

Whole School Science Curriculum Progression

Curriculum Intent Statement: The breath of our **Science** curriculum is adapted to our beliefs about the needs of our pupils and our values as a school.

We have agreed that within our **Science** curriculum, Welton children need:

- To develop their scientific understanding and vocabulary through first hand experiences
- To make use of our outdoor environment and the local area to enhance scientific learning
- To appreciate the subject through aspirational visitors, role models and events for future STEM careers

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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<p>Breadth of study (Concepts) (NC Ref)</p>	<p>(ELG 2022 the Natural World) <i>Explore the natural world around them, making observations and drawing pictures of animals and plants</i> <i>Understand some important processes and changes in the natural world around them, including the seasons</i></p> <p>Plants Early Years MSNSP: Know the names of some plants and wildflowers in the school grounds and locality Stages of growth and death of plants Know that seeds need water and warmth to grow Observe the changes that take place to plants and trees in autumn, winter and spring Know the basic parts of a plant, flower, stem, root, and basic parts of a tree, trunk, root, branches</p> <p>Materials Early Years MSNSP: Know the names of some materials that are more likely to float and sink Know that some materials are waterproof, and some are not, and the names of some common materials: wood, paper,</p>	<p>Plants (Plant Life) Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. • Identify and describe the basic structure of a variety of common flowering plants, including trees.</p> <p>Everyday Materials (Substances and Properties) Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. • Describe the simple physical properties of a variety of everyday materials. • Compare and group together a variety of everyday materials on the basis of their simple physical properties.</p> <p>Animals Including humans (Animals and Humans) Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. • Describe and compare</p>	<p>Living Things & THEIR Habitats (Living Things & Their Habitats) Explore and compare the differences between things that are living, dead, and things that have never been alive Identify that most living things live in habitats to which they are suited Identify and name a variety of plants and animals in their habitats, including micro-habitats 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</p> <p>Uses of Everyday Materials (Substances and Properties) Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p> <p>Plants (Plant Life) Observe and describe how seeds and bulbs grow into mature plants. • Find out and describe</p>	<p>Forces & Magnets (Movement, Forces and Magnets) Compare how things move on different surfaces. • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract or repel each other and attract some materials and not others. • 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. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing.</p> <p>Animals Including humans (Animals and Humans) • 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. • Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p>Rocks</p>	<p>Electricity (Electricity) Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors.</p> <p>Sound (Sound and Hearing) Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sounds travel through a medium to the ear. Find patterns between the pitch of a sound and features of the object that produces it. Find patterns between the volume of a sound</p>	<p>Forces (Movement, Forces and Magnets) Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object Identify the effects of air resistance, water resistance and friction, that act between moving surfaces Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p> <p>Earth and Space (Earth in Space) Describe the movement of the Earth, and other planets, relative to the Sun in the solar system Describe the movement of the Moon relative to the Earth Describe the Sun, Earth and Moon as approximately spherical bodies 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>Properties & Changes Of Materials (Substances and properties) Compare and group together everyday materials on the basis of their properties,</p>	<p>Animals Including humans (Animals and Humans) Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function Describe the ways in which nutrients and water are transported within animals, including humans.</p> <p>Evolution and Inheritance (Evolution and Inheritance) A) 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. B) Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. • Recognise that living things produce offspring of the same kind, but normally offspring vary</p>
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<p>plastic, metal, glass, fabric</p> <p>Know that some materials can be mixed to make stronger materials, eg when building a wall</p> <p style="text-align: center;">Animals</p> <p>Early Years MSNSP: Know the names of animals and baby animals that live on a farm</p> <p>Learn what farm animals need to grow and a simple explanation of their life cycles</p> <p>Learn what a habitat is and what an animal needs from its habitat- food, water, shelter</p> <p>Identify some minibeasts and their habitats</p> <p>Identify why a woodland is a suitable habitat for some animals.</p> <p>Identify some animals living in a polar habitat and their features.</p> <p>Know how they adapt to survive in cold conditions.</p>	<p>the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. Identify and name a variety of plants and animals in their habitats, including micro-habitats</p> <p style="text-align: center;">Seasonal Change (Plant Life, Living Things & Their Habitats)</p> <p>Observe changes across the 4 seasons. Observe and describe weather associated with the seasons and how day length varies</p> <p><i>(Best covered with at least one lesson in appropriate season)</i></p>	<p>how plants need water, light and a suitable temperature to grow and stay healthy.</p> <p style="text-align: center;">Animals Including humans (Animals and Humans)</p> <p>Know that animals, including humans, have offspring which grow into adults. Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	<p style="text-align: center;">(Substances and Properties)</p> <p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. • Describe in simple terms how fossils are formed when things that have lived are trapped within rock. • Recognise that soils are made from rocks and organic matter</p> <p style="text-align: center;">Plants (Plant Life)</p> <p>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</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. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</p> <p style="text-align: center;">Light (Light and Seeing)</p> <p>Recognise that they need light in order to see things, and that dark is</p>	<p>and the strength of the vibrations that produced it.</p> <p>Recognise that sounds get fainter as the distance from the sounds source increases.</p> <p style="text-align: center;">States of Matter (Substances and Properties)</p> <p>Compare and group materials together, according to whether they are solids, liquids or gases.</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.</p> <p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p> <p style="text-align: center;">Living Things & Their Habitats (Living Things & Their Habitats)</p> <p>Recognise that living things can be groups in a variety of ways. Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Recognise that environments can change and that this can</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</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p style="text-align: center;">Living Things & Their Habitats (Living Things & Their Habitats)</p> <p>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.</p> <p style="text-align: center;">Animals Including humans (Animals and Humans)</p> <p>Describe the changes as humans develop to old age.</p>	<p>and are not identical to their parents. • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p style="text-align: center;">Electricity (Electricity)</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 style="text-align: center;">Light (Light and Seeing)</p> <p>Recognise that light appears to travel in straight lines</p> <p>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</p> <p>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</p> <p>Use the idea that light travels in straight lines to</p>
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<p>Threshold Concepts</p> <p>Biology Chemistry Physics</p>	<p><i>Plant Life Animals & Humans Substances & their properties</i></p>	<p><i>Plant Life Animals & Humans Substances & their properties</i></p>	<p><i>Plant Life Animals & Humans Living things and their environments Evolution & Inheritance Substances & their properties</i></p>	<p><i>Plant Life Animals & Humans Living things and their environments Substances & their properties Movement, Forces & Magnets Light & Seeing</i></p>	<p><i>Animals & Humans Living things and their environments Substances & their properties Sound & Hearing Electricity</i></p>	<p><i>Plant Life Animals & Humans Living things and their environments Evolution & Inheritance Substances & their properties Movement, Forces & Magnets Earth in Space</i></p>	<p><i>Animals & Humans Living things and their environments Evolution & Inheritance Light & Seeing Earth in Space</i></p>
<p>Essential Prior Learning</p>	<p>Nursery experiences- EYFS</p>	<p>See EYFS Curriculum above</p>	<p>Plants (Y1) Animals including humans (Y1) Everyday Materials (Y1)</p>	<p>Plants (Y1,2) Animals including humans (Y1,2) Living Things & Their Habitats (Y2) Materials (Y1,2)</p>	<p>Animals including humans (Y1,2,3) Living Things & Their Habitats (Y2) Plants (Y1,2,3) Materials (Y1,2)</p>	<p>Plants (Y1,2,3) Animals including humans (Y1,2,3,4) Living Things & Their Habitats (Y2,4) Materials (Y1,2,4)) Forces (Y3)</p>	<p>Animals including humans (Y1,2,3,4,5) Plants (Y1,2,3) Living things & their habitats (Y2,4,5) Light (Y3) Electricity (Y4)</p>
<p>Vocabulary</p>	<p>leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud</p>	<p>leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud</p>	<p>life processes, living, dead, never been alive, food chain, food sources, habitat, microhabitat, depend, survive.</p>	<p>friction, opposite direction, opposite force, magnetic, poles, north pole, south pole, repel, attract, magnetic field.</p>	<p>electrical circuit, cell, battery, component, connection, short circuit, switch, component, conductors, metallic, non-metallic, insulators</p>	<p>Gravity, air resistance, water resistance, friction, pulleys, levers, gears, machines. solar system, orbit, rotate, spherical.</p>	<p>blood vessels, carbon dioxide, pumped, nutrients, water, oxygen, muscles, human circulatory system, diet, exercise, drugs, lifestyle, deficiencies</p>

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	<p>object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through</p> <p>vertebrate, invertebrate, reptile, fish, amphibian, carnivore, herbivore , parts of the human body associated with senses, main body parts head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth)</p>	<p>object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through</p> <p>vertebrate, invertebrate, reptile, fish, amphibian, carnivore, herbivore , parts of the human body associated with senses, main body parts head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth)</p>	<p>opaque, transparent and translucent, reflective, non-reflective, flexible, rigid.</p> <p>light, shade, sun, warm, cool, water, grow, nutrients, germination, seed, berry, fruit.</p> <p>offspring, reproduction, growth, young/old stages (examples - chick/hen, baby/child/adult, caterpillar/butterfly), exercise, heartbeat, breathing, hygiene, germs, disease, food types (with examples)</p>	<p>nutrients, carbohydrates (including sugars), protein, vitamins, minerals, fats, sugars, water - and fibre, skeleton, muscles, vertebrate - mammals, fish, reptiles, amphibians, birds</p> <p>igneous, sedimentary, metamorphic, fossils, soils</p> <p>roots, stems, trunk, flower, blossom, nutrients, minerals, anchor, photosynthesis, pollination, seed dispersal, reproduce,</p> <p>light, dark, reflect, reflective, shadows, opaque, translucent, light source.</p>	<p>Sound, vibrations, vacuum, volume, pitch, sound insulator.</p> <p>Solid, liquid, gas, melting, freezing, boiling, evaporation, condensation, water cycle.</p> <p>Classification, habitat, environment, seasons, vertebrates - mammals, fish, reptiles, amphibians, birds.</p> <p>Digestion, saliva, oesophagus, small/large intestine, nutrients, digestive system, large intestine, retum, anus, incisors for cutting; canines for tearing; and molars and premolars for grinding (chewing), producers, predators, prey</p>	<p>Properties, state, hardness, transparency, electrical and thermal conductivity and attraction, dissolve, solution, insoluble, sediment, filtering, sieving, evaporation, mixture, changes orf state, reversible, irreversible.</p> <p>offspring, eggs, hatch, metamorphosis, sexually, asexually, pollintaion</p> <p>babies, adults, puberty, primary and secondary sexual characteristics, reproduce</p>	<p>characteristics, vertebrates, invertebrates, sexual reproductinon, identical, adapted, environment, variation, evolution.</p> <p>straight lines, light sources, reflected, transparent , refraction.</p> <p>circuit, battery, voltage, switch, bulb, motor, buzzer</p>
Trips and outdoor experiences		Local Walks		Moon's Hil Quarry, Stoke St Michael - Earth Science Centre			

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	Biology				Chemistry	Physics				
Threshold Concepts	<u>Plant Life</u>	<u>Animals & Humans</u>	<u>Living things and their Habitats</u>	<u>Evolution & Inheritance</u>	<u>Substances & their properties</u>	<u>Movement, Forces & Magnets</u>	<u>Light & Seeing</u>	<u>Sound & Hearing</u>	<u>Electricity</u>	<u>Earth in Space</u>
EYFS	<i>Plants</i>	<i>Animals including Humans</i>			<i>Everyday materials</i>					Seasonal Change (Best done as at least one lesson in appropriate season)
1	Plants: Identify & Describe	Animals including Humans : Identify, Name, Compare, Senses			Everyday Materials: Identify & Describe					
2	Plants: Seeds & Bulbs Growing into Healthy Plants	Animals including Humans: Growing up & taking care	Living Things & Their Habitats: Alive/Dead & habitats		Uses Of Everyday Materials: Uses					
3	Plants: Function of Parts, Needs, Life Cycle	Animals including Humans: Nutrition, Skeleton, Muscles			Rocks: Classification, Fossils, Soils	Forces & Magnets: How They Work	Light: Light, Reflection, Shadows			
4		Animals including humans : Digestion, Teeth, Food Chains	Living Things & their Habitats: Grouping, Classification, Changing Environments		States of Matter: Materials Changing State			Sound: Vibrations, Pitch, Volume	Electricity: Simple Circuits & Conductors (

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5		Animals including humans: Body Changes	Living Things & their Habitats: Life Cycles & Reproduction		Properties & Changes of Materials	Forces: Gravity, resistance, Friction, Mechanisms				Earth & Space: Movement of Earth, Moon & Sun
6		Animals including Humans: How the Body Systems Work & Stay Healthy	Animals Including humans (Animals and Humans) Classification	Evolution & Inheritance : Adaptation & Evolution			Light: Seeing, & Shadows		Electricity: Voltage, Variations, Circuit Diagrams	

(Arrange units across the year to suit your other curriculum topics - bear in mind the length of topics and terms)