

## Wallace Fields Junior science progression map

Year	Planning and Predicting	Investigating and Observing	Recording, Analysing and Evaluating	Knowledge
Year 6	<p>*Independently ask scientific questions. This may be stimulated by a scientific experience or involve asking further questions based on their developed understanding following an enquiry.</p> <p>*Consider how scientists gave combined evidence from observation and measurement with creative thinking to suggest new ideas and explanations for phenomena.</p> <p>*Suggest predictions based on scientific knowledge and real life observations.</p> <p>*Suggest methods of testing including a fair test and how to collect evidence, ensuring it is sufficient and appropriate.</p> <p>*Use and understand terms: independent, dependent and controlled variable</p>	<p>*Carry out a fair test, identifying key factors to be considered.</p> <p>*Make a variety of relevant observations and measurements using a wide range of apparatus correctly.</p> <p>*Select information/data from a range of sources.</p>	<p>*independently present findings in self-drawn/selected tables and graphs (including line graphs with keys).</p> <p>*Identify anomalies</p> <p>*Identify trends and patterns in data.</p> <p>*Draw conclusions and communicate them in newly acquired scientific language.</p> <p>*Make practical suggestions for improving methods in their work, giving suggestions.</p> <p>*Use computing programs to present data and evaluate effectiveness</p> <p><b>Vocabulary:</b>            Characteristics, microorganisms, adaptation, process, soluble, solution, solute, solvent, reversible, irreversible, microbes, bacteria, fossils, adaptation, natural selection, mutation, environment, evolution, friction, force, up thrust, magnetism, repel, attract, poles, gravity, gravitational pull, Newton meter, resistance, evaporation, condensation, precipitation, transpiration, macroclimate, microclimate, producer, consumer, prey, tertiary, decomposer, deforestation, dissolve,</p>	<p><b>Forces and Magnets</b></p> <p>*compare how things move on different surfaces</p> <p>*notice that some forces need contact between two objects, but magnetic forces can act at a distance</p> <p>*observe how magnets attract or repel each other and attract some materials and not others</p> <p>*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</p> <p>*describe magnets as having two poles</p> <p>*predict whether two magnets will attract or repel each other, depending on which poles are facing.</p> <p>*explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>*identify the effects of air resistance, water resistance and friction, that act between moving surfaces (and up thrust) <b>Autumn ASSESSMENT (Investigating and Observing)</b></p> <p><b>States of Matter</b></p> <p>*identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature (<b>Cross curricular: Geography- Rainforest. Microclimate</b>)</p> <p>*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)</p> <p><b>Animals, including humans</b></p> <p>*construct and interpret a variety of food chains, identifying producers, predators and prey (<b>Geography- Rainforest topic</b>)</p> <p>*recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function (<b>PSHE- Alcohol, Hygiene</b>)</p> <p><b>Properties and changes of materials</b></p> <p>*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 <b>Summer ASSESSMENT (Recording, Analysing and Evaluating)</b></p> <p>*know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>*use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating <b>Spring ASSESSMENT (Planning and Predicting)</b></p> <p>*demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>*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 bicarb. of soda.</p> <p><b>Evolution and inheritance</b></p> <p>*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>*recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>*identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p><b>Rocks</b></p> <p>*describe in simple terms how fossils are formed when things that have lived are trapped within rock</p>

## Wallace Fields Junior science progression map

<p><b>Year 6 Higher Attainers</b></p>	<p><b>*Predictions show a secure understanding of scientific principles learnt before or from own research.</b></p>	<p><b>*Decide when observations and measurements need to be checked, by repeating, to give more reliable data.</b></p>	<p><b>*Suggest a variety of reasons for anomalies. *Identify how further investigations and new questions could be made based on findings.</b></p>	<p><b><u>Living things and their habitats</u></b> *describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including <b>microorganisms</b>, plants and animals *recognise that environments can change and that this can sometimes pose dangers to living things <b>(Geography- Rainforests. Deforestation; Evolution- adaptation)</b></p>
<p><b>KS3 Progression of skills and knowledge</b></p>	<p><b>Scientific attitudes</b> *pay attention to objectivity and concern for accuracy, precision, repeatability and reproducibility *understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review * evaluate risks. <b>Experimental skills and investigations</b> * ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience * make predictions using scientific knowledge and understanding * select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying</p>	<p><b>Experimental skills and investigations</b> *use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety * make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements * apply sampling techniques.</p>	<p><b>Analysis and evaluation</b> *apply mathematical concepts and calculate results *present observations and data using appropriate methods, including tables and graphs * interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions * present reasoned explanations, including explaining data in relation to predictions and hypotheses *evaluate data, showing awareness of potential sources of random and systematic error * identify further questions arising from their results. Science – key stage 3 5 Measurement *understand and use SI units and IUPAC (International Union of Pure and Applied Chemistry) chemical nomenclature * use and derive simple equations and carry out appropriate calculations * undertake basic data analysis including simple statistical techniques.</p>	<p><b>KS3 Progression of knowledge</b> *Reproduction in humans (as an example of a mammal), including the structure and function of the male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta. • Reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms. • Differences between species. *The consequences of imbalances in the diet, including obesity, starvation and deficiency diseases. • The effects of recreational drugs (including substance misuse) on behaviour, health and life processes. *Heredity as the process by which genetic information is transmitted from one generation to the next. • A simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model. • The variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection. • Changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction. *Chemical reactions as the rearrangement of atoms. • Representing chemical reactions using formulae and using equations. • Combustion, thermal decomposition, oxidation and displacement reactions. • Defining acids and alkalis in terms of neutralisation reactions. • The pH scale for measuring acidity/alkalinity; and indicators. *The composition of the Earth. • The structure of the Earth. • The rock cycle and the formation of igneous, sedimentary and metamorphic rocks. *Magnetic fields by plotting with compass, representation by field lines. • Earth’s magnetism, compass and navigation. • Forces as pushes or pulls, arising from the interaction between two objects. • Using force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces. • Moment as the turning effect of a force. • Forces: associated with deforming objects; stretching and squashing – springs; with rubbing and friction between surfaces, with pushing</p>

## Wallace Fields Junior science progression map

	independent, dependent and control variables, where appropriate			things out of the way; resistance to motion of air and water. • Forces measured in Newtons, measurements of stretch or compression as force is changed.
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Year	Planning and Predicting	Investigating and Observing	Recording, Analysing and Evaluating	Knowledge
<b>Year 5</b>	<p>* Ask scientific questions. This may be stimulated by a scientific experience.</p> <p>*Recognise how ideas are based on evidence and creative thinking.</p> <p>*Suggest predictions based on scientific knowledge and/or real life observations.</p> <p>*Suggest methods of testing, including fair test.</p> <p>Select suitable equipment.</p> <p>*Confidently use terms: fair test, control, variables</p> <p><b>Vocabulary:</b>                      Roots, adaptation, environment, climate, xylem, phloem, pollination, germination, fertilisation, absorb, anther, petal, style, stamen, ovary, sepal, stigma, molar, incisor, canine, premolar, enamel, dentine, fluoride, ventricle, vein, artery, aorta, atrium, digestion, villi, liver, pancreas, intestines, anus, stomach, seed dispersal, photosynthesis, stomata, igneous, sedimentary, metamorphic, complete circuit, appliances, components, cell(s), vibrations, pitch, ear canal,</p>	<p>*Carry out a fair test, identifying why it is fair (some variables are controlled, one variable is changed/tested; and one variable is measured).</p> <p>*Understand why observations and measurements may need to be repeated.</p> <p>*Select information/data provided from sources.</p>	<p>*Communicate findings in a growing number of ways e.g. scientific drawings, dissections, written conclusions, graphs/tables</p> <p>*Identify trends and patterns using own sentence structures</p> <p>*Identify trends and patterns in data independently.</p> <p>*Communicate findings in tables, charts and line graphs (some scaffolding)</p> <p>*Use appropriate scientific language when making conclusions</p> <p>*Suggest improvements</p>	<p><b>Plants</b></p> <p>*identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers <b>Autumn</b></p> <p><b>ASSESSMENT (Investigating and Observing)</b></p> <p>*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</p> <p>*investigate the way in which water is transported within plants</p> <p>*explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p> <p><b>Living things and their habitats</b></p> <p>*recognise that living things (plants) can be grouped in a variety of ways</p> <p>*explore and use classification keys to help group, identify and name a variety of living things (plants-leaves) in their local and wider environment</p> <p>*recognise that environments can change and that this can sometimes pose dangers to living things (plants).</p> <p>*describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>* describe the life process of reproduction in some <b>plants</b> and animals.</p> <p>*describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, <b>plants</b> and animals</p> <p>*give reasons for classifying <b>plants</b> and animals based on specific characteristics.</p> <p><b>Animals, including humans</b></p> <p>*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</p> <p>*identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p>*describe the simple functions of the basic parts of the digestive system in humans</p> <p>*identify the different types of teeth in humans and their simple functions</p> <p>*construct and interpret a variety of food chains, identifying producers, predators and prey.</p> <p>*describe the changes as humans develop to old age.</p> <p>*identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>*recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>* describe the ways in which nutrients and water are transported within animals, including humans.</p> <p><b>Rocks</b></p> <p>*compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</p> <p>*describe in simple terms how fossils are formed when things that have lived are trapped within rock</p> <p>*recognise that soils are made from rocks and organic matter.</p> <p><b>Sound</b></p> <p>*identify how sounds are made, associating some of them with something vibrating</p>

## Wallace Fields Junior science progression map

	ear drum, pinna, fossil, state of matter, respiration, nutrition, pitch, nutrients, amphibian, properties, thermal insulator, conductor, properties, robust, Durable, malleable		in their work, giving reasons	<p>*recognise that vibrations from sounds travel through a medium to the ear</p> <p>*find patterns between the pitch of a sound and features of the object that produced it <b>Summer ASSESSMENT (Planning and Predicting)</b></p> <p><b>States of Matter</b></p> <p>*compare and group materials together, according to whether they are solids, liquids or gases</p>
Year 5 Higher Attainers	*Give further explanation in predictions using scientific knowledge and/or real life observations	*Independently calculate averages to gain one representative result from a set of repeated results	*Begin to explain anomalous data *Decide on own criteria (scale, labels, title) for drawing bar and line graphs.	<p><b>Electricity (D&amp;T topic Cross-curricular)</b></p> <p>*identify common appliances that run on electricity</p> <p>*construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <p>*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</p> <p>*recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</p> <p>*recognise some common conductors and insulators, and associate metals with being good conductors.</p> <p>*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>*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</p> <p>*use recognised symbols when representing a simple circuit in a diagram.</p>
				<p><b>Properties and changes to materials</b></p> <p>*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 <b>Spring ASSESSMENT (Recording, Analysing and Evaluating)</b></p> <p>*use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>*give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p>
KS3 Progression of knowledge				<p>*Reproduction in humans (as an example of a mammal), including the structure and function of the male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta.</p> <p>*Reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms.</p> <p>*Differences between species.</p> <p>*Waves on water as undulations which travel through water with transverse motion; these waves can be reflected, and add or cancel – superposition.</p> <p>*Frequencies of sound waves, measured in Hertz (Hz); echoes, reflection and absorption of sound.</p> <p>*Sound needs a medium to travel, the speed of sound in air, in water, in solids.</p> <p>*Sound produced by vibrations of objects, in loud speakers, detected by their effects on microphone diaphragm and the ear drum; sound waves are longitudinal.</p> <p>*Auditory range of humans and animals.</p> <p>*Pressure waves transferring energy; use for cleaning and physiotherapy by ultra-sound.</p> <p>*Waves transferring information for conversion to electrical signals by microphone.</p>

## Wallace Fields Junior science progression map

				<ul style="list-style-type: none"> <li>• Electric current, measured in amperes, in circuits, series and parallel circuits, currents add where branches meet and current as flow of charge.</li> <li>• Potential difference, measured in volts, battery and bulb ratings; resistance, measured in ohms, as the ratio of potential difference (p.d.) to current.</li> <li>• Differences in resistance between conducting and insulating components (quantitative).</li> <li>• Static electricity.</li> </ul>
				<ul style="list-style-type: none"> <li>• Reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms.</li> </ul>
				<ul style="list-style-type: none"> <li>• Reproduction in humans (as an example of a mammal), including the structure and function of the male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta.</li> <li>• The structure and functions of the gas exchange system in humans, including adaptations to function.</li> <li>• The mechanism of breathing to move air in and out of the lungs.</li> <li>• The impact of exercise, asthma and smoking on the human gas exchange system.</li> </ul>

Year	Planning and predicting	Investigating and Observing	Recording, Analysing and Evaluating	Knowledge
Year 4	<ul style="list-style-type: none"> <li>* Using sentence stems and teacher pre-modelling, suggest questions using that could be investigated</li> <li>*With support, consider what constitutes as a fair test</li> <li>*Suggest ideas about testing and make predictions.</li> <li>*Know why it is important to collect data to answer questions</li> </ul>	<ul style="list-style-type: none"> <li>*Independently make observations and comparisons which are relevant to question being investigated</li> <li>*Make measurements of temperature, length, capacity and time.</li> <li>*Begin to consider why we should repeat measurements</li> <li>*With support, children to choose appropriate equipment to carry out fair tests, recognising and explaining why it is fair</li> </ul>	<ul style="list-style-type: none"> <li>*Begin to independently comment on general patterns in results, alongside comparative tests (ranked results)</li> <li>*Explain what the evidence shows in a scientific way and whether it supports predictions.</li> <li>*Communicate findings orally and in written form (including scientific drawings) with suggested language</li> <li>*Suggest improvements in their work</li> <li>*Begin to use simple comparative statements e.g. '...er and ...er'</li> <li>*Consider what would be done differently if they repeated the enquiry</li> <li>*Use Venn/Carroll diagrams to classify/sort</li> </ul> <p><b>Vocabulary:</b> Friction, attract, magnetism, force, repel, pole, gravity, air resistance, lever, pulley, gear,</p>	<p><b>Forces and magnets</b></p> <ul style="list-style-type: none"> <li>*compare how things move on different surfaces</li> <li>*observe how magnets attract or repel each other and attract some materials and not others</li> <li>*describe magnets as having two poles</li> <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 <b>air resistance</b>, water resistance and <b>friction</b>, that act between moving surfaces (and up thrust)</li> </ul> <p><b>Autumn ASSESSMENT (Planning and Predicting)</b> <b>(D and T topic cross curricular)</b></p> <ul style="list-style-type: none"> <li>*recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</li> </ul> <p><b>States of Matter</b></p> <ul style="list-style-type: none"> <li>* compare and group materials together, according to whether they are solids, liquids or gases</li> <li>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) <b>Spring ASSESSMENT (Investigating and Observing)</b> <b>(Geography cross curricular)</b></li> <li>* identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> </ul> <p><b>Properties and changes of materials</b></p> <ul style="list-style-type: none"> <li>*demonstrate that dissolving, mixing and changes of state are reversible changes</li> </ul> <p><b>Earth and space</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> </ul>

## Wallace Fields Junior science progression map

			<p>particles, evaporation, condensation, solar system, orbit, mechanism, rotation, clockwise, anticlockwise, axis, spherical, solids, liquids, gases, mini-beasts, insect, prey, predator</p>	<p>* use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p> <p><b>Light</b>            *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.            *recognise that light appears to travel in straight lines</p> <p><b>Living things and their 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 <b>Summer ASSESSMENT (Recording, Analysing and Evaluating)</b>            *recognise that environments can change and that this can sometimes pose dangers to living things.            *describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird            * describe the life process of reproduction in some plants and animals.            *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>Year 4 Higher Attainers</b></p>	<p>*Begin to link predictions to reasons 'I think... because...'            *Consider variables            *Encourage investigation of own questions</p>	<p>*Consider which result should be chosen from a set of repeated results (which result is most reliable)</p>	<p>*Use own scientific knowledge within conclusions            *Independently identify ways in which the method was adapted as they progressed.</p>	<p><b>Animals, including humans</b>            *construct and interpret a variety of food chains, identifying producers, predators and prey.</p>
<p><b>KS3 Progression of knowledge</b></p>				<p>*Gravity force, weight = mass x gravitational field strength (g), on Earth <math>g=10 \text{ N/kg}</math>, different on other planets and stars; gravity forces between Earth and Moon, and between Earth and Sun (qualitative only).            *Our Sun as a star, other stars in our galaxy, other galaxies.            *The seasons and the Earth's tilt, day length at different times of year, in different hemispheres.            *The light year as a unit of astronomical distance.</p> <p>*The similarities and differences between light waves and waves in matter.            *Light waves travelling through a vacuum; speed of light.            *The transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface.            *Use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and action of convex lens in focusing (qualitative); the human eye.            *Light transferring energy from source to absorber leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras.            *Colours and the different frequencies of light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection.</p>

## Wallace Fields Junior science progression map

Year	Planning and Predicting	Investigating and Observing	Recording, Analysing and Evaluating	Knowledge
Year 3	<ul style="list-style-type: none"> <li>* Ask relevant questions about topic and respond to suggestions</li> <li>*With support, contribute ideas about testing.</li> <li>*With support, make predictions</li> <li>*With support, begin to use the term fair test and understand what makes it fair.</li> <li>*With support, plan comparative (ranked) tests and fair tests.</li> </ul>	<ul style="list-style-type: none"> <li>*Encourage careful and systematic observations</li> <li>*Measure length and time.</li> <li>*Follow methods and instructions safely to carry out tests</li> <li>*Use standard units of measurement e.g. cm, minutes and seconds</li> <li>*Use a range of practical resources with growing accuracy</li> </ul>	<ul style="list-style-type: none"> <li>*Comment on what happened, what was expected to happen and consider simple conclusions</li> <li>*With support, identify simple patterns in collected data.</li> <li>*Communicate findings orally, through scientific drawings, annotated photographs and in written form</li> <li>*Answers to questions are consistent with evidence discovered.</li> </ul> <p><b>Vocabulary:</b>                      Reproduce, nutrition, respiration, life cycle, seed, skeleton, joint, muscle, roots, light, water, nutrients, life cycle, protection, reflected, surfaces, opaque, transparent, translucent, conductor, appliance, mains, wires, cell (s), shadow, vibration, circuit, properties, solid, liquid, gas</p>	<p><b>Animals, including humans</b></p> <ul style="list-style-type: none"> <li>*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</li> <li>*identify that humans and some other animals have skeletons and muscles for support, protection and movement.</li> </ul> <p><b>Autumn ASSESSMENT (Recording, analysing and Evaluating)</b></p> <ul style="list-style-type: none"> <li>*describe the simple functions of the basic parts of the digestive system in humans</li> <li>*identify the different types of teeth in humans and their simple functions</li> <li>*describe the changes as humans develop to old age.</li> <li>*identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</li> <li>*recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</li> <li>* describe the ways in which nutrients and water are transported within animals, including humans.</li> </ul>
				<p><b>Light</b></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 <b>(Cross curricular P.S.H.E.)</b></li> <li>*recognise that shadows are formed when the light from a light source is blocked by an opaque object</li> <li>* find patterns in the way that the size of shadows change. <b>Spring ASSESSMENT (Investigating and Observing)</b></li> <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>Sound</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>Properties and changes to materials</b></p> <ul style="list-style-type: none"> <li>*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</li> <li>*give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</li> </ul>
				<p><b>Light</b></p> <ul style="list-style-type: none"> <li>*recognise that shadows are formed when the light from a light source is blocked by an opaque object</li> <li>* find patterns in the way that the size of shadows change.</li> <li>*recognise that light appears to travel in straight lines</li> </ul>
				<p><b>Plants</b></p> <ul style="list-style-type: none"> <li>*identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</li> </ul>

## Wallace Fields Junior science progression map

				<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 <b>Summer ASSESSMENT (Planning and Predicting)</b></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>
Year 3 Higher Attainers	*Use prior knowledge to generate questions and inform predictions *Independently explain fair testing	*Explain why a test is fair *Consider the advantages and disadvantages of a ranking system (comparative testing)	*Suggest ways the test could be improved next time linked to scientific approach	<p><b>Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>*describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, <b>plants</b> and animals</li> <li>*give reasons for classifying <b>plants</b> and animals based on specific characteristics.</li> </ul>
				<p><b>Electricity</b> (D&amp;T Cross curricular- Electricity Night lights)</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> <li>* use recognised symbols when representing a simple circuit in a diagram.</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> </ul>
KS1 Progression of knowledge and skills	*ask simple questions and recognise that they can be answered in different ways	*Observe closely, using simple equipment * perform simple tests	* identify and classify *use their observations and ideas to suggest answers to questions * gather and record data to help in answer questions.	<ul style="list-style-type: none"> <li>*identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</li> <li>*identify and describe the basic structure of a variety of common flowering plants, including trees.</li> </ul>
				<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> <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>
				<ul style="list-style-type: none"> <li>*distinguish between an object and the material from which it is made</li> <li>* identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</li> <li>*describe the simple physical properties of a variety of everyday materials</li> <li>* compare and group together a variety of everyday materials on the basis of their simple physical properties.</li> </ul>
				<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>
				<ul style="list-style-type: none"> <li>*explore and compare the differences between things that are living, dead, and things that have never been alive</li> <li>* identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other</li> <li>* identify and name a variety of plants and animals in their habitats, including microhabitats</li> <li>* describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.</li> </ul>
				<ul style="list-style-type: none"> <li>* observe and describe how seeds and bulbs grow into mature plants</li> <li>* find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</li> </ul>



**Wallace Fields Junior science progression map**

				<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>
				<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>