



Whale Hill Primary School 2023-2024 Subject Overview



Science

Key	Biology	Chemistry	Physics
Year Group	Autumn Term	Spring Term	Summer Term
2023-24 Cycle A	Cycle A - Autumn A My Senses	Cycle A - Spring A Opposites - Hot and Cold, Light and Dark, Frozen and Melted	Cycle A - Summer A Pushes and Pulls and Making things move Katy's amazing machines - CBeebies
2024-25 Cycle B	Cycle B - Autumn A Parts of my Body and Which material is best for? Nina and the Neurons - CBeebies Maddie- Do you Know? - CBeebies	Cycle B - Spring A Growing Plants/life cycles Investigate with Kit and Pup - CBeebies	Cycle B - Summer A What can my body do? Looking after myself and keeping healthy, Skeletons and bones
EYFS	Working 'Scientifically' in EYFS Nursery Children - Understanding of the World/Communication and Language Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Talk about what they see, using a wide vocabulary. • Begin to make sense of their own life-story and family's history. • Explore how things work. • Plant seeds and care for growing plants. • Understand the key features of the life cycle of a plant and an animal.		
	Cycle A - Autumn B Materials - Building a house LEGO - Ole Kirk Kristiansen	Cycle A - Spring B Lifecycles of animals and Habitats Andy's Baby Animals - CBeebies	Cycle A - Summer B Minibeasts Lifecycles and Habitats David Attenborough
	Cycle B - Autumn B Pushes and Pulls Magnetism	Cycle B - Spring B Baby animals and change	Cycle B - Summer B Floating and Sinking

YEAR 1	<u>Throughout the year</u> <u>Seasonal Changes</u> To observe changes across the four seasons. To observe and describe weather associated with the seasons and how the day length varies. <u>Suggested Vocabulary</u> Summer, Spring, Autumn, Winter, sun, day, moon, night, light. <u>Working scientifically objectives</u> • Asking simple questions. • Observing closely, using simple equipment. <u>Key Scientists</u> Holly Green (Meteorologist) Dr Steve Lyons (Extreme Weather)		
	<u>Autumn A</u> <u>Plants - Trees</u> To identify and name a variety of common plants, including garden plants, wild plants and trees and those classified as deciduous and evergreen. <u>Suggested Vocabulary</u> Deciduous, evergreen, leaves, flowers, roots, branch, blossom, petals, roots, bulb, seed, trunk, branches, stem. <u>Working Scientifically Objectives</u> • Asking simple questions • Observing closely, using simple equipment. • Identifying and classifying • Using their observations and ideas to suggest answers to questions <u>Key Scientists</u> Jeanne Baret- Botanist Maria Sibylla Merian - German artist and naturalist	<u>Spring B/Summer A</u> <u>Everyday Materials</u> Distinguish between an object and the material from which it is made Identify and name a variety of everyday material, including wood, metal, plastic, glass and rock Describe the simple physical properties of a variety of everyday materials Compare and group together a variety of everyday materials based on their properties <u>Working Scientifically Objectives</u> • Identify, classify, sort and compare • Identify an appropriate way to answer a question • Perform simple tests to explore questions • Make simple predictions • Consider results- why did x happen?	<u>Summer A/B</u> <u>Plants - Flowers</u> To identify and describe the basic structure of a variety of common flowering plants, including roots, stem/trunk, leaves and flowers. <u>Suggested Vocabulary</u> Leaves, flowers, roots, bulbs, seed, branch, stem <u>Working Scientifically Objectives</u> • Asking simple questions • Observing closely, using simple equipment. • Identifying and classifying • Using their observations and ideas to suggest answers to questions

	<u>Autumn B/Spring A</u> <u>Animals Including Humans</u> To identify and name a variety of common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates To identify and name a variety of common animals that are carnivores, herbivores and omnivores To describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles, mammals and invertebrates, and including pets) To identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. <u>Suggested Vocabulary</u> Fish, reptiles, mammals, birds, amphibians, herbivore, carnivore, omnivore, beak <u>Working Scientifically Objectives</u> • Asking simple questions • Observing closely, using simple equipment. • Identifying and classifying • Using their observations and ideas to suggest answers to questions <u>Key Scientists</u> Linda Brown Buck – Biologist Mammals Chris Packham – Animal Conservationist	• Notice anything that may have affected their results <u>Key Scientists</u> William Addis - Toothbrush Inventor Charles Mackintosh - Waterproof coat John Macadam - Roads	
--	---	---	--

YEAR 2	<u>Autumn A</u> <u>Animals including humans</u> To notice that animals, including humans, have offspring which grow into adults To find out about and describe the basic needs of animals, including humans, for survival (water, food and air) To describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. <u>Suggested Vocabulary</u> survival, adult, baby, offspring, hygiene, exercise, kitten, calf, puppy <u>Working Scientifically Objectives</u> • asking simple questions • using their observations and ideas to suggest answers to questions <u>Marie Curie</u> Steve Irwin - Crocodile Hunter Robert Winston - Human Scientist Joe Wicks - Personal Trainer	<u>Spring</u> <u>Materials</u> To identify and compare the uses of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock and paper/cardboard To find out how the shapes of solid objects made from some materials can be changed by squashing, bending twisting and stretching <u>Suggested Vocabulary</u> Materials, natural, man- made, smooth, bendy, magnetic, non-magnetic <u>Working Scientifically Objectives</u> • asking simple questions • identifying and classifying • using their observations and ideas to suggest answers to questions <u>Key Scientists</u> Ole Kirk Kristiansen - LEGO Stephanie Kwolek - Kevlar Patsy Sherman- Scotch Gard	<u>Summer A/B</u> <u>Plants</u> To observe and describe how seeds and bulbs grow into mature plants To find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. <u>Suggested Vocabulary</u> Seeds, bulbs, water, light, temperature, growth <u>Working Scientifically Objectives</u> • asking simple questions • observing closely, using simple equipment • performing simple tests (comparative test) • identifying and classifying • using their observations and ideas to suggest answers to questions <u>Key Scientists</u> Tim Smit - The Eden Project Agnes Arber - Botanist Alan Titchmarsh - Botanist and Gardener

	<u>Autumn B</u> <u>Living Things and their Habitats</u> To explore and compare the differences between things that are living, dead, and things that have never been alive. To 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 To identify and name a variety of plants and animals in their habitats, including micro-habitats To 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. <u>Suggested Vocabulary</u> Habitat, energy, food chain, predator, prey, woodland, pond, desert, living/dead <u>Working Scientifically Objectives</u> • asking simple questions • identifying, sorting and classifying • using their observations and ideas to suggest answers to questions <u>Key Scientists</u> Terry Nutkin - TV presenter Liz Bonnin - Conservationist		
--	--	--	--

Autumn AForces and Magnets

To notice that some forces need contact between two objects and some forces act at a distance

To observe how magnets attract or repel each other and attract some materials and not others

To 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.

To describe magnets as having two poles.

To predict whether two magnets will attract or repel each other, depending on which poles are facing.

To compare how things move on different surfaces.

Suggested Vocabulary

Magnetic, force, contact, attract, repel, friction, poles, push, pull.

Working Scientifically Objectives

- Asking relevant questions.
- Setting up simple practical enquiries, comparative and fair tests.
- Making accurate measurements using standard units, using a range of equipment, for example thermometers and data loggers.
- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.

Spring ARocks (Materials)

To compare and group together different kinds of rocks on the basis of their simple physical properties

To relate the simple physical properties of some rocks to their formation (igneous or sedimentary)

To describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock.

Suggested Vocabulary

Fossils, soil, sandstone, granite, marble, pumice, crystals, absorbent sedimentary

Working Scientifically Objectives

- Asking relevant questions.
- 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, bar charts, and tables.

Key Scientists

Mary Anning - contribution to palaeontology

William Smith - displayed Yorkshire fossils

Summer A/BPlants

To identify and describe the functions of different parts of flowering plants: roots, stem, leaves and flowers.

To 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.

To investigate the way in which water is transported within plants.

To explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

Suggested Vocabulary

Flower, pollination, dispersal, transportation, reproduction, soil, nutrients
Water, lights.

Working Scientifically Objectives

- Asking relevant questions.
- Recording findings using simple scientific language, drawings, labelled diagrams, bar charts, and tables.
- Comparing and looking for patterns
- Make careful observations

Key Scientists

Jan Ingenhousz - Photosynthesis

Joseph Banks - Botanist

	Recording findings using simple scientific language, drawings, labelled diagrams, bar charts, and tables. Key Scientists William Gilbert - Theories on Magnetism Andre Marie Ampere - Founder of Electro-Magnetism George Stephenson		
	Autumn B Animals including Humans To 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 To identify that humans and some animals have skeletons and muscles for support, protection and movement. Suggested Vocabulary Movement, muscles, bones, skeleton, nutrition, carbohydrates, dairy, fats, sugars Working Scientifically Objectives - Asking relevant questions - Compare and contrast - Recording findings using simple scientific language, drawings, labelled diagrams, bar charts, and tables - Make observations - Research Key Scientists Adelle Davis - 20th Century Nutritionist Marie Curie - Radiation/X Rays	Spring B Light To recognise that they need light in order to see things and that dark is the absence of light To recognise that light from the sun can be dangerous and that there are ways to protect their eyes To recognise that shadows are formed when the light from a light source is blocked by an opaque object To notice that light is reflected from surfaces To find patterns in the way that the size of shadows change Suggested Vocabulary Light, shadows, mirror, reflective, dark, reflection Working Scientifically Objectives - Asking relevant questions. - 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, bar charts, and tables. - Look for patterns Key Scientists James Clerk Maxwell - Visible and Invisible Waves of light	

YEAR 4	<u>Autumn A</u> <u>States of Matter</u> To compare and group materials together, according to whether they are solids, liquids or gases To observe that some materials change state when they are heated or cooled, and measure the temperature at which this happens in degrees Celsius (°C), building on their teaching in mathematics To identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. <u>Suggested Vocabulary</u> Solid, liquid, gas, evaporation, condensation, particles, temperature, freezing, melting <u>Working Scientifically Objectives</u> - Recording findings using simple scientific language, drawings, labelled diagrams, 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 and suggest improvements, new questions and predictions for setting up further tests. - Identifying differences, similarities or changes related to simple scientific ideas and processes. - Grouping and classifying a variety of different materials. <u>Key Scientists</u> Anders Celsius - Celsius Temperature Scale Daniel Fahrenheit - Fahrenheit Temperature Scale/Invention of the Thermometer	<u>Spring A</u> <u>Animals including Humans</u> To describe the simple functions of the basic parts of the digestive system in humans To identify the different types of teeth in humans and their simple functions. To construct and interpret a variety of food chains, identifying producers, predators and prey. <u>Suggested Vocabulary</u> oesophagus, small intestine, large intestine, herbivore, carnivore canine, incisor, molar, teeth <u>Working Scientifically Objectives</u> - Recording findings using simple scientific language, drawings, labelled diagrams, 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 and suggest improvements, new questions and predictions for setting up further tests. - Identifying differences, similarities or changes related to simple scientific ideas and processes. - Using straight forward scientific evidence to answer questions or to support their findings <u>Key Scientists</u> Ivan Pavlov - Digestive System Mechanism Joseph Lister - Discovered Antiseptics	<u>Summer A/B</u> <u>Living things and their Habitats</u> To identify and name a variety of living things (plants and animals) in the local and wider environment, using classification keys to assign them to groups To give reasons for classifying plants and animals based on specific characteristics To recognise that environments are constantly changing and that this can sometimes pose dangers to specific habitats. <u>Suggested Vocabulary</u> Vertebrates, amphibians, reptiles, birds, mammals, environment, habitats <u>Working Scientifically Objectives</u> - Recording findings using simple scientific language, drawings, labelled diagrams, 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 and suggest improvements, new questions and predictions for setting up further tests. - Identifying differences, similarities or changes related to simple scientific ideas and processes. - Using straight forward scientific evidence to answer questions or to support their findings.

	<u>Autumn B</u> <u>Sound</u> To recognise that vibrations from sounds travel through a medium to the ear. To identify how sounds are made, associating some of them with something vibrating To recognise that sounds get fainter as the distance from the sound source increases To find patterns between the pitch of a sound and features of the object that produced it To find patterns between the volume of a sound and the strength of the vibrations that produced it. <u>Suggested Vocabulary</u> Volume, vibration, wave, pitch, tone, speaker <u>Working Scientifically Objectives</u> • Recording findings using simple scientific language, drawings, labelled diagrams, bar charts, and tables. • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Identifying differences, similarities or changes related to simple scientific ideas and processes • Using straight forward scientific evidence to answer questions or to support their findings. <u>Key Scientists</u> Aristotle - Sound waves Galileo Galilei - Frequency and Pitch of Sound Waves Alexander Graham Bell- Invented the Telephon	<u>Spring B and Summer A</u> <u>Electricity</u> To identify common appliances that run on electricity To construct a simple series electrical circuit To 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 To recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit To recognise some common conductors and insulators, and associate metals with being good conductors. <u>Suggested Vocabulary</u> Cells, buzzers, bulbs, switch, battery, circuit, series, conductors, insulators <u>Working Scientifically Objectives</u> • Recording findings using simple scientific language, drawings, labelled diagrams, bar charts, and tables. • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Identifying differences, similarities or changes related to simple scientific ideas and processes. • Using straight forward scientific evidence to answer questions or to support their findings. <u>Key Scientists</u> John o'Sullivan - Wifi Thomas Edison - First Working Lightbulb Joseph Swan - Incandescent Light Bulb	<u>Key Scientists</u> Cindy Looy - Environmental Change and Extinction Jacques Cousteau - Marine Biologist Joy Adamson - The Born Free Foundation
--	---	---	---

YEAR 5

Autumn A

Earth and Space

To describe the movement of the Earth relative to the Sun in the solar system.

To describe the movement of the Moon relative to the Earth.

To describe the Sun, Earth and Moon as approximately spherical bodies.

To use the idea of the Earth's rotation to explain day and night.

Suggested Vocabulary

Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, star, constellation, waxing, waning, crescent, gibbous. Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, planets, solar system, day, night, rotate, orbit, axis, spherical, geocentric, heliocentric.

Working Scientifically Objectives

- Presenting findings in written form, displays and other presentations
- Comparing and constructing models
- Researching

Key Scientists

Stephen Hawking

Claudius Ptolemy and Nicolaus Copernicus -Heliocentric vs Geocentric Universe

Prof Brian Cox - space

Neil Armstrong - First man on the Moon

Helen Sharman - First British astronaut

Tim Peake - First British ESA astronau

Spring A/B

Changes in Materials

To compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, conductivity (electrical and thermal) and response to magnets.

To give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.

To know how some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution

To use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating

To demonstrate that dissolving, mixing and changes of state are reversible changes.

To explain that some changes result in the formation of new materials and that this kind of change is usually not reversible, including changes associated with burning and the actions of acid and bicarbonate of soda

Suggested Vocabulary

Evaporate, condense, dissolving, magnetic, filter, gas, conductivity, transparency, solubility.

Working scientifically objectives

Summer A

Animals including humans

Describe the changes as humans develop to old age

Suggested Vocabulary

Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty, Hormone, Physical, Emotional,

Working Scientifically Objectives

- Presenting findings in written form, displays and other presentations
- Researching and recording

Key Scientists

Dr Steve Jones - Geneticist

Prof Robert Winston - Human Scientist

Summer B

Living things and their habitats

To describe the differences in life cycles common to a variety of animals, including humans (birth, growth, development, reproduction, death), and to a variety of plants (growth, reproduction and death).

To describe the life process of reproduction in some plants and animals.

Suggested Vocabulary

	<u>Autumn B</u> <u>Forces</u> Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object and the impact of gravity on our lives. Identify the effects of air resistance, water resistance and friction, which act between moving surfaces. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. <u>Suggested Vocabulary</u> Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys, force, push, pull, opposing, streamline, brake, mechanism, lever, cog, machine, pulley <u>Working Scientifically Objectives</u> • Planning enquiries, including recognising and controlling variables where necessary • Taking measurements, using a range of scientific equipment, with increasing accuracy and precision • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models • Presenting findings in written form, displays and other presentations <u>Key Scientists</u> Aristotle Galileo Galilei - Gravity and Acceleration Isaac Newton - Gravitation Archimedes of Syracuse - Levers John Walker - The Match Prof. Brian Cox - air resistance, velocity	• Planning enquiries, including recognising and controlling variables where necessary • Taking measurements, using a range of scientific equipment, with increasing accuracy and precision • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models • Reporting findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions • Carrying out tests and comparing materials <u>Key Scientists</u> Spencer Silver, Arthur Fry and Alan Amron - Post it notes Ruth Benerito - Wrinkle free cotton	Foetus, embryo, womb, gestation, development, puberty, teenagers, elderly, growth. Reproduce, stamen, stigma, sepal, petal, ovary, pollen, style, germinate. <u>Working Scientifically Objectives</u> • Presenting findings in written form, displays and other presentations • Observing changes • Asking pertinent questions and suggest reasons for differences and similarities • Comparing <u>Key Scientists</u> James Brodie of Brodie - Reproduction of Plants by Spores David Attenborough - Naturalist and Nature Documentary Broadcaster
--	---	--	---

YEAR 6	<u>Autumn A</u> <u>Light</u> To recognise that light appears to travel in straight lines To 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. To use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. To 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. <u>Suggested Vocabulary</u> Reflection, opaque, mirror, source, travel, spectrum, refraction <u>Working Scientifically Objectives</u> • Planning enquiries, including recognising and controlling variables where necessary • Taking measurements, using a range of scientific equipment, with increasing accuracy and precision • Recording data and results of increasing • Complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models <u>Key Scientists</u> Thomas Young - Wave theory of Light Ibn al Haytham (Alhazen) - Light and our Eyes Percy Shaw - The Cats Ey	<u>Spring A</u> <u>Animals Including Humans</u> To identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. To recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. To describe the ways in which nutrients and water are transported within animals, including humans. <u>Suggested Vocabulary</u> Circulatory, vessels, veins, arteries, oxygenated, deoxygenated, valve, exercise, respiration. <u>Working Scientifically Objectives</u> • Presenting findings in written form, displays and other presentations • Researching • Exploring the work of scientists <u>Key Scientists</u> Justus Von Liebig - Theories of Nutrition and Metabolism Sir Richard Doll - Linking Smoking and Health Problems Leonardo Da Vinci - Anatomy	<u>Summer A</u> <u>Evolution and Inheritance</u> To recognise that living things have changes over time and that fossils provide information about living things that inhabited the Earth millions of years ago To 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. <u>Suggested Vocabulary</u> Genetics, reproduction, characteristics, evolution, adaptation, fossils, inheritance <u>Working Scientifically Objectives</u> • Presenting findings in written form, displays and other'; presentations • Observing and raising questions • Comparing and analysing advantages and disadvantages <u>Key Scientists</u> Carl Linnaeus - Identifying, Naming and Classifying Organisms Charles Darwin Alfred Russel Wallace

	<u>Autumn B</u> <u>Electricity</u> 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 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 use recognised symbols when representing a simple circuit in a diagram. <u>Suggested Vocabulary</u> Circuit, component, conductor, insulator, symbol, voltage, electricity <u>Working Scientifically Objectives</u> • Presenting findings in written form, displays and other presentations • Using simple models to describe scientific ideas • Designing and making <u>Key Scientists</u> Alessandro Volta - Electrical battery Nicola Tesla - Alternating currents Peter Rawlinson - Engineer on electrical vehicle)	<u>Spring B</u> <u>Living Things and their Habitats</u> To 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. To give reasons for classifying plants and animals based on specific characteristics. <u>Suggested Vocabulary</u> Classification, Vertebrates, Invertebrates, Micro-organisms, Amphibians, Reptiles, Mammals, Insects <u>Working Scientifically Objectives</u> • Presenting findings in written form, displays and other presentations • Using classification systems and keys • Researching <u>Key Scientists</u> Carl Linnaeus - Identifying, Naming and Classifying Organisms Charles Darwin- Alfred Russel Wallace	
--	--	---	--