

Hadley Wood Primary School

Science Curriculum Overview



Our Vision

...that every child will leave our school **confident** in their own abilities and excited about the future, with the strategies and skills to tackle tasks and situations in a **capable** manner and **caring** about their planet and their fellow humans.

Curriculum Intent:

As a school we use 'Snap Science' scheme to deliver the key objectives from the National Curriculum. It provides teachers with week-by-week lesson support for each year group in the school. The scheme provides lesson plans, assessment, clear progression, and engaging and exciting whiteboard resources to support every lesson.

At the heart of the resource are the following principles:

- A science scheme of work must embody a clear progression
- It is through working scientifically that children develop an understanding of the nature and processes of science and the key scientific knowledge and concepts
- Children are curious to find answers to questions about the world around them
- Children need to be actively involved in their own learning, to be engaged and reflective
- Every child should have the opportunity to achieve in every lesson
- Assessment is an integral part of teaching that enables children to understand the purpose of their activities and to improve the quality of their work

How the Scheme is structured

- 1 The creators of Snap Science recognise that **working scientifically**, asking questions and testing ideas against evidence, is the most effective way for children to learn about science. Therefore each lesson **has a clear science enquiry focus**.
- 2 Every lesson in Snap Science is carefully planned around **a question for children to answer**, either inside the classroom or outside. By ensuring that these questions spark children's curiosity and that they want to

find out the answer, lessons are purposeful and result in children gaining a new understanding of the world around them.

- 3 In each lesson in Snap Science the **learning intention** is designed so that children have a powerful understanding of the skills and understanding they are developing in the lesson. **Success criteria** define the features of the learning intention in the context of the activity so that children can identify what they are aiming for and how well they are doing.
- 4 Snap Science has been designed to ensure that all children in a class can access and master the lesson's learning intention with each lesson offering **three levels of differentiated task**. These are planned to challenge and extend the learning of all children whilst ensuring that they all achieve the learning intention.
- 5 Every lesson in Snap Science includes **Assessment for Learning strategies** which enable teachers to find out what children have learned and to use that information formatively.
- 6 In response to the wealth of evidence that exists about the benefits of children experiencing the natural world first hand, **children learning science outdoors** is a key feature of Snap Science. For each year group there is a module called **Our Changing World** which is designed to be taught in every term, offering children regular opportunities to explore all aspects of their outdoor environment and build up a rich understanding of how it changes over the year.

Progression of Skills and Knowledge:

The National Curriculum Programme of Study for Science describes a sequence of knowledge and concepts, processes and methods. This sequence of knowledge and concepts is arranged as progressive blocks of key ideas in biology, chemistry and physics, alongside a progression in the skills of working scientifically.

The conceptual ideas in Biology, Chemistry and Physics build on each other and children need to develop a strong understanding of each set of ideas in order for the next set to make sense and for them to make progress. The Programme of Study is set out year by year for Key stages 1 and 2 but each science topic is not covered in every year. It is therefore important that teachers and children know where each block of ideas fits into the overall sequence.

In the Snap Science Progression Charts the key ideas within Biology, Chemistry and Physics in the National Curriculum are arranged to show how they are related to each other and how one idea builds on another. The National Curriculum statements have been edited into key ideas statements. The source of each key idea is identified by the year group and the Programme of Study topic heading. Some additional statements have been added to make important links between ideas.

Working Scientifically is taught throughout KS1 and 2, embedded within the content of Biology, Chemistry and Physics. The National Curriculum Programme of Study for Working Scientifically outlines the practical scientific methods, processes and skills that children must be taught to use, divided into three two-year blocks. In every lesson in Snap Science children will use their developing science enquiry skills to answer scientific questions. The Snap Science Progression Chart for Working Scientifically exemplifies the progression in these skills in the key areas of raising questions and planning, collecting and presenting data, drawing and evaluating conclusions.

This progression underpins the sequence of teaching and learning in each Snap Science module and between year groups.

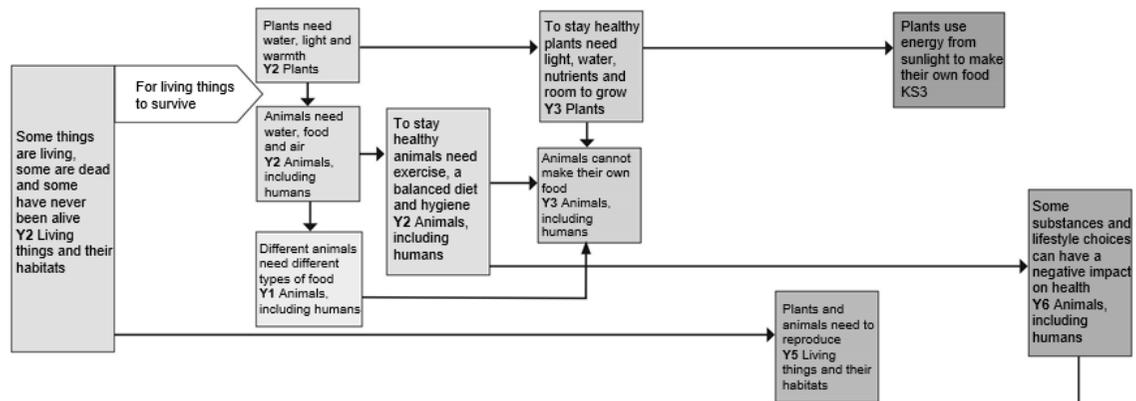
Science Progression of skills: EYFS – Year 6

| EYFS | | | | | | |
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| 30-50 Months | | | 40-60 Months | | ELG | |
| Physical Development | Understanding the World | Expressive Arts and Design | Physical Development | Understanding the World | Physical Development | Understanding the World |
| Health and Self-Care | The World | Exploring and Using Media and Materials | Health and Self-Care | The World | Health and Self-Care | The World |
| <ul style="list-style-type: none"> - To observe the effects of physical activity on their bodies. | <ul style="list-style-type: none"> - To comment and ask questions about aspects of their familiar world, such as the place where they live or the natural world. - To talk about some of the things they have observed, such as plants, animals, natural and found objects. - To talk about why things happen and how things work. - To develop an understanding of growth, decay and changes over time. | <ul style="list-style-type: none"> - To begin to be interested in and describe the texture of things | <ul style="list-style-type: none"> - To eat a healthy range of foodstuffs and understand a need for variety in food. - To show some understanding that good practices with regard to exercise, eating, sleeping and hygiene can contribute to good health. | <ul style="list-style-type: none"> - To look closely at similarities, differences, patterns and change. | <ul style="list-style-type: none"> - To know the importance for good health of physical exercise, and a healthy diet, and talk about ways to keep healthy and safe. | <ul style="list-style-type: none"> - To know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. |

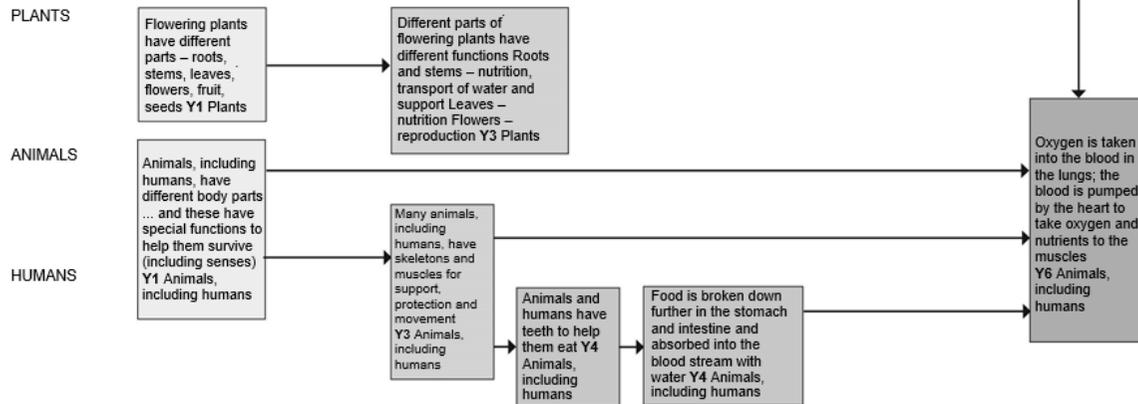
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| | - To show care and concern for living things and the environment. | | | | | |
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Biology: Progression of ideas through KS1 and 2

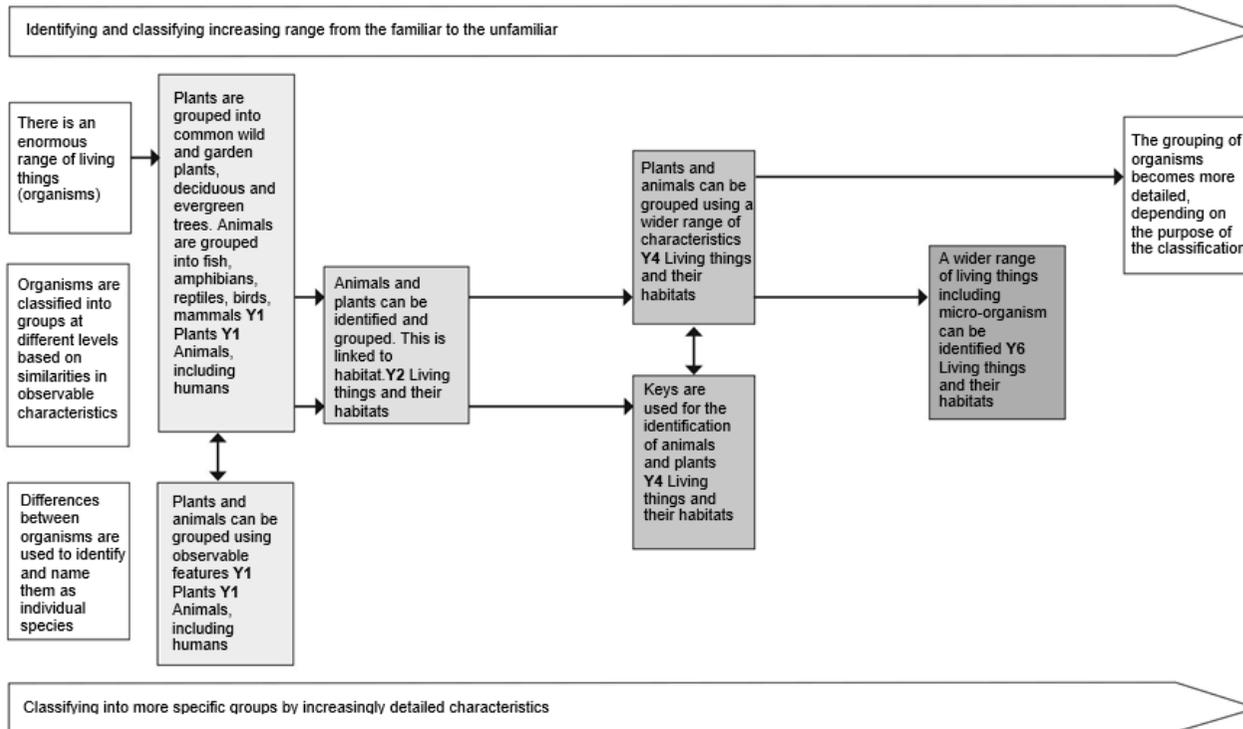
LIFE PROCESSES



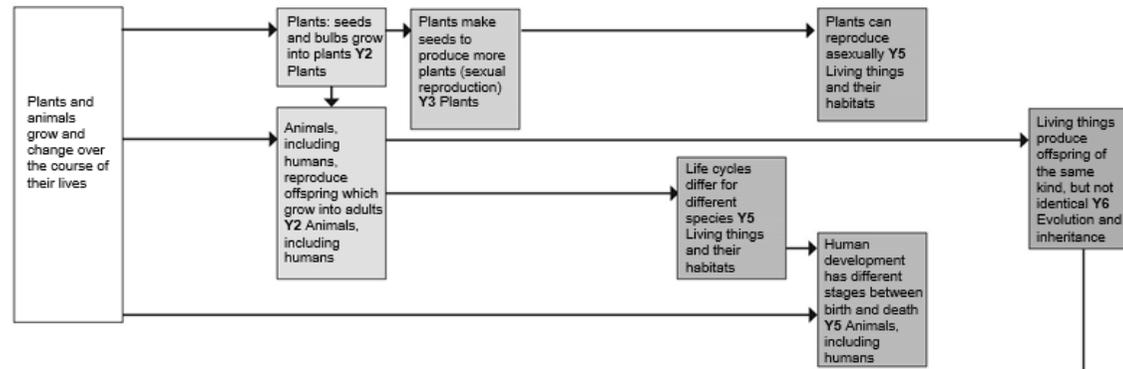
STRUCTURE AND FUNCTION



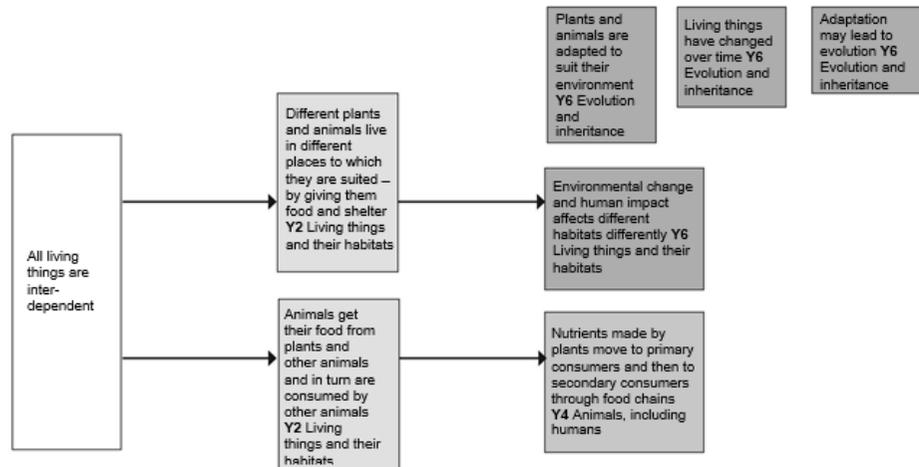
CLASSIFICATION



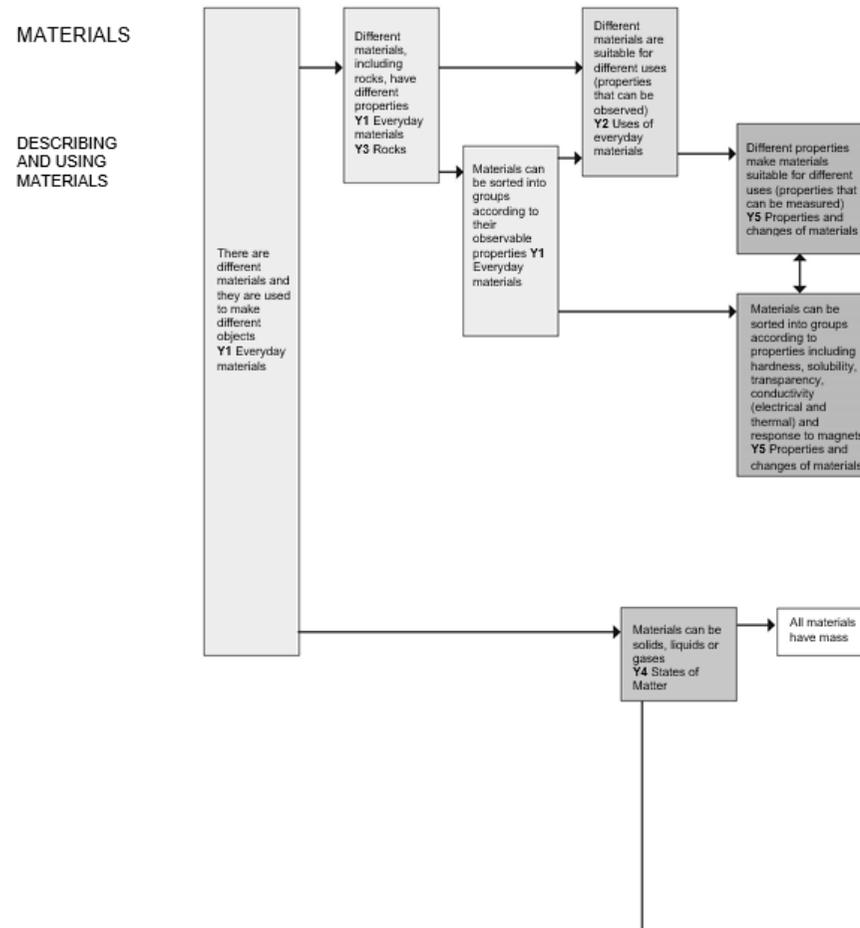
LIFE CYCLES



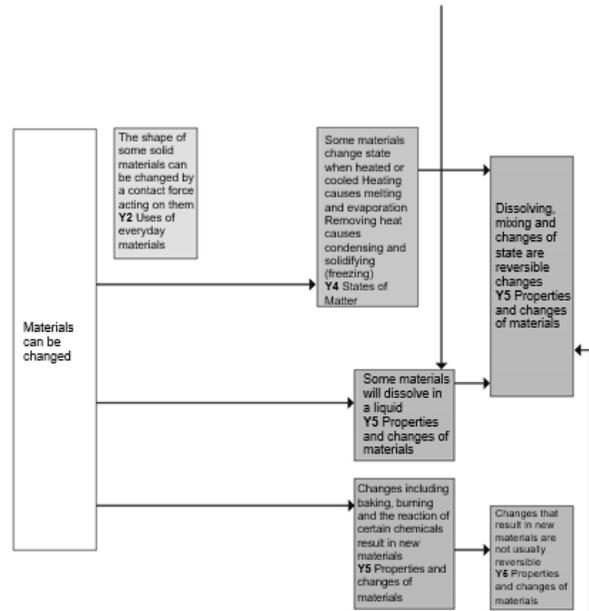
INTERDEPENDENCE



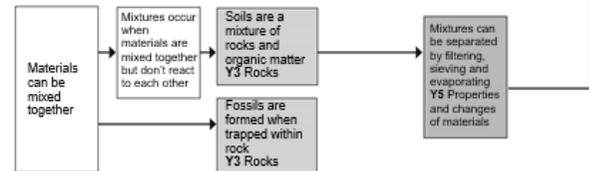
Chemistry: Progression of ideas through KS1 and 2



CHANGING MATERIALS

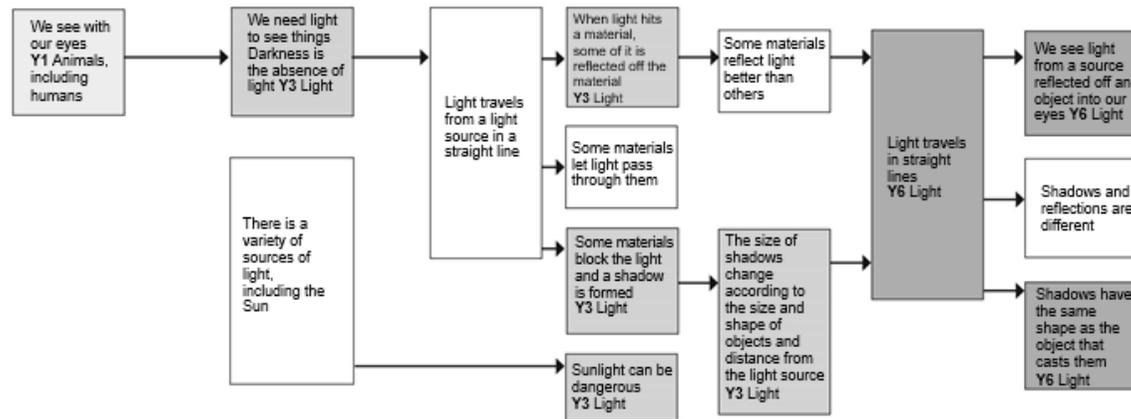


MIXING AND SEPARATING MATERIALS

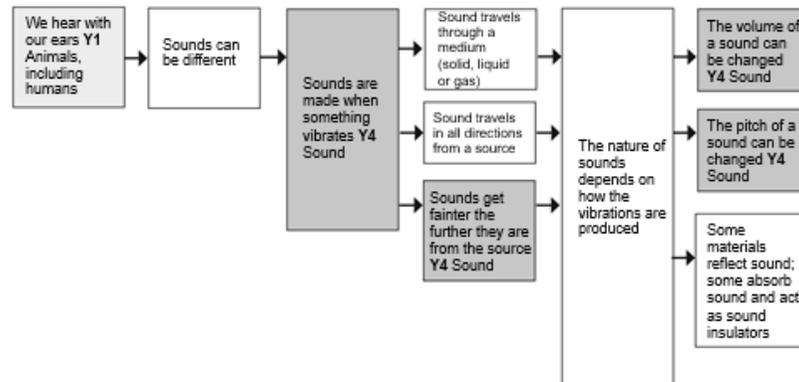


Physics: Progression of ideas through KS1 and 2

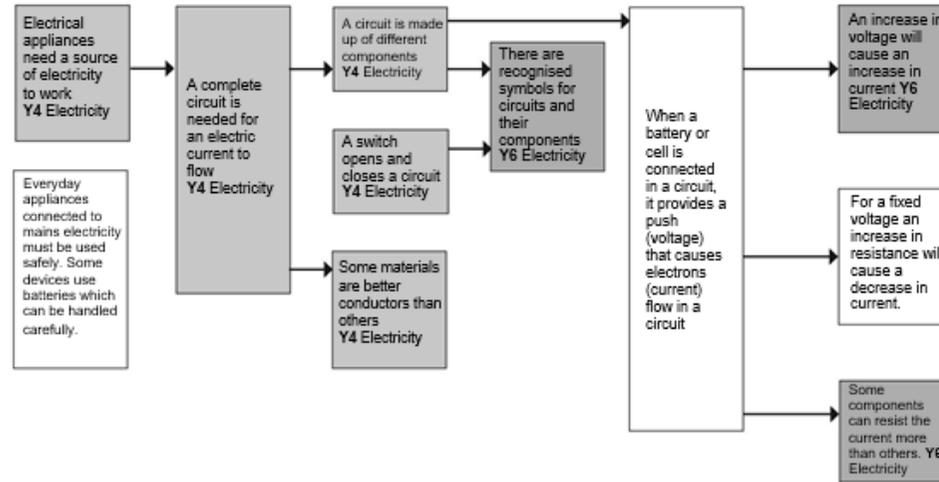
LIGHT



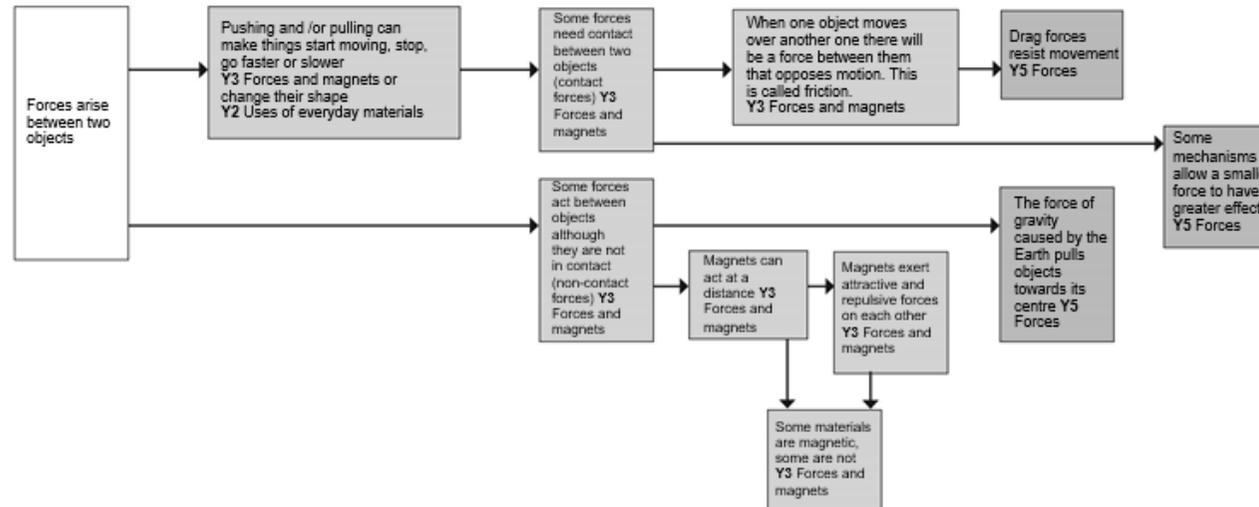
SOUND



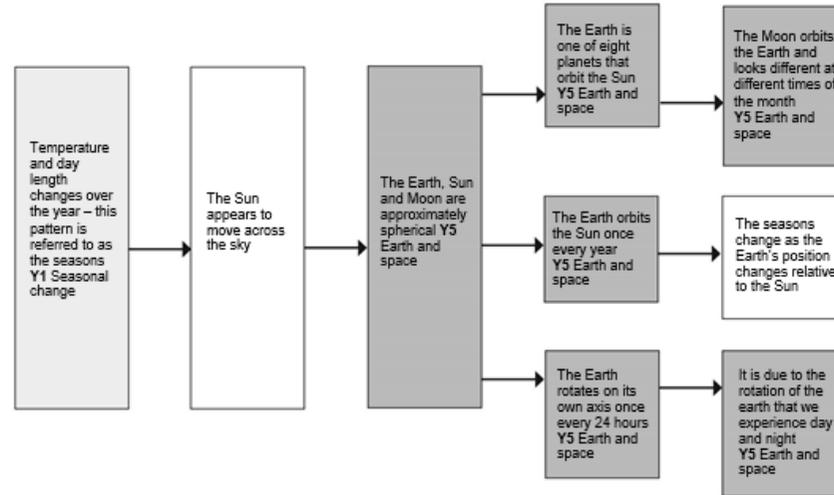
ELECTRICITY



FORCES



EARTH IN SPACE



Science Curriculum Overview: EYFS – Year 6

| Science | |
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| Year 1 and beyond | Early Years |
| Plants | Plant flowers in spring, talk about what plants need to survive, explore flowers and seeds, where food comes from. |
| Animals, including humans | Life cycles –how caterpillars change into butterflies, talking about their pets and how to look after them, talk about jobs e.g.: doctor, dentist and what their jobs involve, visit to the farm - spring lambs, baby animals., basic parts of the human body, when cooking, talk about what the food tastes like, talk about healthy and unhealthy food and healthy living including exercise – talk about how bodies feel during PE and they set themselves moving goals, vet role play area. Moving and Handling: Using a range of fine motor tools to remove tadpoles from frogspawn. |
| Seasonal Changes | How trees change over the seasons, go to forest to look at trees, go for a walk and hunt for autumn treasure, discuss the weather in the different seasons. The World: Sorting pictures into the four different seasons |
| Everyday materials | Talk about materials when doing floating and sinking activities, when doing collage in art, talk about materials and how they feel. Moving and Handling: Building your ideal home for your family with self-selected materials. Using playdoh to create space elements and scenes. The World: Looking at icicles and thinking about how they are formed. Using our knowledge of floating and sinking to create ice models, dropping different items into water Exploring Using Media and Materials: Creating a new home for the witch from Hansel and Gretel. Are there sweets on her home or something different? Which materials could you use |
| Living Things and their Habitats | Observing caterpillars, farm trip The World: Planting cress seeds and discussing the changes and why they are occurring. Comparing and describing different environments. Identifying how living things are suited to where they live. |
| Identifying and classifying | The World: Sorting dinosaur toys, figures and photos according to own criteria. Comparing and contrasting the moon and the earth, recording ideas. |
| Observing closely, using simple equipment | Use magnifying lenses to look at plastic minibeasts |

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| Year 1 | <p>Our changing world: Autumn</p> <ul style="list-style-type: none"> - observe the changes of the season to our environment - discuss reasons behind the changes - discuss how the change in seasons affect animals, plants and humans <p>Our senses</p> <ul style="list-style-type: none"> - describe how humans have similarities and differences - explore the 5 senses | <p>Plant detectives</p> <ul style="list-style-type: none"> -identify basic plants - classifying plants - finding plants around school - comparing different plants and flowers - look at what makes a plant - look at how plants change and grow over time - growing own plants | <p>Our changing world: Winter</p> <ul style="list-style-type: none"> - observe the changes of the season to our environment - discuss reasons behind the changes - discuss how the change in seasons affect animals, plants and humans <p>Everyday materials</p> <ul style="list-style-type: none"> - distinguish between an object and the material it is made of - identify and name a variety of everyday materials | <p>Our changing world: Spring</p> <ul style="list-style-type: none"> -observe the changes of the season to our environment - discuss reasons behind the changes - discuss how the change in seasons affect animals, plants and humans <p>Everyday materials</p> <ul style="list-style-type: none"> - describe the simple properties of everyday materials - compare and group together a variety of everyday materials based on their physical properties | <p>Animal antics</p> <ul style="list-style-type: none"> -investigate the diets of different animals - explore the food chain - look at animal habitats and similarities between habitats -design own habitat for a given animal | <p>Our changing world: Summer</p> <ul style="list-style-type: none"> -observe the changes of the season to our environment -discuss reasons behind the changes -discuss how the change in seasons affect animals, plants and humans <p>Looking at animals</p> <ul style="list-style-type: none"> -identify the different animals in the animal kingdom -look at what makes animals different (birds, reptiles, fish, insects, animals) -classification of animals - look at the types of animals live in our local area and compare it to other areas in the world |
| Year 2 | <p>Everyday Materials</p> <ul style="list-style-type: none"> - identify and compare everyday materials, e.g. wood, metal, plastic, glass, brick, stone, clay, paper, rock, cardboard etc - understand and suggest different possible uses for each material | <p>Everyday Materials</p> <ul style="list-style-type: none"> - find out how shapes of solid objects can be changed by squashing, twisting, bending and stretching - investigate how materials go through irreversible changes and what materials experience reversible | <p>Living Things and their Habitats</p> <ul style="list-style-type: none"> - identify living things and their habitats - describe how these habitats provide the basic need for the animals and plants - identify and name a variety of plants and animals | <p>Animals including humans</p> <ul style="list-style-type: none"> - know that animals have offspring and these grow into adults - find out about the basic needs of animals for survival. - Look after chicks, use to understand life-cycles and basic | <p>Living things and their habitats.</p> <ul style="list-style-type: none"> - habitats and microhabitats - explore and compare living things, things that once lived and things that have never lived. - identify and name a variety of plants and animals across different | <p>Plants</p> <ul style="list-style-type: none"> - to observe how pants and seeds grow into mature plants - know and be able to name a plant's requirements for survival - record observations of seeds and bulbs over different stages of |

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| | <ul style="list-style-type: none"> - to know that some materials may have more than one use. - to suggest why a material is appropriate for particular uses. - to know and find out about inventors. | <p>changes</p> <ul style="list-style-type: none"> - to compare how things move on different surfaces | <ul style="list-style-type: none"> - understand simple food chains and name different sources of food | <p>reproduction/growth.</p> <ul style="list-style-type: none"> - know and understand the importance of exercise, healthy eating and good hygiene | habitats | growth |
| Year 3 | <p>Chemistry:</p> <p>Rocks and soils – classification of rock types.</p> | <p>Chemistry</p> <p>Simple understanding of fossilisation.</p> | <p>Physics</p> <p>Forces and magnets – simple observations of magnets attraction and repelling. Looking at poles, prediction of behaviour of materials.</p> | <p>Physics</p> <p>Light - sources of light, shadows & reflection</p> | <p>Biology</p> <p>Plants and animals – Plants incl.parts, lifecycle and requirements for life.</p> | <p>Biology</p> <p>Plants and animals – Animals: skeletons & nutrition.</p> |
| Year 4 | <p>Switched On <i>(Electricity)</i></p> <p>Identify common appliances that run on electricity.</p> <p>Construct simple circuits, identify and name basic parts including cells, wire, bulbs, switches and buzzers.</p> <p>Experiment with lighting lamps on different circuits. Recognise common conductors, insulators and associate metal with being good conductors.</p> | <p>Good Vibrations <i>(Sound)</i></p> <p>Identify how sounds are made, associating some with vibrating.</p> <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 produces it/ strength of the vibrations and the volume.</p> <p>Recognise that sounds</p> | <p>Where does all that food go? <i>(Animals including humans)</i></p> <p>Describe the function of the digestive system in humans.</p> <p>Identify the different types of teeth.</p> <p>Construct food chains, identify producers, predators and prey (compare teeth of carnivores and herbivores).</p> <p>Look at what can damage teeth.</p> | <p>Who Am I? <i>(Living things including plants)</i></p> <p>Grouping a wide selection of flowering and non-flowering plants.</p> <p>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.</p> | <p>In a State <i>(States of matter)</i></p> <p>Group and compare materials – solids, liquids, and gases.</p> <p>Observe changes in so materials states when cooled.</p> <p>Measure change in Celsius and deal with temperature.</p> | <p>Human Impact <i>(Living things and their habitats)</i></p> <p>Introduce living things and their habitats/revisit environmental change and dangers.</p> <p>Look at groups of living things.</p> <p>Classifying vertebrates, fish, amphibians, reptiles, birds, and mammals,</p> <p>Classifying invertebrates: snails, slugs, worms, spiders and insects.</p> |

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| | | <p>get fainter as the distance from the sound increases.</p> <p>Make ear muffs or muffling boxes to see which one is the best insulation.</p> | | | | <p>Look at environmental changes and dangers that occur.</p> <p>Make ongoing observations.</p> |
| Year 5 | <p>Living things and their habitats</p> <p>What do we know about the life cycles of mammals?</p> <p>What do we know about the life cycles of amphibians?</p> <p>What do we know about the life cycles of insects?</p> <p>What do we know about the life cycles of birds?</p> <p>What makes a successful life cycle?</p> <p>Why do animals make incredible journeys as part of their life cycles?</p> | <p>Feel the Force</p> <p>How can we measure forces?</p> <p>Why does an object fall?</p> <p>What makes things move?</p> <p>How can we slow down falling objects?</p> <p>Does the shape of an object affect its movement in a liquid?</p> <p>Do all heavy things sink?</p> <p>How can we use levers to help us?</p> | <p>The Earth & Beyond</p> <p>How does the size of Earth compare to the Moon and the Sun and how far away are they from us?</p> <p>What is a year?</p> <p>What is a day?</p> <p>How does the sun help us to measure time?</p> <p>What time is it around the world?</p> <p>Why do we have seasons?</p> <p>Why does the moon appear to change shape?</p> | <p>All Change!</p> <p>Are the changes that happen around us reversible or non-reversible?</p> <p>How much gas can be produced by non reversible change?</p> <p>How long does it take for iron nails to rust?</p> <p>What happens when a candle burns?</p> <p>How long does it take for things to rust?</p> <p>What would make the best rocket fuel?</p> | <p>Get sorted</p> <p>How can we compare and group materials?</p> <p>Is a solid always hard?</p> <p>Is a liquid always runny?</p> <p>Are all metals the same?</p> <p>Are all plastics the same?</p> <p>To bounce or not to bounce: why are sports balls so different?</p> | <p>Reproduction in Plants and Animals (including humans)</p> <p>Sexual Reproduction in plants</p> <p>Sexual Reproduction in amphibians</p> <p>Sexual Reproduction in birds</p> <p>Sexual Reproduction in mammals</p> <p>Changes that occur during puberty in boys and girls</p> |
| Year 6 | <p>Body Pump</p> <p>-impact of diet and exercise and drugs. -heart and circulation (blood vessels and blood). -describe the ways in which nutrients and</p> | <p>Body Health</p> <p>-data logging – data records explanation -healthy eating and a balanced diet -investigating the nutritional value of foods</p> | <p>Everything Changes</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>Light Up Your World</p> <p>-recognise that light appears to travel in straight lines -use this idea to explain that objects are seen because they give out or reflect light into the eye</p> | <p>Danger – Low Voltage</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>The Nature Library</p> <p>-describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including</p> |

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| | <p>water are transported within animals, including humans</p> | <p>-predictions – graphs, explanation text. Recording data - taking measurements – accuracy, precision.</p> | <p>-identify how animals and plants adapted to suit their environment in different ways and that adaptation may lead to evolution - recognise that living things produce offspring of the same kind, but sometimes offspring vary and are not identical to their parents.</p> | <p>-explain that we see things because light travels from light sources to our eyes or from light sources to objects then our eyes -use the idea that light travels in straight lines to explain why shadows have the same shape as the object which is cast -investigate how to change the size of a shadow</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 -use recognised symbols when representing a simple circuit in a diagram</p> | <p>microorganisms, plants and animals -give reasons for classifying plants and animals based on specific characteristics</p> |
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