planet), shadow clock, sundial, astronomical clock</p>

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<p><b>Programmes of study</b></p> <p><b>Year 6</b></p>	<p><b>For LIGHT pupils should be taught:</b></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> <p><b>For ELECTRICITY pupils should be taught:</b></p> <ul style="list-style-type: none"> <li>• associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</li> <li>• 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</li> <li>• use recognised symbols when representing a simple circuit in a diagram.</li> </ul>
<p><b>Big Idea</b></p>	<p>Light &amp; sound can be reflected &amp; absorbed and enable us to see and hear Electricity can make circuits work and can be controlled to perform useful</p>
<p><b>Progressive objectives for Light</b></p>	<p>The child can represent light using straight line ray diagrams. The child can draw diagrams using straight lines showing light travelling to the eye. The child can explain how we can see an object by referring to light travelling into the eye. The child can draw a diagram showing an object, shadow and light to relate object shape to shadow shape.</p>
<p><b>Progressive objectives for Electricity</b></p>	<p>The child can explain how number and voltage of cells affects the lamp or buzzer. The child can explain the use of switches, how bulbs can be made brighter and buzzers made louder. The child can represent a circuit that has been constructed using symbols.</p>
<p><b>Assessment opportunities</b></p>	<p><b>Can the child answer the Big Question:</b></p> <p><b>Light – Why can we not see objects in the dark?</b></p> <p><b>How do we cast shadows and why are they the same shape as the object that cast them?</b></p> <p><b>Electricity – How does voltage effect components, such as bulbs, motors and buzzers in a circuit?</b></p>
<p><b>Vocabulary</b></p>	<p><b>LIGHT:</b> As previous year (3) plus: travels straight, reflection, angle of reflection, angle of incidence, incident ray, reflected ray, mirrors, periscope, rainbow, filters</p> <p><b>ELECTRICITY:</b> As previous year (4) plus: voltage, brightness, volume, motor, series circuit, circuit diagram, circuit symbols,</p>

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