

Nelson Academy Science Subject Overview and Endpoints 25-26

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Reception	See EYFS Overview	See EYFS Overview	See EYFS Overview	See EYFS Overview	See EYFS Overview	See EYFS Overview
Year 1	<p>Keeping warm in the ice age</p> <ul style="list-style-type: none"> - Animals and their needs - Classification. Herbivores, carnivores, omnivores and extinct animals. <p>Insulation test – how to keep a cup of coffee warm. Y1 Insulators.pdf</p> <p>What do owls eat? Herbivore, carnivore, omnivore? Pellet Pack and FSC Guide Bundle - The Barn Owl Trust</p> <p>Whose poo? Investigation Science- Investigation Whose-poo.docx</p>	<p>Seasons and the Weather.</p> <p>Materials (weather effecting materials)</p> <ul style="list-style-type: none"> - Recognise and name widely used materials. - Explain why materials are chosen for specific tasks based on their properties - Natural vs man made - Four seasons and local weather patterns - Sun as a source of light and warmth - Daily weather changes <p>Insulation test – how to keep a cup of coffee warm. Y1 Insulators.pdf</p>	<p>Taking care of the Earth.</p> <ul style="list-style-type: none"> - Importance of conservation to conserve limited resources. - Practical measures for conserving energy and resources. - Understand that some materials can be recycled. - Harmful effects of pollution and how we can reduce pollution. <p>Making paper out of old newspapers (blender, frame with chiffon to spread mix on) KS1 Plastic Litter Pick Investigation Activity - Twinkl</p>	<p>Materials and magnets.</p> <ul style="list-style-type: none"> - use correct vocabulary to describe different materials and their properties and sort materials into groups based on their properties. - Understand the difference between magnetic and non magnetic. - Recognise and name a variety of widely used materials. For example: wood, plastic, rock, paper, metal. - Explain why materials are chosen for specific tasks based on their properties. - Become aware that some materials are natural, and some are man-made 	<p>Human body – 5 senses.</p> <ul style="list-style-type: none"> - Identify the 5 senses and associated body parts. <p>Blindfold taste and smell tests. Feely bags. Five Senses Experiment Easy Kids Science</p> <p>The Senses: Key Stage 1 Science Investigation by Helen Bennett on Prezi</p>	<p>Looking after living things, plants and growth</p> <p>Plants</p> <ul style="list-style-type: none"> - What plants need to grow - Basic parts of plants - Plants make their own food - Deciduous and evergreen - Crops and farming <p>Test plant growth – in cupboard (dark), no soil, no water. Opportunity to teach controls and only changing one variable. Lesson: What plants need to grow and stay healthy KS1 Science Oak National Academy</p>

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		<p>Weather station – measure temperature, rainfall, wind direction for a week (Equipment in Spinny)</p>	<p>Challenge school to save even more energy one week – track here.</p> <p>Adult dashboard for Nelson Academy Energy Sparks</p>	<p>Use real materials to group and sort rather than pictures – photograph</p> <p>Magnetism hunt</p> <p>Test properties of materials to see suitability for a certain task.</p> <p>Is it waterproof? Lesson: Waterproof materials: plan and do KS1 Science Oak National Academy</p> <p>It is transparent? Lesson: Transparent and opaque materials: plan and do KS1 Science Oak National Academy</p> <p>Materials strength test Experiment on Strength of Materials</p>		
Year 2	<p>Forces – friction, air resistance, water resistance.</p> <p>Different ramp surfaces (in science cupboard)</p>	<p>Forces – friction, air resistance, water resistance.</p>	<p>Introduction to Astronomy</p> <ul style="list-style-type: none"> - movement of the Earth and other planets relative to the sun 	<p>The Earth</p> <ul style="list-style-type: none"> -The shape of the Earth, the horizon -Oceans and continents -North Pole and South Pole, Equator 	<p>Living things and their environment.</p> <ul style="list-style-type: none"> - Living things live in environments to which they 	<p>Living things and their environment.</p> <ul style="list-style-type: none"> - Living things live in environments to which they are particularly suited.

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	<p>Different size parachutes Test float and sink</p>		<ul style="list-style-type: none"> - describe the movement of the moon relative to the Earth (Planets, sun, moon) <p>Human demonstrations and make models of rotate and revolve Make model with motor (link with Y5 who are making circuits this half term)</p>	<p>-Inside the Earth Layers: crust, mantle, core High temperatures</p> <p>Look at horizon – can they see a curve? Pictures from space – evidence the earth is round. 3d Model – layers of earth</p>	<p>are particularly suited.</p> <ul style="list-style-type: none"> - Specific habitats and what lives there <p>activities-and-games-animals-habitats.pdf</p> <p>Look at habitats around school – pond, tree, under a log. Quadrants – how many different living things in a set space</p> <p>Habitat diorama of different habitats – include elements like plants, animals and water sources</p> <p>Link with geography <u>Fieldwork: Investigating habitats in our school grounds - Geographical Association</u></p>	<ul style="list-style-type: none"> - Specific habitats and what lives there - The food chain - Focus on ocean habitat - Environmental change and habitat destruction <p>Map a food chain in our school grounds</p> <p>Prey/predators Pellet Pack and FSC Guide Bundle - The Barn Owl Trust (if not done in Y1)</p>
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<p>Year 3</p>	<p>Magnetism</p> <ul style="list-style-type: none"> - Invisible forces - Magnetic poles - Magnetic field - Law of magnetic attraction. <p style="color: red;">Magnet testing – what is magnetic. Can they spot a pattern? Are all metals magnetic? Test different strengths of magnet.</p>	<p>Simple machines – Levers and pulleys</p> <ul style="list-style-type: none"> - How specific tools are made to perform specific jobs - How simple machines help make work easier, and how they are applied and combined in familiar tools and machines - e.g pulleys and levers, axels and wheels <p style="color: red;">Machine hunt in school. Examples in their lives of each type of machine (with photos) See science cupboard for equipment – hands on testing and use of machines. How much weight can the pully lift etc.</p> <p>Teach About Simple Machines Science Buddies Blog</p>	<p>Cycles of Nature</p> <p>Water cycle</p> <ul style="list-style-type: none"> - Most of the Earth’s surface is covered by water - The water cycle <p>Seasonal cycles</p> <ul style="list-style-type: none"> - Spring: sprouting, sap flow in plants, mating and hatching - Summer: growth - Fall: ripening, migration - Winter: plant dormancy, animal hibernation <p style="color: red;">Water cycle in a zip lock bag. (Draw the</p>	<p>Life cycles</p> <ul style="list-style-type: none"> - birth, growth, reproduction, death - Reproduction in plants and animals <p>Life cycle of an insect</p> <p style="color: red;">Frog spawn from the pond? Hatch insect from larvae Butterfly hatching kit</p>	<p>Insects</p> <ul style="list-style-type: none"> - Helpful and harmful insects - Distinguishing characteristics - Social insects <p style="color: red;">Visit from bee keeper. Insects in acrylic to identify animal parts (in Spinney). Insect hunt in school grounds – observe using magnifying glasses.</p>	
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			<p>water cycle on the bag with sharpie) How to Make a Water Cycle in a Bag STEAM Activity for Kids</p> <p>Prove evaporation – measured amount of water in a cup, put on radiator/heat (or in sun/shade) Measure after. Evaporation-and-codensation-Experiments.pdf</p> <p>Grow bean sprouts/cress/bulbs to observe sprouting</p>			
Year 4	<p>Animal classification</p> <ul style="list-style-type: none"> - Scientists classify animals according to the characteristics they share - Cold and warm blooded - Vertebrate and invertebrate 	<p>Ecology</p> <ul style="list-style-type: none"> - Habitats, interdependence of organisms and their environment - The concept of a 'balance of nature' (constantly 	<p>Astronomy</p> <ul style="list-style-type: none"> - Spherical bodies - Day and night - Length of days - Phases of moon - Seasons <p>NB ensure they understand shadow</p>	<p>Human body – Muscles, Skeletal system, nervous system</p> <ul style="list-style-type: none"> - Parts and function of skeleton - Musculo-skeletal connection - Brain sends messages around the body using nerves 	<p>Light Optics and Sound</p> <p>Light</p> <ul style="list-style-type: none"> - Light travels in straight lines (demonstrated by shadows) - Transparent and opaque - Reflection 	


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	<ul style="list-style-type: none"> - Examples and characteristics of each class <p style="color: red;">Fish bones vs crab shell Animal skeletons</p>	<p>changing, not a static condition)</p> <ul style="list-style-type: none"> - Man-made threats to the environment <p>Air pollution: emissions, smog Water pollution: industrial waste, run-off from farming</p> <ul style="list-style-type: none"> - Measures we can take to protect the environment (for example, conservation, recycling). (Link to English) <p style="color: red;">Air pollution testing</p> <p>07-Swab-Sample-Lesson-Plan-V1.0.pdf</p> <p style="color: red;">Water testing – from the pond.</p> <p>Share it! Science : Science Teacher's Toolbox: Testing Water Quality</p>	<p style="color: red;">now you have moved light, optics and sound to Summer 1).</p> <p style="color: red;">Spherical earth – disappearing ship model</p> <p>BBC Two - Science Clips Investigates, Earth, Sun and Moon, How do we know the Earth is spherical?</p> <p style="color: red;">Model to explain day and night</p> <p>Day, night and seasons - Space physics: Video playlist - BBC Bitesize</p>	<ul style="list-style-type: none"> - Cerebellum and medulla. <p>Digestive system</p> <ul style="list-style-type: none"> - body parts and functions involved in taking in food and getting rid of waste. - Salivary glands, taste buds - Teeth: incisors, canines, premolars and molars - Oesophagus, stomach, liver, small intestine, large intestine - Healthy diet and food pyramid <p style="color: red;">Digestive system in a pair of tights STEM</p> <p style="color: red;">Teacher lab – teeth (cross curricular with art) West Norfolk Teacher Lab - teaching-primary-science-through-creativity- -all-years.pptx</p>	<ul style="list-style-type: none"> - Mirrors: plane, concave, convex - The spectrum - Parts of eye <p>Sound</p> <ul style="list-style-type: none"> - Sound as vibration - How sound travels - Qualities of sound including pitch - How the human ear works <p style="color: red;">Hamilton is great for this...sign up for free</p> <p style="color: red;">Light – use mirrors, lenses, prism to split light. Test how transparent things are. Theatre Lighting Technicians Hamilton Brookes</p> <p style="color: red;">Sound – Demonstrate sound waves – rice on drum, observe vibration of strings.</p>	
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					<p>Investigate boomwhackers/ recorders/ long and short strings on a guitar – what affects pitch?</p> <p>Year 4 Science: Sound - Listen Up! Hamilton Brookes</p> <p>Test how far sound travels</p>	
Year 5	<p>Rocks and soils</p> <ul style="list-style-type: none"> - Formation and characteristics of metamorphic, igneous, and sedimentary rock - The formation of soil: topsoil, subsoil, bedrock <p>Rock testing (float/sink, hardness, permeability) Sorting rocks Wormery</p>	<p>Solutions and changing states of matter (including reversible changes)</p> <ul style="list-style-type: none"> - Solids, liquids and gasses and how states can be changed. - Solvent and solute - The dissolved substance is present in the solution even though you cannot see it. 	<p>Electricity</p> <ul style="list-style-type: none"> - Electricity as the charge of electrons - Static electricity - Basic parts of simple electric circuits - Conductors and insulators materials - Safety rules for electricity 	<p>Human body: Circulatory system</p> <ul style="list-style-type: none"> - Parts and function of heart - Different types of blood cells and their functions. <p>Heart dissection (Lamb and Ox)</p> <p>Model blood if time</p> <p>Heart rate investigation</p> <p>Y6plan Heartrate pose 2020 (1).docx</p>	<p>Human body: respiratory system</p> <ul style="list-style-type: none"> - Process of taking in oxygen and getting rid of carbon dioxide - Parts of respiratory system - Dangers of smoking <p>Lung dissection (order a pluck)</p>	<p>Evolution of plants and animals</p> <ul style="list-style-type: none"> - Variation in offspring - Environmental adaptation - Adaptation may lead to evolution - Darwin <p>Cast fossils (plaster of Paris)</p> <p>Step by Step Guide on How to make Cast Fossils with Kids</p>

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	<p>The Rock Cycle With Starburst Candy - YouTube</p>	<ul style="list-style-type: none"> - Concentration and saturation <p>Dissolution investigations – what dissolves, how to make something dissolve faster (stir, heat, size of particles eg sugar lump vs cube) Show evaporation to leave salt behind in a mixture. Separating mixtures – sieving, evaporating</p>	<p>Hands on build circuits</p> <p>Conductor/ insulator testing</p> <p>Unit: Simple electrical circuits KS2 Science Oak National Academy</p>		<p>Model lungs (bottle and balloon)</p> <p>Build a lung</p>	<p>Bird beak investigation</p> <p>Build a lung</p>
Year 6	<p>Plant structures and processes</p> <ul style="list-style-type: none"> - Parts and structure of vascular and non-vascular plants - Photosynthesis - Reproduction in plants <p>Dissection of flower – tulip or daffodil are ideal</p>		<p>Classifying living things</p> <ul style="list-style-type: none"> - Kingdom - Phylum - Class - Order - Family - Genus - Species <p>Year 6 Science: Living Things and Their Habitats - Classification Connoisseurs Hamilton Brookes</p>		<p>Human Body: Hormones and reproduction</p> <ul style="list-style-type: none"> - Endocrine system and the role in puberty including thyroid, pituitary, pancreas, adrenal glands. <p>Hormones and receptors game</p>	<p>Human body: Life cycles and reproduction</p> <ul style="list-style-type: none"> - Male and female reproductive organs. reproduction: intercourse, fertilisation, zygote, implantation of zygote in the uterus, pregnancy, embryo, foetus, newborn

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	<p> Tulip Flower Dissection Daffodil Flower Dissection </p> <p> Transportation in plants – use celery/ carnations. Note: ink from a blue felt tip pen in works best – soak the inner in water to extract ink </p> <p> 60025-biology-report-transport-of-water-in-plants--anna.pdf </p>		<p> Classification Exploration Natural History Museum </p>		<p> Endocrine Excitement! - Activity - TeachEngineering </p>	<p> Model birth (child friendly – try this) </p> <p> Use a Balloon and Ping Pong Ball to Show How the Cervix Thins (Effacement) and Dilates During Labor </p>
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- By the end of Key Stage 1, pupils will:	- By the end of Key Stage 2, pupils will:
<p>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 observations and ideas to suggest answers to questions Gather and record data to help answer questions know how plants grow and what they need to survive. (Y1) Know about common plants and trees, their structure and the differences between them. (Y1) Know about the four seasons, the associated weather and the varying day lengths throughout the year. (Y1) Know the basic needs of animals and how their young are similar to their parents (Y1) Know about a variety of common animals and their structure: carnivores, herbivores and omnivores. (Y1) Know about our 5 senses and how we use them. (Y1) Know the different materials we use and their properties. (Y1)</p> <p>Know how surfaces affect the movement of objects (y2) Know what a habitat is and how it is suited to a specific animal. (Y2) Know how animals obtain their food and what a food chain is. (Y2) Know about the diversity of ocean life and what threatens our oceans. (Y2) Know how environmental change can pose dangers to habitats. (Y2) Identify basic parts of our body systems and know and the importance of a healthy lifestyle. (Y2) Describe and classify objects according to what they are made of, and according to their physical properties (Y2) Know that the sun is a star and a source of energy, light and heat (Y2) Know that the earth revolves around the sun and that it rotates. (Y2) Know that when it is day where you are, it is night for people on the opposite side of the Earth. (y2) Know the layers of the Earth and</p>	<p>Ask relevant questions and use different types of scientific enquiries to answer them. Be able to set up simple practical enquiries, comparative and fair tests. Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment. Gather, record, classify and present data in a variety of ways to help in answering questions. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Identify differences, similarities or changes related to simple scientific ideas and processes. Use straightforward scientific evidence to answer questions or to support their findings.</p> <p>Know the life processes that happen each season (Y3) Know the life cycle and how plants and animals reproduce. (Y3) Know the Earth's surface is mostly covered by water and what the water cycle is. (Y3) Know the physical characteristics and life cycle of insects and how they can be both helpful and harmful. (Y3) Know how magnets can attract and repel depending on each pole. (Y3) Know how machines help make work easier, and how they are applied and combined in familiar tools (y3)</p> <p>Know how living things are grouped through classification and how environmental changes effect living things. (Y4) Know the role of producers, consumers and decomposers in the food chain (y4) Know the functions of our skeleton and muscles (y4) Understand how our digestive system works, the functions of our teeth and the food chain process. (Y4) Know the importance of nutrients from a varied and balanced diet. (Y4) Know that light is reflected from surfaces and this is needed in order for us to see. (Y4) Know how to protect our eyes. (Y4) Know how shadows are formed. (Y4) Understand how we hear sound and the difference between volume and pitch. (Y4) Understand the shape and movement of the planets in the solar system. (Y4)</p> <p>Know the main parts of the human circulatory system and their functions. (Y5) Understand the impact lifestyle can have on our bodies. (Y5) Understand how fossils are formed. (Y5)</p>

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	<p>Know the formation and characteristics of different kinds of rocks (Y5)</p> <p>Know how to group different kinds of rocks based on their properties. (Y5)</p> <p>Know how mountains are formed and that movement of the tectonic plates can result in natural disasters (Y5)</p> <p>Know how to construct a simple circuit and which materials are conductors/ insulators. (Y5)</p> <p>Understand that the number and voltage of cells used in a circuit impact the lamp/buzzer. (Y5)</p> <p>Know that everything is made of matter and made up of parts too small for us to see. (Y5)</p> <p>Know the names and common examples of 3 states of matter. (Y5)</p> <p>Know how to group materials into solids, liquids and gases and how their states can be changed. (Y5)</p> <p>Know how to separate mixtures and which changes of state are reversible. (Y5)</p> <p>Understand how living things have adapted to their environment thus resulting in evolution. (Y5)</p> <p>Understand that offspring inherit characteristics but are not identical to their parents. (Y5)</p> <p>Understand the functions of the different parts plants and the life cycle of plants through pollination. (Y6)</p> <p>Understand reproduction and the differences in life cycles. (Y6)</p> <p>Understand the effects of aging on our bodies. (Y6)</p>
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