National Curriculum 2014

Scheme of Work

Science

Statutory Requirements

and school curriculum

Nursery

NC Programme of study

Knowledge

22-36m

- Notices detailed features of objects in their environment.

30-50m

- Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world.
- Can talk about some of the things they have observed such as plants, animals, natural and found objects.
- Talks about why things happen and how things work.
- Developing an understanding of growth, decay and changes over time.

Working Scientifically

Characteristics of Effective Leaning

- Show curiosity about objects, events and people
- Engage in open-ended activity
- Take a risk, engage in new experiences and learn by trial and error
- Find ways to solve problems / find new ways to do things / test their ideas
- Develop ideas of grouping, sequences, cause and effect
- Use senses to explore the world around them
- Make links and notice patterns in their experience

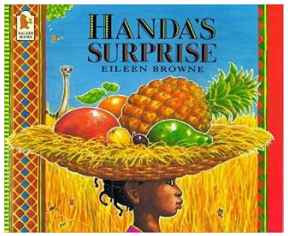
Suggested Activities

- Make comments on seasonal changes
- importance of keeping healthy and the things that contribute to this
- collect materials, such as rough sandpaper, soft fabric and shiny bottle tops to build a sensory wall
- explore colour, texture, shape, form and space
- sounds - how they can be changed and how to imitate sounds they hear.

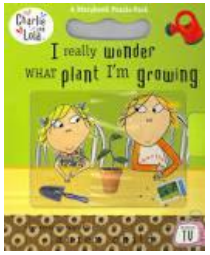
Linked Texted Year N (reading across the curriculum)

One Day on our Blue Planet: In the Savannah (Ella Bailey)

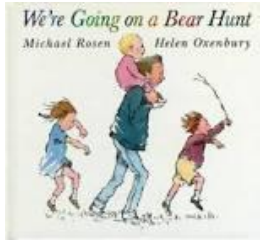
Handa's Surprise



I Really Wonder What Plant I'm Growing (Lauren Child)



We're Going on a Bear Hunt (Michael Rosen)



Additional school curriculum including Visits

Science at Foundation Stage is introduced indirectly through activities that encourage children to explore, problem solve, observe, predict, think, make decisions and talk about the world around them. It's called 'knowledge and understanding of the world'. Through Knowledge and Understanding of the World, children explore creatures, people, plants and objects in their natural environments. They observe and manipulate objects and materials to identify differences and similarities. Children will be encouraged to ask questions about why things happen and how things work and will also be asked questions about what they think will happen to help them communicate, plan, investigate, record and evaluate findings.

Visits and Visitors include:

- Forest Schools
- Wyevale Garden Centre
- Seasonal walks
- School Nurse
- St James' Church

Reception

NC Programme of study

Knowledge

Understanding the World

Looks closely at similarities, differences, patterns and change.

Early Learning Goal
Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.

Working Scientifically

Characteristics of Effective Leaning

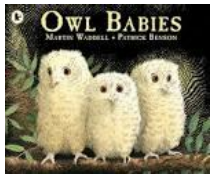
- Show curiosity about objects, events and people
- Engage in open-ended activity
- Take a risk, engage in new experiences and learn by trial and error
- Find ways to solve problems / find new ways to do things / test their ideas
- Develop ideas of grouping, sequences, cause and effect
- Use senses to explore the world around them
- Make links and notice patterns in their experience

Suggested Activities

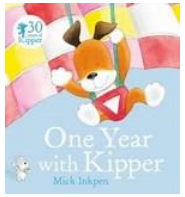
- Comparing objects - natural and found objects, leaves.
- Comparing the weather / seasons – changes to ice/snow etc.
- Plant seeds to observe growth and change.
- Comparing seasonal changes
- Floating and sinking

Linked Texted Year R (reading across the curriculum)

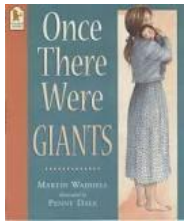
Owl Babies
(Martin Waddell)



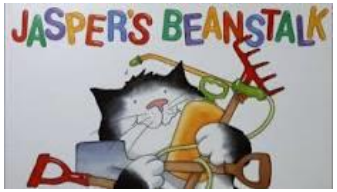
One year with Kipper
(mick Inkpen)



Once there were Giants
(Martin Waddell)



Jasper's Beanstalk
(Nick Butterworth)



Oi Get off our Train
(John Burningham)

Additional school curriculum including Visits

Science at Foundation Stage is introduced indirectly through activities that encourage children to explore, problem solve, observe, predict, think, make decisions and talk about the world around them. It's called 'knowledge and understanding of the world'. Through Knowledge and Understanding of the World, children explore creatures, people, plants and objects in their natural environments. They observe and manipulate objects and materials to identify differences and similarities. Children will be encouraged to ask questions about why things happen and how things work and will also be asked questions about what they think will happen to help them communicate, plan, investigate, record and evaluate findings.

Visits and Visitors include:

- Forest Schools

- Wyevale Garden Centre
- Farm
- Seasonal walks
- School Nurse

Year 1

NC Programme of study

Knowledge

.Plants

- identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
- identify and describe the basic structure of a variety of common flowering plants, including trees.

Animals inc Humans

- identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals
- identify and name a variety of common animals that are carnivores, herbivores and omnivores
- describe and compare 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.

Everyday materials

- 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.

Seasonal Changes

- observe changes across the four seasons
- observe and describe weather associated with the seasons and how day length varies.

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.

Key Vocabulary

Plants
Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud

Animals
Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves
Senses, touch, see, smell, taste, hear, fingers (skin), eyes, nose, ear and tongue

Materials
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

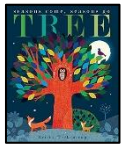
Seasons
Weather (sunny, rainy, windy, snowy etc.), seasons (Winter, Summer, Spring, Autumn), sun, sunrise, sunset, day length, monsoon, khareef, thunder storm

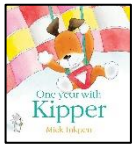
Linked Texted Year 1 (reading across the curriculum)

Tree: Seasons Come, Seasons Go
(Patricia Hegarty and Britta Teckentrup)

One Year with Kipper
(Mick Inkpen)

After the Storm
(Nick Butterworth)

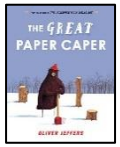


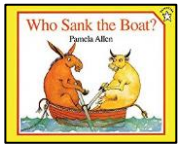


The Great Paper Caper
(Oliver Jeffers)

Who Sank the Boat
(Pamela Allen)

The Story of Cinderella
(Walt Disney)

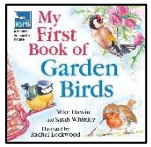


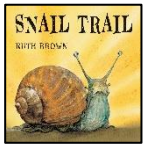


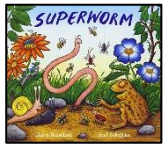
RSPB: My First Book of Garden Birds
(Mike Unwin and Sarah Whittley)

Snail Trail
(Ruth Brown)

Superworm
(Julia Donaldson & Axel Scheffler)



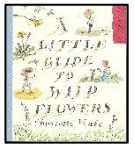


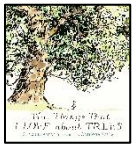


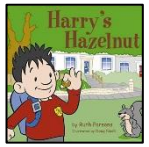
A Little Guide to Wild Flowers
(Charlotte Voake)

The Things That I LOVE about TREES
(Chris Butterworth)

Harry's Hazelnut
(Ruth Parsons)







Additional school curriculum including Visits

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Visits and Visitors include:

- Science Club
- Seasonal Walks
- Gardening club
- Forest School
- Author Visit – Viviane French
- Farm

Year 2

NC Programme of study

Knowledge

. Plants

- 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.

Living Things and their habitats

- explore and compare the differences between things that are living, dead, and things that have never been alive
- identify that most living things live in habitats to which they are suited 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 micro-habitats
- describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.

Animals inc Humans

- 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.
- Use of everyday 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.

Living Things and their habitats

- explore and compare the differences between things that are living, dead, and things that have never been alive
- identify that most living things live in habitats to which they are suited 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 micro-habitats
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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.

Key Vocabulary

Living things and habitats
Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, names of local habitats e.g. pond, woodland etc., names of micro-habitats e.g. under logs, in bushes etc.

Plants
As for year 1 plus - light, shade, sun, warm, cool, water, grow, healthy, germinate

Animals and humans
Offspring, reproduction, growth, child, young/old stages (examples - chick/hen, baby/child/adult, caterpillar/butterfly), exercise, heartbeat, breathing, hygiene, germs, disease, food types (examples – meat, fish, vegetables, bread, rice, pasta)

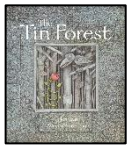
MaterialsNames of materials – increased range from year 1
Properties of materials - as for year 1 plus opaque, transparent and translucent, reflective, non-reflective, flexible, rigid, shape, push/pushing, pull/puling, twist/twisting, squash/squashing. Bend/bending, stretch/stretching

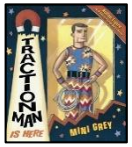
Linked Texted Year 2 (reading across the curriculum)

The Tin Forest
(Helen Ward)

Traction Man
(Mini Grey)

Three Little Pigs
(Lesley Sims)

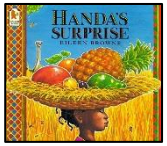


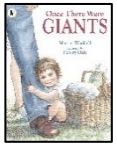


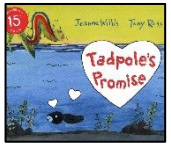
Handa's Surprise
(Eileen Brown)

Once There Were Giants
(Martin Waddell and Penny Dale)

Tadpole's Promise
(Jeanne Willis and Tony Ross)



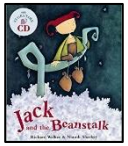


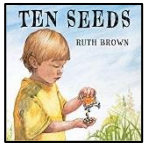


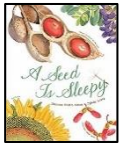
Jack and the Beanstalk
(Richard Walker)

Ten Seeds
(Ruth Brown)

A Seed Is Sleepy
(Dianna Aston)



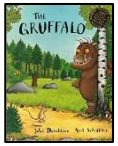




The Gruffalo
(Julia Donaldson)

Meerkat Mail
(Emily Gravett)

No Place Like Home
(Jonathon Emmett)



Additional school curriculum including Visits

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Visits and Visitors include:

- Science Club
- Gardening club



Year 3

NC Programme of study

Knowledge

Plants

- 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

Animals, inc Humans

- identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat
- identify that humans and some other animals have skeletons and muscles for support, protection and movement
- Rocks
- compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
- describe in simple terms how fossils are formed when things that have lived are trapped within rock
- recognise that soils are made from rocks and organic matter.

Light

- 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 their eyes
- recognise that shadows are formed when the light from a light source is blocked by a solid object
- find patterns in the way that the size of shadows change.

Forces & Magnets

- compare how things move on different surfaces
- notice that some forces need contact between two objects, but magnetic forces can act at a distance
- observe how magnets attract or repel each other and attract some materials and not others
- compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials
- describe magnets as having two poles
- predict whether two magnets will attract or repel each other, depending on which poles are facing

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.

Key Vocabulary

Plants
Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal – wind dispersal, animal dispersal, water dispersal

Light
Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous

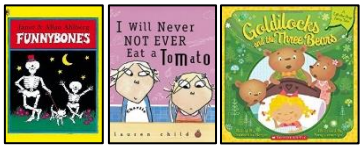
Forces and magnets
Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole

Rocks and soils
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

Animals and humans
Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, support, protect, move, skull, ribs, spine, muscles, joints

Linked Texted Year 3 (reading across the curriculum)

The Owl Who Was Afraid of the Dark *(Jill Tomlinson)* ***The Dark*** *(Lemony Snicket)* ***The Firework-Maker's Daughter*** *(Philip Pullman)*	***The Iron Man*** *(Ted Hughes)* ***Mrs Armitage: Queen of the Road*** *(Quentin Blake)* ***Mr Archimedes' Bath*** *(Pamela Allen)*	***The Pebble in My Pocket*** *(Meredith Hooper)* ***Stone Girl, Bone Girl*** *(Laurence Anholt)* ***The Street Beneath My Feet*** *(Charlotte Guillain & Yuval Zommer)*	***The Story of Frog Belly Rat Bone*** *(Timothy Basil Ering)* ***The Hidden Forest*** *(Jeannie Baker)* ***George and Flora's Secret Garden*** *(Jo Elworthy)*	***Funnybones*** *(Janet and Allan Ahlberg)* ***I Will Never Not Ever Eat a Tomato*** *(Lauren Child)* ***Goldilocks and the Three Bears*** *(Samantha Berger)*



Additional school curriculum including Visits

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out..

Visits and Visitors include:

- Science Club
- Gardening club

Year 4

NC Programme of study

Knowledge

Living things and their habitats

- 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 and wider environment
- recognise that environments can change and that this can sometimes pose dangers to living things.

Animals, inc Humans

- 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.

State of Matter

- 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 (°C)
- identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature

Sound

- identify how sounds are made, associating some of them with something vibrating
- recognise that vibrations from sounds travel through a medium to the ear
- find patterns between the pitch of a sound and features of the object that produced it
- 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.

Electricity

- identify common appliances that run on electricity
- construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
- identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery
- recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
- recognise some common conductors and insulators, and associate metals with being good conductors.

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.

Key Vocabulary

Living things and habitats
Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate

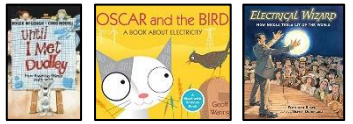
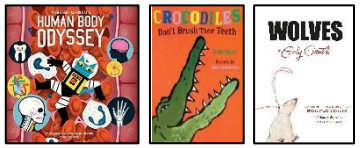
Animals and humans
Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain

Electricity
Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol

Sound
Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation

States of matter
Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle

Linked Texted Year 4 (reading across the curriculum)

Horrid Henry Rocks *(Francesca Simon)* ***Moonbird*** *(Joyce Dunbar)* ***The Pied Piper of Hamelin*** *(Natalia Vasquez)* 	***Charlie and the Chocolate Factory*** *(Roald Dahl)* ***Once Upon a Raindrop: The Story of Water*** *(James Carter)* ***Sticks*** *(Diane Alber)* 	***The Vanishing Rainforest*** *(Richard Platt)* ***The Morning I Met a Whale*** *(Michael Morpurgo)* ***Journey to the River Sea*** *(Eva Ibbotson)* 	***Until I Met Dudley*** *(Roger McGough)* ***Oscar and the Bird: A Book about Electricity*** *(Geoff Waring)* ***Electrical Wizard: How Nikola Tesla Lit Up the World*** *(Elizabeth Rusch)* 	***Human Body Odyssey*** *(Werner Holzwarth)* ***Crocodiles Don't Brush Their Teeth*** *(Colin Fancy)* ***Wolves*** *(Emily Gravett)* 

Additional school curriculum including Visits

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out..

Visits and Visitors include:

- Science Club
- Gardening club
- Seeds4Life
- Newcastle United Foundation Match Fit Programme
- Hodgekin Park
- Author Visit - Emily Dodd
- Inventors in Residence project




Year 5

NC Programme of study

Knowledge

Living things and their habitats

- describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird
- describe the life process of reproduction in some plants and animals.

Animals, inc Humans

- describe the changes as humans develop to old age

Properties and changes of materials

- 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 and 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 that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.

Earth & Space

- describe the movement of the Earth, and other planets, relative to the Sun in the solar system
- describe the movement of the Moon relative to the Earth
- describe the Sun, Earth and Moon as approximately spherical bodies
- use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.

Forces

- 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.

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 a 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

Key Vocabulary

Earth and Space
Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune) spherical, solar system, rotates, star, orbit, planets

Materials
Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve reversible/non-reversible change, burning, rusting, new material

Forces
Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears

Animals including humans
Vocab to be decided alongside PSHE puberty topic

Living things and habitats
Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings

Linked Texted Year 4 (reading across the curriculum)

The Enormous Turnip *(Katie Daynes)* ***Leonardo's Dream*** *(Hans de Beer)* ***The Aerodynamics of Biscuits*** *(Clare Helen Welsh)*	***The Skies Above My Eyes*** *(Charlotte Guillain & Yuval Zommer)* ***George's Secret Key to the Universe*** *(Lucy and Stephen Hawking with Christophe Galfard)* ***The Way Back Home*** *(Oliver Jeffers)*	***Goodnight Mister Tom*** *(Michelle Magorian)* ***Blackout*** *(John Rocco)* ***Hitler's Canary*** *(Sandi Toksvig)*	***Itch*** *(Simon Mayo)* ***Kensuke's Kingdom*** *(Michael Morpurgo)* ***The BFG*** *(Roald Dahl)*	***Charlotte's Web*** *(E.B. White)* ***The Land of Neverbelieve*** *(Norman Messenger)* ***Mummy Laid an Egg*** *(Babette Cole)*	***Letters from the Lighthouse*** *(Emma Carroll)* ***The Gruffalo's Child*** *(Julia Donaldson)* ***The King Who Banned the Dark*** *(Emily Haworth-Booth)*

Additional school curriculum including Visits

The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

Visits and Visitors include:

- Science Club
- Gardening club
- Science Workshop at Newcastle Racecourse courtesy of Centre for Life
- Tim Peake's Space Capsule
- Hoops 4 Health
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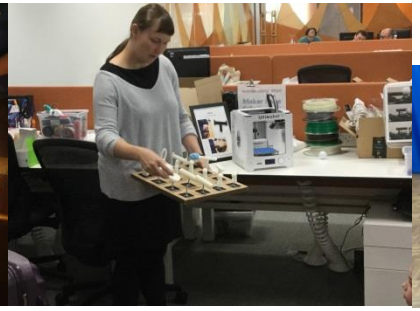


Year 6

NC Programme of study

Knowledge

Living things and their 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.

Animals, inc Humans

- identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood
- recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function
- describe the ways in which nutrients and water are transported within animals, including humans.

Evolution & Inheritance

- 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.

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.

Electricity

- 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 position of switches
- use recognised symbols when representing a simple circuit in a diagram

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 a 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

Key Vocabulary

Electricity
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

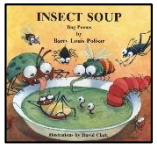
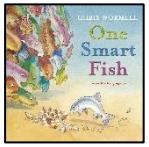
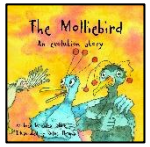
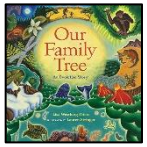
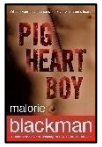
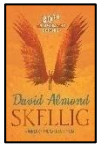
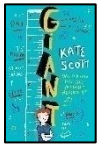
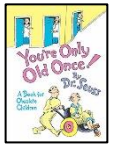
Light
As for year 3 plus straight lines, light rays.

Living things and habitats
Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering and non-flowering

Evolution and Inheritance
Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils

Animals including humans
Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs and lifestyle

Linked Texted Year 6 (reading across the curriculum)

Beetle Boy *(M G Leonard)* ***Insect Soup*** *(Barry Louis Polisar)* ***Fur and Feathers*** *(Janet Halfmann)*   	***One Smart Fish*** *(Christopher Wormell)* ***The Molliebird*** *(Jules Pottle)* ***Our Family Tree*** *(Lisa Westberg Peters)*   	***Pig-Heart Boy*** *(Malorie Blackman)* ***Skellig*** *(David Almond)* ***A Heart Pumping Adventure*** *(Heather Manley)*   	***Hair in Funny Places*** *(Babette Cole)* ***Giant*** *(Kate Scott)* ***You're Only Old Once!*** *(Dr. Seuss)*   

Additional school curriculum including Visits

The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

Visits and Visitors include:

- Science Club
- Gardening club
- Hoops 4 Health
- World Science Centre Day
- Nissan
- Centre for Life
- STEM Day - At the Discovery Museum