'Growing and maturing in our learning journey'

Science

'They are like trees that grow beside a stream, that bear fruit at the right time, and whose leaves do not dry up. They succeed in everything they do.' Psalms 1:3

Intent

IT IS OUR INTENTION TO DEVELOP IN ALL YOUNG PEOPLE A LIFELONG CURIOSITY AND INTEREST IN THE SCIENCES.

Implementation

THE ACQUISITION OF KEY SCIENTIFIC KNOWLEDGE IS AN INTEGRAL PART OF OUR SCIENCE AT SPETISBURY. CHILDREN WILL LEARN AND RETAIN THE IMPORTANT, USEFUL AND POWERFUL VOCABULARY AND KNOWLEDGE CONTAINED WITHIN EACH UNIT.

Impact

CHILDREN WILL KNOW MORE, REMEMBER MORE AND EXPLAIN THE ANSWERS TO KEY QUESTIONS PRESENTED BY THEIR TEACHERS AND IN THEIR WIDER LIVES.

Intent

Science allows us to understand ourselves, the world around us and our impact upon it. Science is about wanting to ask questions, wanting to find the answers to these questions and gaining satisfaction and knowledge from the process of enquiry. It is our intention at Spetisbury to develop in all our learners a lifelong curiosity in science. A year 6 child will leave our school with the same open and enquiring mind that an early years child enters with.

As children progress through the year groups, they build on their skills in working scientifically, as well as on their scientific knowledge. They develop greater independence in planning and carrying out enquiries to answer a range of scientific questions. A year 6 child will leave Spetisbury equipped with the vocabulary, knowledge and experience to explain, predict and analyse the world around them.

The knowledge and working scientifically progression maps detail the core skills of biology, chemistry and physics providing a solid base from which the curriculum post KS2 can be confidently accessed.

Science is constantly progressing: The foundations we lay will empower the Spetisbury learner to adapt and embrace the implications and uses of science in the future.

Implementation

At Spetisbury we follow the Plymouth Science scheme of work. The acquisition of key scientific knowledge is an integral part of our science lessons. Linked knowledge organisers enable children to learn and retain the important, useful and powerful vocabulary and knowledge contained within each unit. Knowledge organisers are used to inform classroom displays and to focus support on fragile learners.

The progression of skills for working scientifically are developed through the year groups and scientific enquiry types and skills are of key importance within lessons. We cover six enquiry types: research, pattern seeking, observing, testing, classifying and problem solving. Within the enquiry types we cover the disciplinary skills of prediction, planning, observing, recording, asking questions, interpreting and evaluating. Each lesson has a clear focus. Scientific knowledge and enquiry skills are developed with increasing depth and challenge as children move through the year groups.

Year groups 1-6 use floor books to record the working scientifically aspects of the curriculum. These are working documents accessed by the children and adults alike.

Fragile learners are supported to access the curriculum through well planned scientific enquiry that encompasses all. Advanced learners are challenged through opportunities to apply their knowledge and skills to solve problems and answer questions.

Subject knowledge support is available to teachers, enabling them to deliver high-quality teaching and learning opportunities while making them aware of possible scientific misconceptions.

Impact

Through following this approach we are confident that:

- We will increase the profile of science across school.
- The learning environment during lessons will be rich with key science vocabulary spoken and used by all learners and teachers.
- Science is loved by teachers and pupils across school. Teachers are confident in their own subject knowledge and children and confident to question and investigate.
- Learners will confidently describe how they use the knowledge and disciplinary skills they have acquired in their science lessons.
- Impact can also be measured through key questioning skills built into lessons, retrieval practice and formative and summative assessments aimed at targeting next steps in learning.

Science Unit Overview 22/23

Year Group	Unit Coverage					
EYFS	Colour Ourselves	Celebrations Fairy Tales	People who help us	Science Week	Animals	
Year 1	Animals including humans	Animals including humans (Ext unit)	Materials	Materials (Ex Unit) Science Week	Plants	Seasonal Change
Year 2	Animals including humans	Animals including humans (Ext Unit)	Living things and habitats.	Materials Science Week	Plants	Plants (Ext Unit)
Year 3	Forces and magnets	Rocks	Light	Science Week	Animals including humans	Plants
Year 4	Living things	Animals including humans	Sound	Science Week	Electricity	States of matter
Year 5	Properties of materials	Forces	Space	Science Week	Living things and habitats	Animals including humans
Year 6	Animals including humans	Evolution and inheritance	Electricity	Science Week	Light	Living things and habitats

Key concepts

Disciplinary concepts/second order concepts *Substantive knowledge is the unit						
Pattern	Change	Compare and contrast	Categorisation	Structure and function	Cause and effect	Variation
First order concepts:	**Biology**		**Physics**	**Chemistry**		**Working Scientifically**
EYFS	Understanding the world		Understanding the world	Understanding the world		
Year 1	**Plants** Structure and function Variation Categorisation **Animal including humans** Change Categorisation Structure and function		**Seasonal changes and weather** Pattern Change Compare and contrast	**Everyday materials** Compare and contrast Categorisation		
Year 2	**Living things and their habitats** Variation Compare and contrast Change **Plants** Structure and function Variation Categorisation			**Everyday materials** Compare and contrast Categorisation Change Pattern		

Key concepts (cont)

	Animals including humans Change Categorisation Structure and function			
Year 3	**Plants** Structure and function Variation Categorisation **Animals including humans** Change Categorisation Structure and function	**Light** Pattern Cause and effect **Forces and magnets** Cause and effect Compare and contrast	**Rocks** Compare and contrast Cause and effect	
Year 4	**Living things and their habitats** Variation Compare and contrast Categorisation **Animals including human** Categorisation Structure and function Cause and effect	**Sound** Pattern Cause and effect **Electricity** Cause and effect Compare and contrast	**States of matter** Compare and contrast Cause and effect Pattern Change	
Year 5	**Living things and their habitats**	**Earth and space**	**Properties and changes of materials**	

Key concepts (cont)

	Variation Compare and contrast Categorisation Structure and function **Animals including humans** Structure and function Cause and effect Change	Cause and effect Categorisation **Forces** Cause and effect Compare and contrast	Compare and contrast Cause and effect Pattern Change	
Year 6	**Living things and their habitats** Compare and contrast Categorisation **Animals including humans** Structure and function Cause and effect **Evolution and inheritance** Change Variation Pattern	**Light** Pattern Cause and effect **Electricity** Cause and effect Compare and contrast Pattern		

Science progression of knowledge, skills and enquiry

Science Progression of Knowledge, Skills and Enquiry

How this document works:

This is a whole school overview. The accompanying document shows each year group along with suggested activities and links teachers can use to teach each skill, knowledge or enquiry type.

Page 1: demonstrates what a typical scientist will look like at the end of each year, combining the key skills and knowledge they will require.

Page 2: onwards has the National Curriculum objectives for each year group with key vocabulary for that module and also 'key indicators' which demonstrates what the children should know to achieve the objective.

Any text boxes in a different colour with a thick border shows that this skill/knowledge is taught in a different module but builds on from learning in that module e.g.

Recognise that living things can be grouped in a variety of ways.

The red writing in brackets underneath show where this objective was taken from. This is to allow teachers to make the links to prior learning.

This grid shows the types of enquiry suggested for each unit. The additional year group document gives suggested activities linked to each 'scientific enquiry'.

Scientific Enquiry	
Research	
Pattern Seeking	
Observing (Over time)	
Testing	
Identifying and Classifying	
Problem solving	

This is the National Curriculum Working Scientifically objectives. These are highlighted through the document in purple. This is to ensure teachers are teaching knowledge alongside skills.

Year 1 / 2 Working Scientifically

Asking simple questions and recognising that they can be answered in different ways ♣ observing closely, using simple equipment ♣ performing simple tests ♣ identifying and classifying ♣ using their observations and ideas to suggest answers to questions ♣ gathering and recording data to help in answering questions.

Year 3 / 4 Working Scientifically

Asking relevant questions and using different types of scientific enquiries to answer them ♣ setting up simple practical enquiries, comparative and fair tests ♣ making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers ♣ gathering, recording, classifying and presenting data in a variety of ways to help in answering questions ♣ recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables ♣ reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions ♣ using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions ♣ identifying differences, similarities or changes related to simple scientific ideas and processes ♣ using straightforward scientific evidence to answer questions or to support their findings.

Year 5/6 Working Scientifically

Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary ♣ taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate ♣ recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs ♣ using test results to make predictions to set up further comparative and fair tests ♣ reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations ♣ identifying scientific evidence that has been used to support or refute ideas or arguments.

Foundation/ EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Children will ask questions about the environment including the weather outside. They will be able to suggest what they might wear. They will develop an understanding of growth, decay and changes over time and show care and concern for living things and the environment. They will use their senses when walking around and investigating. They will develop questioning and curiosity through play and understand the concept of forces and electricity through twisting, pushing, slotting and magnetic toys and seeing the effects of pushing different buttons to make sounds and movements. They can talk about similarities and differences between living things and materials and make simple observations about animals.	Children will be asking questions about the local environment including plants and animals found there including how they can look after them. They will observe and talk about the weather and changes. They will explore different materials using scientific language to describe them.	Children will be asking questions about the local environment including discussing how plants grow, survive, germinate and reproduce. They investigate different habitats (incl. micro) and observe how different animals depend on each other and its life processes. They understand basic needs of animal survival including exercise and nutrition. They can identify properties of materials and state why they are suited to purpose. They can name some scientists who have developed new materials.	Children will be asking questions about the local environment and using their observation skills to identify parts of a flower and know how water transports around the plant. Children will understand the lifecycle of a plant by drawing diagrams and using research to find the function of each part. Children will know that humans and animals have skeletons and understand why. They know how humans get nutrients. They will carry out comparative and fair tests to compare and classify rocks and soils based on their properties.	Children will be asking questions about the local environment and observe how the environment can change along with the dangers this can cause. They will understand the functions of the teeth and the importance of oral hygiene. Children will know about how the digestive system works. Children will be grouping, identifying and classifying living things and materials and using classification keys. Children will understand the water cycle and effect of heat with evaporation and condensation as well as materials changing state. Children will use representations to understand how we hear through vibrations and know how to create simple circuits including a switch. Comparative and fair tests will be used to test conductivity of materials.	Children will understand the changes that occur in humans from birth to old age and understand reproduction in plants and animals. They explore different lifecycles and can understand the similarities and differences between mammals, amphibians, insects and birds. Children will be able to explain the uses of everyday materials and describe some reversible and irreversible changes. They will be able to present their results from fair tests using tables and charts. Children will use diagrams to show the movement of the Earth and the moon and can explain how different time zones occur. They explain day and night. They will have an understanding of forces including gravity, air resistance, water resistance and friction. They will be able to mechanisms such a levers, pulleys and gears to explain forces and making jobs easier.	Children will understand how the circulatory system works and will be able to use this to explain the positive and negative effects of diet, exercise, drugs and lifestyle on the body. They will be able to recall animals from the 5 vertebrate group and some from non-vertebrate groups including their key characteristics. They will understand how plants and animals are suited to their environment and the process of evolution. Children will be able to use classification keys to identify unknown plants. They will know what fossils are and can use research and observations to show that things lived billion years ago. Children will use diagrams to explain how light travels and understand shadows. They will be able to make simple circuits using recognised symbols in their drawings. They can conduct a range of fair tests identifying cause and effect when testing brightness of a bulb or volume of a buzzer. Children will be able to conduct a range of investigations with accuracy using repeat measurements and using a range of equipment. They will use scientific theory to refute or support their arguments.

This is what our scientists can do at Spetisbury

Year Group	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants 	• Make simple observations about plants and can explain why some things occur.	• Name common plants and describe the basic structure of flowering plants, including deciduous and evergreen. • Identify and describe the basic structure of a variety of common flowering plants, including tress. 	• Observe and describe how seeds and bulbs grow into mature plants. • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. 	• Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. • 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. • 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. 	Recognise that living things can be grouped in a variety of ways. (living things and habitats)	Describe the differences in the lifecycles of a mammal, an amphibian, an insect and a bird. (Living things and habitats)	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics (Living things and habitats)
Key vocabulary	Plant, leaf, stem, flower, grow, rain, sun, water, soil, seed,	Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud. Names of trees in local area, garden and wild flowering plants.	As year 1+ light, shade, sun, warn, cool, water, grow, healthy.	Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal- wind dispersal, animal dispersal, water dispersal, pollen, roots, stem, trunk, leaves, absorb, nutrients, reproduce, germination, stamen, style.	Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate. (living things and habitats)	Lifecycle, mammal, amphibian, germination, seed formation, insect, bird, pollination, life processes, plants, animals, reproduction, environment, dispersal, growth, living, eggs, and seeds. (living things and habitats)	Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering and non-flowering. (living things and habitats)
Key indicators	• The world: Can develop an understanding of growth, decay and changes over time. • Shows concern and care for living things and the environment.	• Can name trees and other plants they see regularly. • Can describe key features of the trees and plants e.g. shapes of leaves/colour of the flower/blossom. • Can point out trees which lost their leaves and those who keep them all year. Can point to and name parts of a plant. • Can use simple charts to sort. Can use photos to talk about how plants change.	• Can describe how plants that have grown from seeds and bulbs have developed over time. • Can identify plants that grew well in different conditions. • Can spot similarities and differences between bulbs and seeds. • Can nurture seeds and bulbs into mature plants identifying the different requirements of different plants.	• Can explain the function of the parts of a flowering plant. • Can describe the life cycle of flowering plants, including pollination, seed formation, seed dispersal and germination. • Can give different methods of pollination and seed dispersal, including examples. • Can explain observations made during investigations. • Can look at features of seeds to decide on method of dispersal. • Can draw and label a diagram of their created flowering plant to show its parts and their role and method of pollination and seed dispersal.	See living things and habitats.	See living things and habitats.	See living things and habitats.

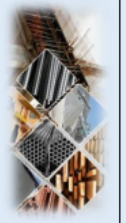
Progression

Progression

Animals including humans. 	• Health and self-care- children notice changes in their bodies after exercise such as heart beating faster. Children understand the importance of handwashing.	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 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	Notice 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.	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.	Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions. Construct and interpret a variety of food chains, identifying producers, predators and prey.	Describe the differences in the lifecycles of a mammal, an amphibian, an insect and a bird. Describe the life processes of reproduction in some plants and animals. (living things and habitats) Describe the changes as humans develop from birth to old age.	Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Identify and name the main parts of the human circulatory system and describe the function of the heart, blood vessels and blood. Describe the ways in which nutrients and water are transported within animals, including humans.
Key vocabulary	Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, heart,	Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, reptile, amphibian, mammal, omnivore, carnivore, herbivore, all senses.	Offspring, grow, adults, nutrition, reproduce, survival, water, food, air, exercise, hygiene, survival, exercise.	Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, support, protect, skull, ribs, spine, muscles, joints.	Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, incisor, canine, herbivore, omnivore.	Puberty, vocabulary linked to describe a range of sexual characteristics.	Heart, pulse, rate, pumps, blood, blood vessel, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle.
Key indicators	They can talk about simple similarities and differences between living things. They can make simple observations about animals and explain why some things occur.	Can name a range of animals which includes animals from each of the vertebrate groups. Can describe the key features of named animals. Can label key features on a picture/diagram. Can write descriptively about an animal. Can write a 'What am I? riddle about an animal. Can describe what a range of animals eat. Can compare and classify animals.	Can sequence the stages of a baby. Observe these changes. Can describe how animals change as they get older. Develops understanding of how insects change (more than a butterfly) through lifecycle diagrams. Can explain what humans and other animals need to survive- this could be through planning a trip to the moon or desert Island. Can describe how to keep clean and healthy. Has a good understanding of the food plate and understands 'a healthy balanced diet'. Can create a diet for an athlete. Can adopt a menu to substitute food from the eat well plate. Understands the effect of exercise on the body.	Can name the nutrients found in food. Can state that to be healthy we need to eat the right types of food to give us the correct amount of these nutrients. Name some bones that make up the skeleton giving examples that support, help them move or provide protection. Can describe how muscles and joints help them to move. Classify food groups (high/low nutrients), answer q's about nutrients in food, use data to look for patterns. Give similarities and differences between skeletons.	Can sequence the main parts of the digestive system. Can draw the main parts of the digestive system onto a human outline. Can describe what happens in each part of the digestive system. Can point to three different types of teeth in their mouth and talk about what each is used for. Demonstrate journey of food through body. Make a dental record, Can explain teeth in animals and if they are carnivores, herbivores or omnivores.	Can explain the changes that takes place in boys and girls during puberty. Can explain how a baby changes physically as it grows and also what it is able to do.	Can draw a diagram of the circulatory system, label the parts and annotate it to show what the parts do. Can explain the positive and negative effects on diet, exercise, drugs and lifestyle on the body.

Progression

Living Things Evolution and Inheritance	They know about similarities and differences between themselves and others, and among families, communities and traditions. They can talk about their own environment The world: Show care and concern for living things and the environment 	• Name common plants and describe the basic structure of flowering plants, including trees. (Plants) 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 the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including (Animals including Humans)	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 and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other Identify and name a variety of plants and animals in their habitats, including microhabitats 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. 	Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. (Plants)	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 environment. Recognise that environments can change and that this can sometimes pose dangers to living things. 	Describe the differences in the lifecycles of a mammal, an amphibian, an insect and a bird. Describe the life processes 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 micro-organisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics  Evolution and inheritance Recognise that living things produce offspring of the same kind, but normally offspring vary 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. Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. 
Key Vocabulary		See Animals including Humans See Plants	Living, dead, never been alive, suited, suitable, basic need, food, food chain, shelter, move, feed, names of local habitats e.g. pond, woodland, names of micro habitats e.g. under logs, in bushes etc.		Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate.	Lifecycle, mammal, amphibian, germination, seed formation, insect, bird, pollination, life processes, plants, animals, reproduction, environment, dispersal, growth, living, eggs, and seeds. Can dissect and label parts of flowering plant including male and female structures. Record finding as an annotated illustration of a flowering plant. Research and explain the life cycle and reproduction of a plant using scientific language.	Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering and non-flowering. Evolution Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils.
Key indicators			Find a range of items which are dead, living. Can name plants/animals which live in different habitats and micro habitat. Can talk about the features of the animal/plant and how they are suited to the habitat.		Can name living things in a range of habitats, giving key features that helped identify them. Can give examples of how an environment may change both naturally and due to human	Can describe the lifecycles of mammals, amphibians and insects using diagrams. Can describe similarities and differences between them.	Can give examples of animals in the five vertebrate groups and some of the invertebrate groups. Can give key characteristics of the five vertebrate groups and some invertebrate groups. Can give examples of flowering and non-flowering plants. Can use classification keys to identify unknown plants and animals. Can create classification keys. Can give

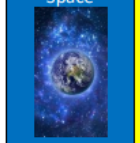
			Can talk about what the animal eats. Can construct a food chain.		impact. Can use classification keys to identify unknown plants and animals.		a number of characteristics that explain why an animal belongs to a particular group. Evolution Can explain the process of evolution. Can give examples of how plants and animals are suited to their environment. Can give examples of how an animal or plant has evolved over time e.g. penguin, peppered moth. Give examples of things that lived millions of years ago and the fossil evidence to support this.
Materials  **Rocks and Soils** 	Moving and handling- Introduce and encourage children to use the vocabulary of manipulation, e.g. squeeze and prod. The world: Can talk about why things happen and how things work. Exploring media and materials- notice changes in properties as they are transformed through becoming wet, dry, flaky or fixed. Think about cause and effect.	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.	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.	Notice that some forces need contact between two objects, but magnetic forces can act at a distance. (Forces and magnetism) Rocks and Soils 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 a rock. Recognise that soils are made from rocks and organic matter	STATES OF MATTER Compare and group materials together, according to whether they are solids, liquids or gases (states of matter) 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 (States of matter) Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. (states of matter)	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. Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. Use knowledge of solids, liquids gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals wood and plastic. Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials and this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. (Evolution and Inheritance)

Progression

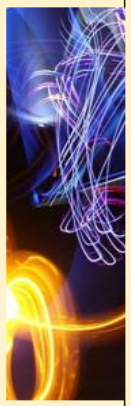
Key Vocabulary	Wet, dry, shiny, dull, bendy, stiff, squashy, hard/soft, lumpy, wrinkly. Smooth, rough.	Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see through, not see through.	Names of materials: wood, plastic, glass, metal, water, rock, brick, paper, fabric, card, rubber, suitable/unsuitable, use/useful, hard/soft, stretchy/stiff. Rigid/flexible, waterproof/absorbent, strong/weak, rough/smooth, transparent/opaque, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching.	Rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb, water, soil, fossil, marble, chalk, granite, sandstone, slate, soil, peat, sandy/chalk/clay soil.	Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle	Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/not reversible, change, burning, rusting, new material.	
Key indicators	They can talk about simple similarities and differences between two materials.	Can label a picture/diagram of an object made from different materials. Can describe the properties of materials. Can sort materials using their properties. Can test evidence to answer a question.	Can name an object, say what material it is made from, identify properties and make a link between property and use. Whilst changing a shape of an object can describe the actions used. Can use suitable vocabulary. Simple tests relevant to properties. Describe similarities and differences.	Can name some types of rock and give physical features of each. Can explain how a fossil is formed. Can explain that soils are made from rocks and also contain living/dead matter. Classify rocks in a range of ways using scientific vocabulary. Test properties of rocks. Show understanding of how fossils were formed, can identify plant/animal matter in soil, test water retention of soils.	Can create a concept map, including arrows linking the key vocabulary. Can name properties of solids, liquids and gases. Can give everyday examples of melting and freezing. Can give everyday examples of evaporation and condensation. Can describe the water cycle. Can give reasons to justify why something is a solid liquid or gas. Can give examples of things that melt/freeze and how their melting points vary From their observations, can give the melting points of some materials. Using their data, can explain what affects how quickly a solid melts. Can measure temperatures using a thermometer. Can explain why there is condensation on the inside the hot water cup but on the outside of the icy water cup From their data, can explain how to speed up or slow down evaporation. Can present their learning about the water cycle in a range of ways e.g. diagrams, explanation text, story of a water droplet.	Can explain everyday uses of material e.g. how bricks, wood, glass are used in buildings. Can explain what dissolving is, giving examples. Can name equipment used for filtering and sieving. Can use knowledge of liquids, gases and solids to suggest how materials can be recovered from solutions or mixtures by evaporation, filtering or sieving. Can describe simple reversible and non-reversible changes to materials, giving examples. Can create chart/table grouping materials using properties. Suggest appropriate material for purpose. Can explain results from investigations involving dissolving and non-reversible change.	

Progression

Progression

Seasonal Changes  Earth and Space 	They show concern and care for the environment and can notice changes and differences. Develops an understanding of decay and changing over time.	Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies.		Recognise that they need light in order to see things and that dark is the absence of light. Notice that light is reflected from surfaces. Recognise that light from the sun can be dangerous and that there are ways to protect our eyes. Recognise that shadows are formed when the light source is blocked by a solid object. Find patterns in the way the size of the shadows change (Light)		Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. (Forces) Earth and 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 Earth rotation to explain day and night due to the apparent movement of the sun across the sky.	Use the idea that light travels in straight lines to explain why shadows have the same shape as the object that casts them. (Light)
Key vocabulary	Snow, wind, rain, sun, day, night, stormy, cloudy, hot, cold, foggy.	Weather (sunny, rainy, windy, snowy etc) Seasons (winter, summer, spring, autumn) sun, sunrise, sunset, Day length		Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous. (Light)		Earth, sun, moon, Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune, Pluto (dwarf planet), spherical, solar system, rotates, star, orbit, planets, axis, night, day, season, galaxy. Meteorite.	Year 3 vocabulary- Plus Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous. (Light)
Key indicators	Can describe the weather outside and suggest what they might wear and what they might see. Can comment on the environment e.g. the leaves have fallen off the tree, there is a puddle.	Can name four seasons and identify when in the year they occur. Can observe and describe weather in different seasons. Can describe days being longer in summer and shorter in winter. Present data in tables charts and compare seasons.		See Light		Can show using diagrams the movement of the Earth and moon. Can explain the rotation of the Earth and how this causes night and day. Can explain evidence gathered about the position of shadows in terms of movement of the Earth. Can explain how a sundial works. Can explain why we have time zones.	See Light

Progression

Light and sound 	The world: Children respond to their senses: sights, sounds and smells in the environment.	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. (Materials) Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies. (Seasonal changes) 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 (Animals incl humans)	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (materials) • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. (Plants)	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. (Plants) Recognise that they need light in order to see things and that dark is the absence of light. Notice that light is reflected from surfaces. Recognise that light from the sun can be dangerous and that there are ways to protect our eyes. Recognise that shadows are formed when the light source is blocked by a solid object. Find patterns in the way the size of the shadows change	Recognise that environments can change and that this can sometimes pose dangers to living things. (living things and habitats) SOUND To 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 pitch of a sound and features of the object that produced it. Find patterns between the volume of a sound and the strength of the vibrations that produced it. Recognise that sound gets fainter as the distance from the sound source increases.	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. (materials) Use Earth rotation to explain day and night due to the apparent movement of the sun across the sky. (Earth and Space)	Recognise that light travels in straight lines. 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. 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. Use the idea that light travels in straight lines to explain why shadows have the same shape as the object that casts them.
Key vocabulary	Smell, sound, sight, see, look,	See Seasonal Changes See Animals Including Humans		Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous.	Sound, source, vibrate, vibration, travel, pitch, volume, faint, loud, insulation.	Earth, sun, moon, Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune, Pluto (dwarf planet), spherical, solar system, rotates, star, orbit, planets, axis, night, day, season, galaxy. Meteorite. (Earth and Space)	Year 3 vocabulary- Plus Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous.
Key indicators		See Seasonal Changes See Animals Including Humans		Can describe how we see objects in lights and can describe dark as the absence of light. Know it is dangerous to look at the sun. Define transparent, translucent and opaque. Can describe how shadows are formed. Predict what materials will be more/less visible. .	Can describe different types of objects producing different sounds and that the sound is produced by vibration in the object. Can describe sounds travelling through different mediums such as air, water, metal. Can find patterns between pitch and volume and the features of the	(See Earth and Space)	Can describe with diagrams how light travels in straight lines, either from sources or reflected from other objects into our eyes. Can describe with diagrams how light travels in straight lines past translucent or opaque objects to form a shadow of the same shape.

					object producing it. Can recognise that sounds get fainter as the distance from the sound source increases. Can explain what happens when you strike a drum or pluck a string- use diagrams to show. Demonstrates how to increase/decrease pitch and volume.		
Forces 	Moving and handling- Introduce and encourage children to use the vocabulary of manipulation, e.g squeeze and prod. Technology- shows an interest in technological toys with knobs or pulleys, or real objects such as cameras or mobile phones.	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. (Materials)	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. (Materials)	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.		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. To describe the movements of the Earth, and other planets, relative to the Sun in the solar system (Earth and Space)	
Key Vocabulary	Push, pull, twist, stretch, turn, open, lift, squeeze, pinch, flick, tap.	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. (Materials)	Names of materials: wood, plastic, glass, metal, water, rock, brick, paper, fabric, card, rubber, suitable/unsuitable, use/useful, hard/soft, stretchy/stiff, Rigid/flexible, waterproof/absorbent, strong/weak, rough/smooth, transparent/opaque, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching. (Materials)	Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel. Magnetic material, metal, iron, steel, poles, north pole, south pole.		Force, Gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears.	

Progression

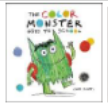
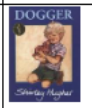
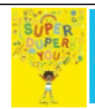
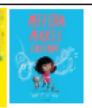
Key indicators	Children will be able to play with a range of toys of varying sizes made of different materials and fit them together in different ways such as twisting, pushing, slotting or magnetism. Can manipulate playdough in different ways.	(See Materials)	(See Materials)	Give examples of forces in everyday life. Give examples of objects moving differently on different surfaces. Name a range of magnets and show how the poles attract and repel. Can draw diagrams using arrows to show the attraction and repulsion between the poles of magnets. Can use results to describe how objects move on different surfaces. Can use results to make predictions. Can use some classification to know some metals are not magnetic. Use test data to rank magnets.		Can demonstrate the effect of gravity acting on an unsupported object. Can give examples of friction, water resistance and air resistance. Can give examples of when it is beneficial to have high or low friction, water resistance, and air resistance. Can demonstrate how pulleys, levers and gears work.	
Electricity	Technology- shows skills in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movement or new images. 	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. (Materials)	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Materials)		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. 	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. (Materials)	Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off potion of switches. Use recognised symbols when representing a simple circuit in a diagram. 
		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. (Materials)	Names of materials: wood, plastic, glass, metal, water, rock, brick, paper, fabric, card, rubber, suitable/unsuitable, use/useful, hard/soft, stretchy/stiff, Rigid/flexible, waterproof/absorbent, strong/weak, rough/smooth, transparent/opaque, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching.		Can name the components in a circuit. Can make an electric circuit. Can control a circuit using a switch. Can name some metals that are conductors. Can name materials that are insulators. Can communicate structures of circuits using drawings. Can incorporate a switch.		Explain how a circuit operates to achieve particular operations, such as control the light for a torch with different brightnesses or make a motor go faster or slower Make circuits to solve particular problems such as a quiet and a loud burglar alarm Carry out fair tests exploring changes in circuits

Progression

			(Materials)		Can add a circuit with a switch to a DT project and demonstrate how it works. Can describe how a switch works.		Make circuits that can be controlled as part of a D&T project
					Electrical, appliance, mains, plug, circuit, component, cell, battery, positive, negative, connect/connectors, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol.		Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage NB Children do not need to understand what voltage is but will use volts and voltage to describe different batteries. The words cells and batteries are now used interchangeably

Progression

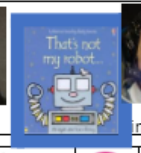
Science Knowledge and Skills Coverage. (EYFS)

Content/ Knowledge	Colour	All About Me	Celebrations	Traditional Tales
Book/ Science Capital	 	  	  	  
Scientific Enquiry	Look for patterns when colour mixing Observation over time colour change. Colour absorbency over time.	Identify parts of the body Look for patterns Identify Senses.	Identify shapes and features of a spider. Look for simple patterns. Patterns Observe over time Comparative test Comparative test	Identify different liquids and materials Simple test Simple test
Working Scientifically	Ask how and why questions Show curiosity and question why things happen. Observe and describe what they see using everyday language.	Observe parts of the body Explain ideas clearly. Record learning in a table.	Observe features of a spider. Explain ideas Planning simple test Predict what will happen. Evaluate snow Record results in a simple bar chart.	Make careful observations Ask and answer simple questions. Plan simple tests.
Ideas/WOW moments.	1. Read Colour monster book. Explore and experiment with colour paddles, equipment and torches. Make colour spinner (Newton) 2. Look at colour images, look through rainbow glasses. Bicarb and paint experiment of changing colour. Skittles activity, feely bag, Dark den, paint mixing. 3. Colour mixing using diffusion, colour in nature walk, colour mixing in bags.	1. Point to parts of the body. Draw parts of the body in a mirror. Through a box lid Make own face- where do features go? Label body Find body parts in gloop 2. Order stages of growth Role play corner Set out areas with the above stations) 3. Identify body parts Identify senses Play keeper of the keys Food tasting Feely bags Instruments	1. Zoom in image of spider- curiosity Spider making web Spider search outdoors Make spider web to stick flies to. Label spider and make own spider. 2. jelly worms in lemonade activity Creepy crawly hunt Potion station Bug classification and obs drawings. Witches cauldron an potions. 3. Ice hands and melting 4. Candy canes in bicarb experiment Label reindeer Ice sensory play Santas workshop play corner Snow scene.	1. Read gingerbread man Test what happens if gingerbread man gets wet? Make a raft using junk materials Make umbrella or roof Playdough gingerbread men. Retell story using small play. Make bridges out of bricks. 2. Read Three Little Pigs Materials test Make houses out of different materials. Make a maze with Lego. Make an outside maze. 3. Read Billy Goat Gruff Make a raft Make a bridge- junk

Opportunities to link Understanding the World EYFS to Science KS1

Year 1 Yearly Overview

Science Knowledge and Skills Coverage. (Year 1)

	Animals Including Humans	Materials	Plants	Seasonal Changes
Content/ Knowledge	I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals I can identify and name a variety of common animals that are carnivores, herbivores and omnivores. I can describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) I can identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	I can distinguish between an object and the material from which it is made. I can identify and name a variety of everyday materials including wood, plastic, glass, metal, water and rock. I can describe the simple properties of a variety of everyday materials. I can compare and group together a variety of everyday materials on the basis of their simple properties.	To identify and describe the basic structure of a variety of common flowering plants including trees. To identify and name a variety of common wild and garden plants including deciduous and evergreen trees	I can observe changes across four seasons. I can observe and describe weather associated with the seasons and how day length varies.
Book/ Science Capital		 Macintosh   im Peake	  	
Scientific Enquiry	Identify parts of body. Identify parts of body. Spot patterns between groups of animals Identify and classify animals Comparative tests	Identify materials and classify As above Classify based on how they feel. Classify materials Compare suitability of materials Patterns in test results,	Find out how different fruits grow. Observe seeds over time. Identify plants in the environment. Identify and classify parts of a plant. Identify and classify leaves. Observe leaves over time.	Identify 4 seasons Look for patterns in colours. Observe formation of crystals over time. Compare results to research on rain. Simple comparative test. Identify different clouds
Working Scientifically	Ask questions Venn diagrams Make comparisons and give reasons. Observe features of human body Carry out tests to compare and classify Make predictions using senses.	Use observations to classify Record in a table Ask and answer questions Simple test Make predictions on best materials. Evaluate test	Make careful observations. I can explain how a seed grows. Draw and label a plant Label parts of a plant Ask yes and no questions to classify. Make simple predictions	Observe similarities and differences. Predict colours in a leaf. Can explain what winter feels like. Labelled diagrams Evaluate test and suggest improvements Ask simple questions
Ideas/WOW moments.	1- Draw around body and label 2- Compare features that are the same and different. Explore senses Parts of tongue and taste- taste new foods. Sight Test. 3- Body parts bingo Animals and smell Smell test. Feely bag 4- Order sounds Classify animals and animal groupings 5- Animal X rays Compare and contrast animals- How big and how small	1. Rocket landing in school grounds and mission from Tim Peake. - Sorting materials -Whats in the bag 2. Recap materials -Odd one out -Properties of materials -Material hunt. 3. Materials bingo -Feely wall -Mystery bag -That's not my books- find suitable materials. 4- Astro nappy absorbency test. -Charles Macintosh. 5- Make curtains for spaceship (transparent/opaque) 6- Stretchy material test.	1. Read tiny seed -Identify fruits and where they grow -Zoom in activity. -Observation of fruits and veg -Growing potatoes. 2- Read Jack and the beanstalk -Order how seeds grow. -What do plants need to grow? -Plant diary 3- Plant hunt in local environment. -Identify parts of a plant. 4-Plant bingo	1. Identify 4 seasons -Read Snow rabbit, spring rabbit. -Sort clothes according to season 2. Season song. - Autumn video -Chromatography in leaves and pens. 3- Zoom in, zoom out -How are crystals formed experiment -How snow is formed experiment -What does winter feel like? 4- Odd one out

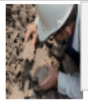
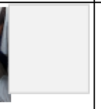
Science Knowledge and Skills Coverage. (Year 2)

Content/ Knowledge	Animals Including Humans	Living Things and Habitats	Materials	Plants
	I notice that animals including humans have offspring which grow into adults. I can find out about and describe the basic needs of animals including humans for survival. Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene	Explore and compare the differences between things that are living, dead and things that have never been alive. Identify most living things live in habitats to which they are suited and describe how different habitats provide for basic needs of different kinds of animals and plants and how the depend on each other. Identify and name a variety of plants and animals in their habitat, including microhabitats. 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.	To identify and compare the suitability of a variety of everyday materials including wood, metal, plastic, glass, brick, rock, paper, cardboard for particular uses. I can find out how the shape of solid objects made from materials can be changed by squashing, bending, twisting and stretching.	To observe and describe how seeds and bulbs grow into mature plants. Find and describe how plants need water, light and a suitable temperature to grow and stay healthy.
Book/ Science Capital	  Health care assistant	• Mummy can I have a penguin story.	  John Dunlop  Oliver Rackham	 Sam plants a Sunflower  Carl Linnaeus  George Washington Carver  Alexander Von Humboldt Identify and classify parts of a flower
Scientific Enquiry	Look for patterns in animals; Observe lifecycle over time; Research fact about animal; Identify for animals ea; Set up comparable te; Identify and classify foods; Identify and classify foods; Look for patterns in how germs spread; Use research; Observe o time; Revise, research and recall	Identify and classify objects; Identify habitats; Research facts about animals; Look for patterns in data; Look for patterns in data; Find out what animals eat.	Compare and group materials.; Identify materials; Use research for understanding.; Comparative tests.; Notice patterns between materials.; Comparative test.	Observe over time how plants grow.; Use a Venn diagram to sort and classify; Identify plants using observations/identify plants in environment; Observe plants over time; Look for patterns; Carry out comparative test; Use research; Record observations after time; Look for patterns; Look for patterns in my tests; Recap key concepts
Working Scientifically	Identify animals and offspring; Communicate findings; Ask simple questions; Communicate findings about animals; Plan and carry out test; Sort food into groups and record; Use art to represent foo groups; Make simple predictions; Communicate using models; Evaluate test; Answer questions using scientific knowledge.	Ask questions; Draw basic conclusions; Record observations; Use tables and pictograms; Interpret results; Communicate findings	Identify and classify materials.; Labelled diagrams; Draw basic conclusions; Carry out simple comparative tests.; Predicting best material; Evaluate findings of tests	Label parts of a flower; Make observations on how a plant grows; Use a Venn diagram to sort and classify; Identify plants using observations; Make basic predictions; Carry out simple tests; Communicate clearly how plants grow; Ask questions to investigate; record results/ course; Observe plants in different climates; Evaluate learning
Ideas/WOW moments.	1- Matching animals with offspring. 2- Lifecycles 3- Using IT to answer questions 4- Animal menus 5- Investigating which exercises raise pulse rate. 6- Investigating food groups and tasting foods. Sort foods according to group. 7- Balanced diets, Links to art, children create art piece based on their food diaries.	1- Sort, living, dead and never been alive. Egg box material hunt. 2- Sorting animals according to its biome. 3- Exploring different biomes. Who am I clues? Biome home learning 4- Micro habitats and mini beast hunting. 5- completing tables for extraordinary creatures. Creating own creature and habitat. 6- Food chain drama, draw food chains.	1. Mystery bag. Make material monsters. Sort materials 2. Materials hunt. 3. Materials drama and modelling, Silly materials. 4- comparing materials for 3 little pigs house. 5- Humpty dumpty investigation- make a protective sleeping bag using best material. 6- John Dunlop investigating bouncy materials.	1. Identify parts of the plant- dice game. 2. Sam plants a sunflower book- lifecycle of a sunflower and strawberry. 3. Observing seeds and observational drawings. Classifying seeds. 4. Seed hunt and identifying seeds. 5. Conditions for growth, seeds from the kitchen 6. Investigation into plant growth using different soils.

Year 2 Yearly Overview

Year 3 Yearly Overview

Science Knowledge and Skills Coverage. (Year 3)

Content/ Knowledge	Rocks	Animals Including Humans	Forces and Magnets	Light	Plants
	To compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. To describe in simple terms how fossils are formed when things that have lived are trapped within rock. To recognise that soils are made from rock and organic matter.	I can identify that humans and some other animals have skeletons and muscles for support, protection and movement. I can 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.	I can compare how things move on different surfaces. I notice that some forces need contact between two objects, but magnetic forces can act at a distance. I can observe how magnets attract or repel each other and attract some materials and not others. I can 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. I can describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing.	To recognise we need light in order to see things and that dark is the absence of light. Light is reflected from surfaces. Recognise that light from the sun can be dangerous and that there are ways to protect your eyes. Recognise that shadows are formed when light from a light source is blocked by an opaque object. Find patterns in the way that the shadows change.	I can identify and describe the functions of different parts of a flowering plant. I can explore the requirements of plant life and growth. I can investigate the way in which water is transported within plants. I can explore the part that flowers play in the lifecycle of flowering plants including pollination, seed formation and seed dispersal.
Book/ Science Capital	 Mary Anning  Geologist  Ground investigation engineer	 Physiotherapist	 Gigantic turnip John McAdam Sir Isaac Newton Albert Einstein	 Darkest Dark  Charlie Dimmock	 George Carl Linnaeus Washington Carver Alexander Humboldt Oliver Rackham
Scientific Enquiry	Compare and group materials based on their properties. Classify rocks based on their properties. Carry out comparative tests to rank rock properties. Research and learn about Mary Anning. Use research and models to help demonstrate my learning. I can make careful and systematic observations over time.	Research the bones in the skeletal system. I can identify and classify parts of the skeletal system. Identify bones in the body and the hand. I can look for patterns in how each part of the hand moves and make adjustments. I can identify and classify animals into vertebrate and invertebrates. I can look for patterns in results. I can use secondary sources to find out about muscles. I can research the nutritional values of foods by reading data. I can look for patterns and compare nutritional values. I can identify and classify foods.	Group and identify forces based on observations Research John McAdam to create own road surfaces Sort and classify materials into magnetic and non-magnetic. I can carry out a fair test using magnets. I can spot patterns in my drawings and explain what is happening using magnetic fields. I can use research and secondary sources to aid my explanations.	I can compare how different materials react to light. I can identify patterns in my results to answer questions I can observe what happens over time. I can spot patterns in results to answer questions. I can look for patterns in results, I can observe a shadow over time. I can carry out a fair test and control variables. I can look for patterns in the size of the shadows.	I can identify parts of the plant I can carry out a comparative test. I can make observations over time. I can use research and my own scientific knowledge to explain the process. I can look for patterns I can identify and classify different seeds.

Year 3 Yearly Overview cont.

Working Scientifically	Make careful observations and identify similarities and differences. Record classifications in a table, Venn or Carrol diagram. I can record my results in a table Interpret the process of fossilisation using models and pictures. Ask questions to deepen my learning about rock formation. I can set up tests to answer questions.	Locate and label the bones in the body I can answer questions about the uses of our bones. Record using labelled drawings and scientific language. I can evaluate my design and suggest improvements. I can make careful observations to sort animals into groups. I can make predictions from questions raised. I can use scientific language to discuss ideas. I can record my results in a table. I can record my results in a bar chart. I can evaluate my learning using scientific language.	I can observe different forces Evaluate my choices and suggest further improvements. I can predict whether materials are magnetic or not. I can plan a fair test I can record my findings using scientific drawings I can use models to explain findings.	I can raise questions when exploring materials and light. I can make predictions based on scientific questions. I can set up practical comparative tests using my own ideas. I can record my results in a table. I can interpret my results and report on patterns found. I can evaluate my test and suggest improvements. I can observe what happens when an object is moved closer to a light source.	I can record my findings using scientific diagrams. I can plan a comparative test. I can interpret my findings using scientific knowledge. I can explain in detail what pollination is. I can evaluate my seed spinner. I can look carefully at seeds.
Ideas/WOW moments.	1. Recap previous learning. Using chocolate to represent rocks. Rock drama. 2. Classifying rocks based on their characteristics. Rock cycle. Natural and manmade rock. 3. Rock drama- properties of rock. Rock tests (hardest, most durable, waterproof, does not react to acid) 4. Process of fossilisation. Mary Anning's work. Explore fossils. Make own fossil following the process. 5. How are rocks formed and how do they change? Rock cycle drama. Rock cycle practical. Learn about Geologist and ground investigation engineer. 6. Soils- investigation into what soil is made from. End of unit quiz.	1. Recap previous learning. Introduction to the skeletal system- label bones. 2. Build a skeleton- skeleton relay. Why do we need bones experiment? 3. What does a physiotherapist do? Close drawing of the hand and bones in the hand. Children plan their bionic hand design. 4. Children make their bionic hand. 5. Children classify animals into vertebrate and invertebrates. 6. Function of the skeleton- investigate how the skeleton protects the organs. 7- How do muscles work? Make a muscle model to explain the process. 8- What do humans need to stay alive? Explore food contents and classify using food wheel. 9- Record results in a table regarding how much of a particular category a food contains e.g. sugar. 10- Eat well plate game, balanced and unbalanced plates. End of unit quiz.	1. Recap previous learning. Read gigantic turnip, explain friction using rice in bottle. Children observe different forces. 2. Recap on vocabulary, investigate different road surfaces and find out about John McAdam. Use force metres and also recap on Sir Isaac Newton. 3. Explore magnetic and non-magnetic. 4. Explore magnetic materials and children plan their own fair test. 5. Investigate why magnets have two poles. Children will find out about magnetic fields. 6. Focus on the earths magnetic field and children make own compass. End of unit quiz.	1. Pre learning. Read the Darkest Dar as stimulus. Light investigation. Natural and artificial light sources. 2. Investigation into prisms, children to understand why light is reflected. Investigation into which materials reflect light. 3. Why is the sky blue? Investigation into UV light and sun cream. 4. Optical illusions. Investigation into shadows and how shadows change. 5. Investigation into how shadows change depending on where the sun is in the sky. 6. Application lesson making curtains with most opaque materials.	1. Pre learning. Labelling a plant. Functions of the plant. Labelling the male and female parts of the plant. Plant dissection and drawings. 2. What do plants need to grow? recap. Experiment into the requirements of plant growth using pansys. 3. Investigation on how water and nutrients transport through stem using carnations and celery. Photosynthesis. 4. Recap on sunflower lifecycle and what germination means. Focus on pollination and pollination drama. Why are bees important? 5. Fertilisation and seed dispersal. Focus on the different ways seeds are dispersed. Children make their own seed dispersed by wind. 6. What is a botanist? - children learn about different botanists. Children go on a seed hunt to see what they can find in their environment. End of unit quiz.
Cross Curricular	**Maths**- Using keys and grouping. Creating recording tables and looking for patterns. Recording using Venn and Carrol diagrams. **English**- Drama, role play, improvisation, . **Geography**- rocks around the world and in different places e.g. Jurassic coast. **IT**- links with gaming and children's interest of Minecraft. **History**- learning about historical figures and fossilisation. **ART**- Make your own fossil.	**PSHE**- links to health and balanced diets. **Maths**- using tables to record and classify. Use bar charts to record results. Read scales. **DT**- to know how different foods help our bodies, use different materials to build models. **English**- spelling scientific words correctly and writing ideas in a logical way. **PE**- skeleton relay. **IT**- using apps and ICT to research.	**English**- Use of books to create a hook for the lesson. Children to write in full sentences when interpreting and use conjunctions to explain thinking. Spell scientific words correctly. **Maths**- to create tables, line graphs and sorting diagrams. Reading scales on force metres. Use measuring equipment accurately. **PSHE**- safety with ears and loud sounds. **History**- learning about historical scientists linked to friction.	**English**- interpreting results and using and spelling scientific words correctly. Darkest Dark book for stimulus. **Maths**- Using tables and Venn diagrams. Measuring accurately. Using angles. **DT**- evaluating the effectiveness of different materials. **PSHE**- Safety when in the sun. Protect eyes and skin. **IT**- Use of data loggers/apps to measure light.	**English**- interpreting results and using and spelling scientific words correctly. Using connectives to add details to predictions. **Maths**- Using tables and Venn diagrams. Bar and line graphs. Reading scales. **Geography**- Links to the water cycle. **ART**- careful observational drawings. **IT**- use of videos and online research to support learning. **History**- learning about historical figures and famous botanists and horticulturalists.

Science Knowledge and Skills Coverage. (Year 4)

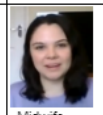
Content/ Knowledge	Living Things and Habitats	Animals Including Humans	Sound	Electricity	States of Matter
	-To recognise that living things can be grouped in a variety of ways. -To explore and use classification keys to help group. -Identify and name a variety of living things in the environment. -Recognise that environments can change and this can sometimes pose dangers to living things.	- Describe the simple functions of the basic parts of the digestive system in humans. -Identify the different types of teeth in humans and their simple functions. Construct and interpret a variety of food chains, identifying producers, predators and prey.	-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 volume of a sound and the strength of the vibrations that produced it. -Recognise that sounds get fainter as the distance from the sound source increases.	-Identify common appliances that run on electricity. Construct 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 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.	-Compare and group materials together, according to whether they are solids, liquids or gases. -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. -Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.
Book/ Science Capital	 Steve Irwin Escape Biologist  Duffy's Lucky	 John Hams    Scatologist Dentist	 Sound collector Poem  Alexander Graham Bell  F1 engineers	 Alessandro Volta  Michael Faraday  Henry Snaith  Oscar and the bird book	 Dr Pearl Agyakwa
Scientific Enquiry	Identify animals and Classify into different groups. Identify similarities and differences in Human characteristics Find patterns in mini beast habitats. dentify animals and classify into groups Research endangered animals. I can research the effects of changing environment.	Identify the organs of the digestive ystem and use model to explain thinking. Identify the different teeth and know heir function. Identify and compare similarities and Differences in human and animal eeth. et up a comparative test to show ffects of tooth decay. Observe tooth decay over time. I can research animal food chains to find out what animals eat. dentify foods animals eat to classify. Identify patterns	Identify how sounds are made. Conduct a fair test to establish the best String phone. Spot patterns in results into how well Sound travels. H/W- research how hearing aids work. Pattern seek to make conclusions. Carry out a pattern seeking enquiry. Set up a fair test Look for patterns in results.	Identify electrical components and classify appliances. I can identify patterns in my observations. I can conduct a comparative test. I can identify the properties of materials. I can find out about different scientists and energy sources. I know how electricity has developed over time.	can compare and group materials ogether depending on their es. I can look for patterns in my observations. I can construct a fair test to investigate melting points. I can observe what happens when a liquid changes to a solid. I can carry out a fair test and change and measure factor.
Working Scientifically	Observe characteristics of living things Identify similarities and differences in characteristics. To gather and record data in a table. I can record observations from Scientific enquiry enquiry. I can ask relevant questions to classify things I can use evidence to answer questions and present findings. Record findings about endangered species	Observe the similarities and differences in human/animal teeth. Interpret and present learning of digestive system through models. Set up own test to see the effects of Different liquids on tooth decay. Make predictions based on sci Knowledge of liquids to decay teeth. I can record my results in a table and Bar graph. I can ask questions to find out what Animals eat. Evaluate learning	I can observe vibrations which cause Sound. Measure distance to nearest cm. Set up tests to create the best string Phone. Record results in a table and spot patterns. Record sound measured in DB in a table. Produce line graph. Evaluate musical instrument based on Sound and knowledge of pitch. Observe how sounds are created. Set up own tests and record results. Set up own tests based on animal ear Shapes or this could be asking questions.	I can record my work using labelled drawings I can make predictions using scientific language I can interpret my results using my scientific knowledge I can identify the properties of different Materials. I can pose scientific questions I can record how electricity can help us	Make careful observations and Identify similarities and differences. I can make predictions using Straightforward evidence and ations. I can use a thermometer to take accurate measurements. I can interpret what I have observed using my own scientific knowledge. I can set up tests to answer questions.

Year 4 Yearly Overview

Year 4 Yearly Overview cont.

					know about the water system.
Ideas/WOW moments.	1. Identify animals and group based on characteristics. Match animal to habitat. 2. Human guess who, classification key with human characteristics. Make classification key for liquorice Allsorts. 3. Mini beast hunt- recording type of habitat and what mini beasts are found. 4. Make own classification keys for mini beasts found. Classify leaves using given keys. Identify evergreen and deciduous trees. 5. Duffy book with sea pollution. Children research endangered animal and think of the reasons why. 5. Discuss how environments change and how animals adapt. Round robin of 3 environments- children record changes and effects humans have on habitats.	1. Digestive system drama. Make model of digestive system. 2. Identify different teeth, functions by eating different food. Compare with household items. 3. Tooth decay and effects. Set up egg experiment in liquids. Make own toothpaste 4. Herbivore, carnivore, omnivore. Look at skeletons and teeth. 5. Food chains- poo dissection. Link to mole book. 6. Food chains/food webs. 7. Evaluate learning, concept map and quiz.	1. Poem- sound collector. Round robin of activities to observe sound. 2. Order sound cards, how are sounds made? String phone test. 3. Sound in water- Whale song. Bottles, straws, ruler experiment. 4. Which frequency of sound travel the furthest? 5. Storm in a circle. Honda advert. Sound walk. Investigation into pitch making musical instruments. 6. F1 Ear muffs. Planning own test using post it note approach. Recap. 7. Animal ears and slinky demo.	1. Sorting appliances in to mains and battery. Explore electrical circuits, symbol bingo. Challenge cards. 2. Oscar and the bird- thinking about electricity in real life. Human circuit. Building simple circuits 3. Testing conductors and insulators. 4. Connecting a switch and making own switch using different materials. 5. Scientists linked to the development of electricity. Children make a wind turbine 6. Renewable energy types, children design a house for the future.	1. Ballooning around- ice. Sorting materials based on properties. 2. Predicting, glove experiment and dancing raisins. 3. Investigating into melting points. Difference between melting and dissolving. 4. Making ice cream. 5. Evaporation and condensation. Fair test. 6. Materials Scientist. Modelling the water cycle part 2- window water cycle.
Cross Curricular	**PSHE**- Looking after the environment and animals. Safety when collecting mini beasts **Maths**- Using keys and grouping. Creating recording tables and looking for patterns. **English**- creating poster to impart information, spell scientific vocabulary correctly. **Geography**- different climates and explore how animals are adapted to different climates. **Sustainability**- Explore different types of pollution and the effects on animals. **MFL**- Learn animal names in a different language.	**PSHE**- links to oral hygiene, importance of visiting the dentist. **Maths**- using tables to record and classify. **DT**- to know how different foods are broken down. **English**- spelling scientific words correctly and writing ideas in a logical way. **Geography**- how to look after our environment.	**English**- to add music to poems. **Maths**- to create tables, line graphs and sorting diagrams. **PSHE**- safety with ears and loud sounds. **DT**- use a range of resources to create different sounds and block sounds. **S&L**- to listen carefully to identify different sounds.	**English**- interpreting results and using and spelling scientific words correctly. Oscar and the bird book for stimulus. **Maths**- Using tables and Venn diagrams. **DT**- evaluating the effectiveness of different materials. **PSHE**- Safety when using electrical appliances. **History**- learning about historical development of electricity and scientists of the past and present. **Geography/sustainability**- learn about different types of renewable energy and how this may be used in the future.	**DT**- evaluating the effectiveness of different materials. **English**- interpreting results and using and spelling scientific words correctly. Oscar and the bird book for stimulus. Using connectives to add details to predictions. **Maths**- Using tables and Venn diagrams. Using scales to read thermometer. Bar and line graphs. **PSHE**- Safety when using a naked flame. **Geography**- Links to the water cycle.

Science Knowledge and Skills Coverage. (Year 5)

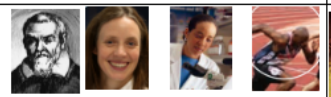
Content/ Knowledge	Living Things and Habitats Describe the differences in life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals.	Animals Including Humans Describe the changes as humans develop from birth to old age.	Space Describe 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 approximate spherical bodies. Use Earth rotation to explain day and night due to the apparent movement of the sun across the sky.	Properties of materials Compare and group together everyday materials based on their properties, including hardness, solubility, transparency, conductivity and response to magnets. Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. Use knowledge of solid, liquid and gas to decide how mixtures might be separated including through filtering, sieving and evaporation. Give reasons based on evidence from comparative tests for the particular uses of everyday materials including metals, wood and plastic. Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials and this kind of change is not usually reversible including changes associated with burning and the action of acid on bicarbonate of soda.	Forces I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. I can identify the effects of air resistance, water resistance and friction, that act between moving surfaces I can recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect
Book/ Science Capital	 Jane Goodall  David Attenborough	 Midwife  Curiosity	 Neil Armstrong, Buzz Aldrin, Tim Peake, Helen	 Spencer Silver, Arthur Fry	 Newton, Galileo, Helen Margolis
Scientific Enquiry	Identify patterns that might be found in the natural environment. Identify and classify different life cycles. I can use secondary sources to research naturalists and behaviouralists. Report and present findings from Research. I can plan and carry out a fair test accurately. I can look for patterns when considering gestation periods of Animals.	Look for patterns in gestation periods. Notice changes over time Use research and own subject knowledge to order stages of human development. Identify changes in the human body I can research and use subject knowledge to help others. I can research and use subject knowledge to help others.	Identify and classify planets Identify and classify planets. Observe changes over time Use research and secondary sources to find out about the moon. Look for patterns in day light hours. Conduct a fair test where variables are Controlled.	Identify different materials and classify based on its properties. I can identify the properties of different Materials based on whether it will dissolve. I can make observations over time I can compare how reversible and Irreversible materials act when heated and Cooled. I notice patterns in my results. I learn about famous scientists and what major discoveries they have made.	Research the effects of gravity and Sir Isaacs equipment. Observe over time how many times a pendulum swings. Conduct a fair test to explore the effects of air resistance on a falling object. Conduct a comparative test to investigate water resistance. Conduct a fair test to investigate friction. Look for patterns in my results.
Working Scientifically	Use oral and written forms to report conclusions. Present data in a variety of different ways to help answer my questions. Ask relevant questions and find ways to answer them. I can make accurate and relevant predictions. I can suggest next steps based on the Weakest aspects of the enquiry. Record my results using a bar chart and explain the results.	Make predictions on gestation Periods. Record data using scatter graphs Make careful observations as we grow older Record learning using scientific diagrams. Interpret findings to help others. Evaluate my learning	Raise questions and suggest reasons for similarities and differences. Use measurement to represent planets in a model Record my work using scientific diagrams and labels. Use a model to discuss, communicate and justify scientific ideas using scientific vocabulary. Present results in a variety of ways to Answer a question. Plan own test and control variables.	Evaluate my test. I can make predictions about which materials are soluble and insoluble. I can use scientific language and illustrations to discuss, communicate and justify ideas. I can make careful observations when heating solutions. I can plan my own test based on how Materials react with one another. I can record results in a table	Observe different forces and measure the force using different equipment. Set up a test to change the speed of a pendulum. Interpret and communicate results from data using scientific vocabulary Plan different types of enquiry to answer a question. Take measurements using a range of scientific equipment. Record results in a table.

Year 5 Yearly Overview

Year 5 Yearly Overview cont.

Ideas/WOW moments.	1. Recap previous learning- animal classification and lifecycles. Classification drama. Classify animals. Draw a lifecycle. 2. Life cycles of different organisms. Life cycle drama. Comparing lifecycles using a diagram. 3. Find out about the work of Jane Goodall and David Attenborough. Observe animals and take notes in a table. 4. Pollination vs fertilisation. Recap on pollination. Pollination drama recap. Sexual and asexual reproduction. School group survey for different types of plants. Children research how different plants reproduce. 5. Investigate how to grow new plants from different parts of the parent plant. Children carry out a fair test to grow their own plant. 6. How do animals reproduce? Investigate different gestation periods and make top Trumps. Assessment test.	1. Recap body systems, teeth and animals. Research gestation periods of animals. 2. Lifecycle of a human. Use fruits and vegetables as models for foetus development. Plot developmental stages on line graph. 3. Observe how we change as we age. Developmental milestones. Order what happens at different stages. 4. Puberty and changes on the body. 5. Looking after mental health and design a poster. 6. Relaxation techniques, complete poster and end of unit test.	1. Recap previous learning on light and shadow. Read Curiosity, ordering planets and looking at relative sizes through Playdough planets. 2. Investigation into how big each planet is using fruit and veg. Creating a solar system in my pocket. 3. Investigate phases of the moon through drama and Oreo moon phases. Children draw the 8 moon phases. 4. Children use a model to investigate the relationship between the sun, moon and earth. Ext investigate how their weight would change on different planets. 5. Investigate day and night and why different parts of the world have day at a different time. 6. Look at what astronauts do and famous astronauts. What causes craters on the moon? Chn learn about asteroids and comets and plan their own crater experiment.	1. Recap previous learning on materials and forces. Investigate materials and their properties through a 'Cinderella' materials problem solving. 2. Understand the difference between melting and Dissolving, soluble and insoluble. Children will conduct a test to find out which materials are soluble, and which are not. 3. Children will investigate if they can recover a substance from a solution by heating materials. 4. Children will learn about reversible changes by changing milk into butter. 5. Children will recap irreversible and reversible materials then look at changes resulting in new materials through various investigations such as tea bag rockets, bicarb balloons, pop rockets. 6. Children will find out about Spencer Silver and Arthur Fry and the invention of the post it note. Children will use their findings to make their own glue. Assessment test.	1. Recap previous learning- forces. Find out about Sir Isaac Newton. Learn about gravity and different forces by investigating different forces applied. 2. Focus on gravity and space. Explore difference between weight and mass. Focus on Galileo and investigate time using pendulums. 3. Investigate air resistance. Investigate effects of air resistance with parachutes. 4. Investigation into water resistance. 5. Investigate friction through slippy shoes investigation. 6. Investigate levers, pulleys and gears through a range of activities.
Cross Curricular	**PSHE**- growing up and reproduction. **Maths**- Using keys and grouping. Creating recording tables and looking for patterns. Plotting on a graph. **English**- spell scientific vocabulary correctly. Report findings in a logical way. **Geography**- different climates and explore how animals are adapted to different climates. **Sustainability**- Explore different types of pollution and the effects on animals. **MFL**- Learn animal names in a different language. **History**- learning about scientists of the past and present.	**PSHE**- links to puberty, relationships and healthy relationships. **Maths**- Plotting data on a line graph. Using a table to collect data. **English**- spelling scientific words correctly and writing ideas in a logical way. **Art**- Designing a poster for an audience to give information.	**English**- Enjoy science texts, follow instructions, asking questions, **Maths**- size and mass. Measuring using cms, reading tables. Link to fractions when folding paper. **History**- learning about historical development of space and scientists of the past and present. **PSHE**- Dangers about looking at the sun. **IT**- Use of video to share abstract concepts. Slow motion video technology (optional)	**English**- interpreting results and using and spelling scientific words correctly. Drama activities to reenact concepts. **Maths**- Using tables and Venn diagrams. **DT**- evaluating the effectiveness of different materials. **PSHE**- Safety when testing and making own glue. Safety when dealing with flames and heat. **History**- learning about historical developments and scientists of the past and present.	**DT**- evaluating the effectiveness of different materials to create parachutes. **English**- interpreting results and using and spelling scientific words correctly. Write a letter to a driving company. **Maths**- Using tables and Venn diagrams. Using scales to read force metres. Bar and line graphs. Learn about weight and mass. **IT**- Use of video to show abstract concepts. **History**- learning about historical development of electricity and scientists of the past and present.

Science Knowledge and Skills Coverage. (Year 6)

Content/ Knowledge	Animals Including Humans I can identify the main parts of the human circulatory system and describe the function of the heart, blood vessels and blood. I can describe the ways in which nutrients and water and transported within animals including humans. I can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.	Electricity To 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. To associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. To use recognised symbols when representing a simple circuit in a diagram.	Living things and Habitats Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences including micro-organisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics.	Light Recognise that light appears to travel in straight lines. 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. 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. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
Book/ Science Capital	 Santorio Dr Kat Dibb Biomedical Scientist. Dwain Chambers	 Volta Faraday Becquerel	 Steve Irwin Aristotle Linnaeus Jenner Fleming	 Optician
Scientific Enquiry	Identify parts of the body Research Santorio and look for patterns. Identify parts of the blood. Use research to support explanation Conduct comparative test Use research to support ideas.	Identify electrical components. Notice patterns in my investigation. Comparative tests. Fair test Using research Identify components	Sort based on observable characteristics. Classify and sort using classification keys. Research genus and species. Research animals to classify Observe microorganisms over time. Notice patterns.	ook for patterns n how light is eflected. Use SK and esearch to make periscope. Identify different parts of the eye. Look for patterns in observations. Use SK about efraction to make predictions I can look for patterns in how we see things.
Working Scientifically	Use scientific diagrams Take accurate measurements Use labelled diagrams to explain Use models to explain my thinking Plan investigation and record results. Observe what happens using a model.	Answer questions by investigating Take accurate measurements Develop predictions Present results in line graph. Use diagrams to support explanation Scientific diagrams.	Record in a table Answer own questions. Use classification keys. Raise questions about animals to group. Observe and raise questions. Predict how microorganisms will decay food Evaluate effects of yeast.	Use scientific models and labelled diagrams. Use diagrams to support explanation. Make careful observations. Draw diagrams with accuracy Make predictions based on SK. Evaluate using scientific language
Ideas/WOW moments.	1- Children create own model of the heart and explain how it works using scientific language. 2- Circulatory drama. Create a pendulum swing to measure pulse rate. Extra- heart dissection. 3-Explore heart location in animals. Children to make blood 4- Use picture of the heart to explain how blood flows in and out. Use skittles to demonstrate how nutrients are absorbed.	1- Circuit investigations. Practical activities. Electricity hazards. 2- Drawing electrical symbols. Will it work activity. What is electricity investigation. Measuring bulb brightness using data logger and recording in Lux. 3- What is a cell/battery? Children to make own fruit batteries. 4- Investigation into voltage. Investigation into changing the sound of a buzzer in a circuit using knowledge of voltage. 5- Create a game for the fair using knowledge of simple circuits.	1. Sort animals and leaves into broad groups. 2. Sort minibeasts, classify minibeasts using classification keys. Human classification. 3. Classification. Seven levels of Linnaeus System- Carolus Linnaeus. Different classifications based on Kingdom, Phylum, class, order, family, genus and species. Children classify animals using Linnaeus scale. 4. Quirky creatures. Specific descriptions using facts. Children to use classification system to create own creature.	1. Dark den/box practical. History of light. Light maze activity. Use prisms to spot colour spectrum. 2. Know how a periscope works, how light is reflected and make own periscope. 3. Identify light sources. Explore if the moon is a light source. How does the eye work, how do we see? Children will look at optical illusions. Children will observe how the pupil reacts to light. Draw and label the eye.

Year 6 Yearly Overview

Year 6 Yearly Overview cont.

	Understand why blood clots and the role of the platelets to form a scab. 5- Recap on healthy foods. Investigation into heart recovery rates. 6- Drugs and testing in sport, explore effects of smoking. Children create own smoking model. Explore importance of mental health.	6- Children to create a toy using more complicated components e.g. propellers, motors.	5. Learn about different microorganisms and how they are classified using the system. Good and bad bacteria. Food decay. Edward Jenner and smallpox vaccine. 6. Learn about the effects of Yeast, yeast experiment. Make bread to show the effects of yeast.	4. Explain how we see things using diagrams. Experiment with shadows and changing the size of the shadow. Shadow investigation answering specific questions. 5. Refraction activities. Children will make their own magnifying glass and understand what refraction is. 6. Children will explore how rainbows are formed. Children will consolidate the language of the unit.
Cross curricular links/opportunities	• **English-** following instructions and create instructions. Create poster. • **History-** looking at how the pulse metre was invented and people from the past. • **Maths-** calculating average and using a stop watch for measurement. • **IT-** watch video/clips/apps to help children with their explanations. Use of data loggers, pulse metres. • **PE-** Exercises to increase heart rate. • **DT-** Healthy foods and balanced diets. • **PSHE-** Medicines, drugs and mental health.	• **PSHE-** Danger with electricity • **English-** Can record explanations. Follow instructions. • **IT-** Use data loggers, apps to measure Lux. • **DT-** Investigating different fruits and their properties. Create a new product for the market. Choosing suitable materials. • **History-** learning about scientists in the past and present.	• **English-** following instructions. • **PSHE-** Hygiene. • **IT-** Use of stopwatch, videos and apps. (optional) time lapse videos • **DT-** Making bread, food hygiene. • **Maths-** sorting and classification. • **Art-** creating own creatures using a sorting system. Being creative. • **History-** learning about scientists in the past and present.	• **History-** recap the history of light. • **PSHE-** health and safety about not looking at the sun or shining light in the eye. • **DT-** Creating shadow by making shadow puppets. • **Maths-** sequencing of dates. • **English-** follow instructions, write detailed explanations. • **IT-** use of video and IT.

Year 6 Yearly Overview cont…

Content/ Knowledge	<u>Evolution and Inheritance</u> 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 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.
Book/ Science Capital	 Darwin  Palaeontologist  The Molliebird
Scientific Enquiry	Use scientific evidence to support or refute arguments. Explain research using scientific knowledge and understanding. Can identify patterns which can be found in natural environments. Draw conclusions when sorting and classifying. Can present findings in oral and written form using research. I can look for patterns when considering variation.
Working Scientifically	Use ideas from secondary sources to explain ideas. Raise questions about a range of phenomena. Develop predictions which can be found in natural environments. Use scientific reasons to make overall comparisons. Use scientific diagrams to explain abstract concepts. Describe and evaluate my own and other people's scientific ideas
Ideas/WOW moments.	1- Children consolidate work on fossils and how they are formed. Children make own fossil and explain the process. Children create a guide or poster. 2- Children will learn about Charles Darwin and natural selection. Discuss evolution of birds through seed investigation. 3- Read Molliebird and design own Molliebird based on the changing environments. Use sweets and raisons to demonstrate natural selection. 4- Discuss how plants are adapted to their environments. Sort plant cards according to how they adapt and evolve.

	5- Children will focus on how animals are adapted to different climates. Read peppered moth to demonstrate modern evolution. Create a stop motion or leaflet to show how animals are adapted to its environment. 6- Explore genetics and how characteristics are passed down the generations. Children to analyse family trees and write an explanation for how the Weasley family tree has similar characteristics.
Cross curricular links/opportunities	• **English**- create information poster and leaflet. Write coherent and detailed explanations. • **History**- looking at how animals and plants have evolved over time. Study of scientists in the past. • **IT**- stop motion technology. Use of video clips to help understand concepts. • **Maths**- measurements and timelines. Recording time.