

Progression in Science: KS1 to KS2

Working Scientifically

W/S	Plan (WSP)	Do (WSD)	Review (WSR)
KS1	<ul style="list-style-type: none"> ● asking simple questions and recognising that they can be answered in different ways 	<ul style="list-style-type: none"> ● observing closely, using simple equipment ● performing simple tests ● identifying and classifying 	<ul style="list-style-type: none"> ● using their observations and ideas to suggest answers to questions ● gathering and recording data to help in answering questions.
Lower KS2	<ul style="list-style-type: none"> ● asking relevant questions and using different types of scientific enquiries to answer them ● setting up simple practical enquiries, comparative and fair tests 	<ul style="list-style-type: none"> ● 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 	<ul style="list-style-type: none"> ● 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.
Upper KS2	<ul style="list-style-type: none"> ● planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary 	<ul style="list-style-type: none"> ● 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 	<ul style="list-style-type: none"> ● 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.

EYFS

	Communication and Language	Personal, Social and Emotional Development	Understanding the World
3 and 4 year olds	<ul style="list-style-type: none"> • Understand 'why' questions, like: "Why do you think the caterpillar got so fat?" 	<ul style="list-style-type: none"> • Make healthy choices about food, drink, activity and toothbrushing. 	<ul style="list-style-type: none"> • 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. • Begin to understand the need to respect and care for the natural environment and all living things. • Explore and talk about different forces they can feel. • Talk about the differences between materials and changes they notice.
Reception	<ul style="list-style-type: none"> • Learn new vocabulary. • Ask questions to find out more and to check what has been said to them. • Articulate their ideas and thoughts in well-formed sentences. • Describe events in some detail. • Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. • Use new vocabulary in different contexts. 	<ul style="list-style-type: none"> • Know and talk about the different factors that support their overall health and wellbeing: <ul style="list-style-type: none"> - regular physical activity - healthy eating - toothbrushing - sensible amounts of 'screen time' - having a good sleep routine - being a safe pedestrian 	<ul style="list-style-type: none"> • Explore the natural world around them. • Describe what they see, hear and feel while they are outside. • Recognise some environments that are different to the one in which they live. • Understand the effect of changing seasons on the natural world around them.
Early Learning Goal	<p><u>Listening, Attention and Understanding</u></p> <ul style="list-style-type: none"> • Make comments about what they have heard and ask questions to clarify their understanding. 	<p><u>Managing Self</u></p> <ul style="list-style-type: none"> • Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. 	<ul style="list-style-type: none"> • Explore the natural world around them, making observations and drawing pictures of animals and plants. • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

Biology

	Animals, including humans (AiH)	Key Vocabulary	Key Scientist link	Book/Story link
Y1	<p>a) identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</p> <p>b) identify and name a variety of common animals that are carnivores, herbivores and omnivores</p> <p>c) describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</p> <p>d) identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</p>	<p>Fish, Reptiles, Mammals, Birds, Amphibians (+examples of each)</p> <p>Herbivore, omnivore, carnivore</p> <p>Leg, arm, elbow, head, ear, nose, back, wings, beak</p>	<p>Jane Goodall (Primatologist)</p> <p>Joan Beauchamp Procter (Zoologist)</p>	<p>Dinosaur Roar Paul Stickland and Henrietta Stickland</p> <p>A First Book of Animals Nicola Davies & Petr Horacek</p> <p>Here Comes Mr Postmouse Marianne Dubuc</p> <p>Slow Down: Bring Calm to a Busy World with 50 Nature Stories Rachel Williams & Freya Hartas</p> <p>Sonya's Chickens Phoebe Wahl</p> <p>My First Book of Birds Zoe Ingram</p> <p>Lots: The Diversity of Life on Earth Nicola Davies & Emily Sutton</p> <p>Peace at Last (sound and hearing) Jill Murphy</p> <p>Little Explorers: My Amazing Body Ruth Martin & Allan Sanders</p> <p>Me and My Amazing Body Joan Sweeney & Ed Miller</p>
Y2	<p>a) notice that animals, including humans, have offspring which grow into adults</p> <p>b) find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</p> <p>c) describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	<p>Survival, water, air, food adult, baby, offspring, kitten, cat, puppy, exercise, hygiene</p>	<p>Maria Sibylla Merian (Scientific Illustrator & Entomologist)</p> <p>Louis Pasteur (Biologist & Chemist)</p>	<p>The Odd egg Emily Gravett</p> <p>Goldilocks and the Three Bears Traditional version</p> <p>Mr Seahorse Eric Carle</p> <p>Tad Benji Davies</p> <p>I Am the Jungle Melissa Hurt & Katy Tanis</p> <p>Monkey Puzzle Julia Donaldson & Axel Scheffler</p> <p>Pattan's Pumpkin: An Indian Flood Story Chitra Soundar & Frane Lessac</p> <p>The Disgusting Sandwich Gareth Edwards & Hannah Shaw</p> <p>Tadpole's Promise Jeanne Willis & Tony Ross</p> <p>Fussy Freda Julian Jarman & Fred Blunt</p>
Y3	<p>a) 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</p> <p>b) identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p>	<p>movement, muscles, bones skull, nutrition, skeletons</p>	<p>Wilhelm Rontgen (Mechanical Engineer & Physicist)</p> <p>Ibn Sina "Avicenna" (Physician)</p>	<p>Professor Astro Cat's Human Body Odyssey Dominic Walliman & Ben Newman</p> <p>Bones: Skeletons and How They Work Steve Jenkins</p> <p>Can I Build Another Me? Shinsuke Yoshitake</p> <p>Dragons Love Tacos Adam Rubin & Daniel Salmieri</p> <p>Information Graphics: Human Body Simon Rogers</p> <p>Life on Earth: Human Body Heather Alexander & Andres Lozano</p>

				Book of Bones Gabrielle Balkan & Sam Brewster Bone by Bone Sara Levine & T.S. Spookytooth
Y4	a) describe the simple functions of the basic parts of the digestive system in humans b) identify the different types of teeth in humans and their simple functions c) construct and interpret a variety of food chains, identifying producers, predators and prey.	Mouth, Tongue, Teeth, Oesophagus, Stomach, Small Intestine, Large Intestine, Herbivore, Carnivore, Canine, Incisor, Molar	Marie M. Daly (Biochemist) Pierre Fauchard (Physician)	The Last Wild Piers Torday Wolves Emily Gravett The Big Book of Beasts Yuval Zommer & Barbara Taylor The Story of the Little Mole Who Knew it was None of His Business Werner Holzwarth How Does the Food Chain Work? Baby Professor Demon Dentist David Walliams & Tony Ross Gut Garden: A Journey into the Wonderful World of Your Microbiome Katie Brosnan How Food Travels in the Body Baby Professor Food Chains: Who Eats What? Sam Hutchinson & Sarah Dennis
Y5	a) describe the changes as humans develop to old age.	Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty	Elizabeth Blackwell (Doctor) Patrick Steptoe, Robert Edwards & Jean Purdy (Obstetrician, Physiologist & Embryologist)	Giant Kate Scott Hair in Funny Places Babette Cole Maia and What Matters Tine Mortier & Kaatje Vermeire If All the World Were... Joseph Coelho & Allison Colpoys Home in the Woods Eliza Wheeler You're Only Old Once Dr. Seuss Nine Months Miranda Paul Counting By 7s Holly Goldberg Sloan
Y6	a) identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood b) recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function c) describe the ways in which nutrients and water are transported within animals, including humans.	Circulatory, Heart, Blood Vessels, Veins, Arteries, Oxygenated, Deoxygenated, Valve, Exercise, Respiration	Marie Curie (Physicist & Chemist) Alexander Fleming (Physician & Microbiologist)	Pig Heart Boy Malorie Blackman The Bubble Boy Stewart Foster Skellig David Almond Knowledge Encyclopedia: Human Body! DK Marie Curie (Little People, Big Dreams) Isabel Sanchez Vegara The Fastest Boy in the World Elizabeth Laird Illumanatomy Kate Davies Anatomicum (Welcome To The Museum) Jennifer Z Paxton

	Living things and their habitats (LTIH)	Key Vocabulary	Key Scientist link	Book/Story link
Y1	none			
Y2	<p>a) explore and compare the differences between things that are living, dead, and things that have never been alive</p> <p>b) 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</p> <p>c) identify and name a variety of plants and animals in their habitats, including micro-habitats</p> <p>d) describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.</p>	<p>Living, Dead, Habitat, Energy, Food chain, Predator, Prey, Woodland, Pond, Desert</p>	<p>Sylvia Earle (Marine Biologist & Explorer)</p> <p>Sir Ernest Shackleton (Antarctic Explorer)</p>	<p>The Big Book of Bugs Yuval Zommer</p> <p>Dear Greenpeace Simon James</p> <p>Pond Circle Betsy Franco & Stefano Vitale</p> <p>Wild World Angela McAllister & Hvass&Hannibal</p> <p>What do You do With a Tail Like This? Steve Jenkins & Robin Page</p> <p>Harry the Poisonous Centipede Lynne Reid Banks & Tony Ross</p> <p>Creature Features Steve Jenkins & Robin Page</p> <p>Leaf Sandra Dieckmann</p>
Y3	none			
Y4	<p>a) recognise that living things can be grouped in a variety of ways</p> <p>b) explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</p> <p>c) recognise that environments can change and that this can sometimes pose dangers to living things.</p>	<p>Vertebrates, Fish, Amphibians, Reptiles, Birds, Mammals, Invertebrates, Snails, Slugs, Worms, Spiders, Insects, Environment, Habitats</p>	<p>Rachel Carson (Marine Biologist & Conservationist)</p> <p>Jacques Cousteau (Ocean Explorer & Conservationist)</p>	<p>Under the Canopy Iris Volant & Cynthia Alonso</p> <p>The Lost Worlds Jackie Morris & Robert Macfarlane</p> <p>Sparrow Girl Sara Pennypacker & Yoko Tanaka</p> <p>Tiger, Tiger, Burning Bright Fiona Waters & Britta Teckentrup</p> <p>The Promise Nicola Davies & Laura Carlin</p> <p>The Lorax Dr Seuss</p> <p>Encyclopedia of Animals Jules Howard & Jarom Vogel</p> <p>Botanicum (Welcome to the Museum) Kathy Willis & Katie Scott</p>
Y5	<p>a) describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>b) describe the life process of reproduction in some plants and animals.</p>	<p>Mammal, Reproduction, Insect, Amphibian, Bird, Offspring</p>	<p>Mary Agnes Chase (Botanist)</p> <p>David Attenborough (Broadcaster & Natural Historian)</p>	<p>Beetle Boy M.G. Leonard</p> <p>A Butterfly is Patient Dianna Aston</p> <p>Where the World Turns Wild Nicola Penfold</p> <p>The Big Book of Birds Yuval Zommer</p> <p>Fanatical about Frogs Owen Davey</p> <p>The Coral Kingdom Laura Knowles & Jennie Webber</p> <p>Life Cycles DK & Sam Falconer</p> <p>Whales</p>

				Kelsey Oseid
Y 6	<p>a) describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals</p> <p>b) give reasons for classifying plants and animals based on specific characteristics.</p>	Classification, Vertebrates, Invertebrates, Micro-organisms, Amphibians, Reptiles, Mammals, Insects	<p>Carl Linnaeus (Botanist & Zoologist)</p> <p>Marjory Stoneman Douglas (Writer & Conservationist)</p>	<p>Animalium Jenny Broom</p> <p>Tiny: The Invisible World of Microbes Nicola Davies</p> <p>The Wonder Garden Jenny Broom</p> <p>Boy in the Tower Polly Ho-Yen</p> <p>The Bacteria Book: Gross Germs, Vile Viruses, and Funky Fungi Steve Mould</p> <p>Unseen Worlds: Real-Life Microscopic Creatures Hiding All Around Us Helene Rajcak</p> <p>An Anthology of Intriguing Animals Ben Hoare</p> <p>Karl, Get Out of the Garden!: Carolus Linnaeus and the Naming of Everything Anita Sanchez</p>

	Evolution and inheritance (E&I)	Key Vocabulary	Key Scientist link	Book/Story link
	Year 1, year 2, year 3, year 4, year 5 - none			
Y6	<p>a) recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>b) recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>c) identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>	Fossils, Adaptation, Evolution, Characteristics, Reproduction, Genetics	<p>Charles Darwin (Naturalist)</p> <p>Gregor Mendel (Botanist & Biologist)</p>	<p>Story of Life: Evolution Katie Scott</p> <p>Moth: An Evolution Story Isabel Thomas</p> <p>Amazing Evolution: The Journey of Life Anna Claybourne</p> <p>Our Family Tree: An Evolution Story Lisa Westberg Peters</p> <p>Charles Darwin's On The Origin of Species Sabina Radeva</p> <p>The Molliebird: An Evolution Story Jules Pottle</p> <p>One Smart Fish Christopher Wormell</p> <p>I Used to Be a Fish Tom Sullivan</p>

	Plants (P)	Key Vocabulary	Key Scientist link	Book/Story link
Y1	<p>a) identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</p> <p>b) identify and describe the basic structure of a variety of common flowering plants, including trees.</p>	Deciduous, Evergreen trees, Leaves, Flowers (blossom), Petals, Fruit, Roots, Bulb, Seed, Trunk, Branches, Stem	<p>Beatrix Potter (Botanist & Natural Scientist)</p> <p>John Ray (Naturalist)</p>	<p>The Tree Lady: The True Story of How One Tree-Loving Woman Changed a City H Joseph Hopkins</p> <p>It Starts With a Seed Laura Knowles & Jennie Webber</p> <p>The Keeper of Wild Words Brooke Smith & Madeline Kloepper</p> <p>Mrs Noah's Garden Jackie Morris & James Mayhew</p> <p>A Little Guide to Wild Flowers Charlotte Voake</p> <p>The Gigantic Turnip Aleksei Tolstoy & Niamh Sharkey</p> <p>The Tiny Seed Eric Carle</p> <p>Jack and the Beanstalk Richard Walker & Niamh Sharkey</p>
Y2	<p>a) observe and describe how seeds and bulbs grow into mature plants</p> <p>b) find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p>	Seeds, Bulbs, Water, Light, Temperature, Growth	<p>Jane Colden (Botanist)</p> <p>Agnes Arber (Botanist)</p>	<p>The Boy Who Grew Dragons Andy Shepherd & Sara Ogilvie</p> <p>Flowers are Calling Rita Gray & Kenard Pak</p> <p>A Seed is Sleepy Dianna Aston & Sylvia Long</p> <p>The Tin Forest Helen Ward & Wayne Anderson</p> <p>The Flower John Light & Lisa Evans</p> <p>Finding Wild Megan Wagner Lloyd & Abigail Halpin</p> <p>The Boy Who Grew a Forest Sophia Gholz & Kayla Harren</p> <p>National Trust: Sunflower Shoots and Muddy Boots Katherine Halligan & Grace Easton</p>
Y3	<p>a) identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</p> <p>b) explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant</p> <p>c) investigate the way in which water is transported within plants</p> <p>d) explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>	Air, Light, Water, Nutrients, Soil, Reproduction, Transportation, Dispersal, Pollination, Flower	<p>Stephen Hales (Botanist)</p> <p>Anna Atkins (Botanist & Photographer)</p>	<p>Du Iz Tak Carson Ellis</p> <p>The Big Book of Blooms Yuval Zommer</p> <p>The Bluest of Blues Fiona Robinson</p> <p>The Last Tree Emily Haworth-Booth</p> <p>The Night Flower Lara Hawthorne</p> <p>Plantopedia: Welcome to the Greatest Show on Earth Adrienne Barman</p> <p>The Story of Frog Belly Rat Bone Timothy Basil Ering</p> <p>I Am the Seed that Grew the Tree Fiona Waters & Fran Preston-Gannon</p> <p>Up in the Garden and Down in the Dirt Kate Messner & Christopher Silas Neal</p>

Y4 Y5 Y6 none

Chemistry*

	Everyday materials (Y1), Uses of everyday materials (Y2), Rocks (Y3), States of matter (Y4) & Properties and changes of materials (Y5) (M)	Key Vocabulary	Key Scientist link	Book/Story link
Y1	<p>a) distinguish between an object and the material from which it is made</p> <p>b) identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</p> <p>[c] describe the simple physical properties of a variety of everyday materials (See Y1 L, E, F&M and S)]</p> <p>[d] compare and group together a variety of everyday materials on the basis of their simple physical properties (See Y1 L, E, F&M and S)]</p>	Wood, Plastic, Glass, Paper, Water, Metal, Rock, Hard, Soft, Bendy, Rough, Smooth	<p>Charles Mackintosh (Chemist & Inventor)</p> <p>Ole Kirk Christiansen (Inventor)</p>	<p>Traction Man IsHer Mini Grey</p> <p>Somebody Swallowed Stanley Sarah Roberts & Hannah Peck</p> <p>Not a Stick Antoinette Portis</p> <p>The Adventures of a Plastic Bottle: A Story About Recycling Alison Inches</p> <p>Extra Yarn Mac Barnett & Jon Klassen</p> <p>The True Story of the 3 Little Pigs! Jon Scieszka</p> <p>Once Upon a Raindrop James Carter & Nomoco</p> <p>Song of the River Joy Cowley & Kimberley Andrews</p> <p>Hansel & Gretel Beth Woolvin</p>
Y2	<p>[a] identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses (See Y2 L, E and S)]</p> <p>[b] find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching (See Y2 F&M)]</p>	Hard, Soft, Stretchy, Stiff, Shiny, Dull, Rough, Smooth, Bendy, Waterproof, Absorbent, Opaque, Transparent Brick, Paper, Fabrics, Squashing, Bending, Twisting, Stretching Elastic, Foil	<p>Jon Dunlop (Inventor)</p> <p>Robert Gair (Inventor)</p>	<p>The Great Paper Caper Oliver Jeffers</p> <p>Rosie Revere, Engineer Andrea Beaty & David Robert</p> <p>Flat Stanley Jeff Brown & Rob Biddulph</p> <p>A Planet Full of Plastic Neal Layton</p> <p>What to Do with a Box Jane Yolen & Chris Sheban</p> <p>Paper Planes Jim Helmore & Richard Jones</p> <p>The Most Magnificent Thing Ashley Spires</p> <p>Brick Joshua David Stein & Julia Rothman</p>
Y3	<p>a) compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</p> <p>b) describe in simple terms how fossils are formed when things that have lived are trapped within rock</p> <p>c) recognise that soils are made from rocks and organic matter.</p>	Fossils, Soils, Sandstone, Granite, Marble, Pumice, Crystals, Absorbent	<p>Mary Anning (Paleontologist)</p> <p>Florence Bascom (Geologist)</p>	<p>The Pebble in My Pocket: A History of Our Earth Meredith Hooper</p> <p>The Street Beneath My Feet Charlotte Guillian & Yuval Zommer</p> <p>A Rock is Lively Dianna Hutts Aston & Sylvia Lively</p> <p>The Mole and the Hole Brayden Kowalczuk</p> <p>This Little Pebble Anna Claybourne & Sally Garland</p> <p>Under Earth, Under Water</p>

				Aleksandra Mizielinski & Daniel Mizielinski Lubna and Pebble Wendy Meddour & Daniel Egneus Stone Girl, Bone Girl: The Story of Mary Anning of Lyme Regis Laurence Anholt & Sheila Moxley
Y4	<p>a) compare and group materials together, according to whether they are solids, liquids or gases</p> <p>b) 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)</p> <p>c) identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	Solid, Liquid, Gas, Evaporation, Condensation, Particles, Temperature, Freezing, Heating	<p>Daniel Gabriel Fahrenheit (Physicist)</p> <p>Antoine Lavoisier (Chemist)</p>	<p>The Rhythm of the Rain Grahame Baker-Smith</p> <p>Stick Dog Dreams of Ice Cream Tom Watson</p> <p>Charlie and the Chocolate Factory Roald Dahl & Quentin Blake</p> <p>The BFG Roald Dahl & Quentin Blake</p> <p>The Story of Snow: The Science of Winter's Wonderland Mark Cassino & Jon Nelson</p> <p>River Story Meredith Hooper & Bee Willey</p> <p>Winter's Child Angela McAllister & Grahame Baker Smith</p> <p>Water Dance Thomas Locker</p>
Y5	<p>a) 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</p> <p>b) know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>c) use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>d) give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p>e) demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>f) 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.</p>	Hardness, Solubility, Transparency, Conductivity, Magnetic, Filter, Evaporation, Dissolving, Mixing	<p>Spencer Silver & Arthur Fry (Chemist & Inventor)</p> <p>Stephanie Kwolek (Chemist)</p>	<p>The Borrowers Mary Norton</p> <p>George's Marvellous Medicine Roald Dahl & Quentin Blake</p> <p>Kensuke's Kingdom Michael Morpurgo</p> <p>Itch Simon Mayo</p> <p>Make It Change Anna Claybourne</p> <p>Bartholomew and the Oobleck Dr Seuss</p> <p>The Story of Inventions Anna Claybourne & Adam Larkum</p> <p>Ada Twist, Scientist Andrea Beaty & David Roberts</p>
Y6	none			

* Where statements may be equally placed within the field of physics (M1c, d and M2a, b) they have been identified here by [] and appear in the physics statement with the appropriate topic reference preceding the text e.g. M2a (Materials Year 2 Statement a)

Physics

	Light (L)	Key Vocabulary	Key Scientist link	Book/Story link
Y1	none			
Y 2	none			
Y 3	<p>a) recognise that they need light in order to see things and that dark is the absence of light</p> <p>b) notice that light is reflected from surfaces</p> <p>c) recognise that light from the sun can be dangerous and that there are ways to protect their eyes</p> <p>d) recognise that shadows are formed when the light from a light source is blocked by a solid object</p> <p>e) find patterns in the way that the size of shadows change.</p>	<p>Light, Shadows, Mirror, Reflective, Dark, Reflection</p>	<p>Ibn al-Haytham "Alhazen" (Inventor)</p> <p>Lewis Latimer (Inventor)</p>	<p>The Black Rabbit Phillipa Leathers</p> <p>Smoot The Rebellious Shadow Michelle Cuevas</p> <p>The Dark Lemony Snicket & Jon Klassen</p> <p>Oscar and the Moth: A Book About Light and Dark Geoff Waring</p> <p>My Shadow Robert Louis Stevenson & Sara Sanchez</p> <p>You are Light Aaron Becker</p> <p>Orion and the Dark Emma Yarlett</p> <p>Windows Julia Denos & E.B. Goodale</p> <p>The Night Box Louise Greig & Ashling Lindsay</p> <p>Can't You Sleep Little Bear? Martin Waddell</p>
Y4	none			
Y5	none			
Y6	<p>a) recognise that light appears to travel in straight lines</p> <p>b) use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye</p> <p>c) explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes</p> <p>d) use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>	<p>Refraction, Reflection, Light, Spectrum, Rainbow, Colour</p>	<p>Thomas Edison (Inventor)</p> <p>Edith Clarke (Electrical Engineer)</p>	<p>The King who Banned the Dark Emily Haworth-Booth</p> <p>Letters from the Lighthouse Emma Carroll</p> <p>Edison: The Mystery of the Missing Mouse Treasure</p> <p>Torben Kuhlmann</p> <p>How Does a Lighthouse Work? Roman Belyaev</p> <p>The City of Ember: the graphic novel Jeanne DuPrau</p> <p>The Visitor Antje Damm</p> <p>Shadow Lucy Christopher</p> <p>Lampie: A seaswept fairytale and adventure Annet Schaap</p>

	Electricity (E)	Key Vocabulary	Key Scientist link	Book/Story link
Y 1	M1c describe the simple physical properties of a variety of everyday materials M1d compare and group together a variety of everyday materials on the basis of their simple physical properties			
Y2	M2a identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and card for particular uses			
Y 3	none			
Y4	a) identify common appliances that run on electricity b) construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers c) 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 d) recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit e) recognise some common conductors and insulators, and associate metals with being good conductors.	Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators	Hertha Ayrton (Engineer, Physicist & Inventor) Joseph Swan (Physicist, Chemist & Inventor)	Electrical Wizard: How Nikola Tesla Lit Up the World Peter Brown The Wild Robot Simon James Overheard in a Tower Block Joseph Coelho & Kate Milner BOOT Small Robot, BIG Adventure Shane Hegarty & Ben Mantle Izzy Gizmo and the Invention Convention Pip Jones & Sara Ogilvie Oscar and the Bird: A Book About Electricity Geoff Waring Until I Met Dudley Roger McGough & Chris Riddell When Charlie McButton Lost Power Suzanne Collins & Mike Lester
Y5	none			
Y6	a) associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit b) 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 c) use recognised symbols when representing a simple circuit in a diagram.	Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators, Amps, Volts, Cell	Michael Faraday (Physicist) William Kamkwamba (Inventor)	The Boy who Harnessed the Wind (Young Readers' Edition) William Kamkwamba Energy Island Allan Drummond Goodnight Mr Tom Michelle Magorian Cool Circuits and Wicked Wires Susan Martineau Great Scientific Theories: Electricity Louise Spilsbury Blackout John Rocco The Boy Who Invented TV: The Story of Philo Farnsworth Kathleen Krull Wildspark Vashiti Hardy

	Forces and magnets (Y3) Forces (Y5) (F&M)	Key Vocabulary	Key Scientist link	Book/Story link
Y1	M1c describe the simple physical properties of a variety of everyday materials M1d compare and group together a variety of everyday materials on the basis of their simple physical properties			
Y2	M2b find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching			
Y3	a) compare how things move on different surfaces b) notice that some forces need contact between two objects, but magnetic forces can act at a distance c) observe how magnets attract or repel each other and attract some materials and not others d) 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 e) describe magnets as having two poles f) predict whether two magnets will attract or repel each other, depending on which poles are facing.	Magnetic, Force, Contact, Attract, Repel, Friction, Poles, Push, Pull	John McAdam (Civil Engineer & Road Builder) Isaac Newton (Physicist)	Egg Drop Mini Grey Magnet Max Monica Lozano Hughes & Holly Weinstein The Iron Man Ted Hughes & Chris Mould The Lost Thing Shaun Tan Float Daniel Miyares Up and Down Oliver Jeffers The Robot and the Bluebird David Lucas Mrs Armitage Queen of the Road Quentin Blake
Y4	none			
Y5	a) explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object b) identify the effects of air resistance, water resistance and friction, that act between moving surfaces c) recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys	Albert Einstein (Theoretical Physicist) Archimedes (Mathematician, Engineer & Inventor)	The Northern Lights Phiip Pullman On a Beam of Light: A Story of Albert Einstein Jennifer Berne & Vladimir Radunsky Clockwork Philip Pullman The Tin Snail Cameron McAllister The Explorer Katherine Rundell Stick and Stone Beth Ferry & Tom Lichtenheld Aerodynamics of Biscuits Clare Helen Walsh & Sophia Touliaou LindberghThe Tale of a Flying Mouse Torben Kuhlmann Newton's Rainbow Kathryn Lasky & Kevin Hawkes
Y6	none			

	Sound (S)	Key Vocabulary	Key Scientist link	Book/Story link
Y1	M1c describe the simple physical properties of a variety of everyday materials M1d compare and group together a variety of everyday materials on the basis of their simple physical properties			Peace at Last (sound and hearing) Jill Murphy
Y 2	M2a identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses			
Y3	none			
Y 4	a) identify how sounds are made, associating some of them with something vibrating b) recognise that vibrations from sounds travel through a medium to the ear c) find patterns between the pitch of a sound and features of the object that produced it d) find patterns between the volume of a sound and the strength of the vibrations that produced it e) recognise that sounds get fainter as the distance from the sound source increases.	Volume, Vibration, Wave, Pitch, Tone, Speaker	James West (Inventor & Acoustician) Alexander Graham Bell (Inventor & Engineer)	Sonam and the Silence Eddie Ayres & Ronak Taher A Story Like the Wind Gill Lewis & Jo Weaver The Phoenix of Persia Sally Pomme Clayton & Amin Hassanzadeh Sharif The Sound of Silence Katrina Goldsaito & Julia Kuo The Wonderbird David Lucas Sky Song Abi Elphinstone The Dam David Almond & Levi Pinfold What Sound is Morning? Grant Snider
Year 5, year 6 -none				

	Seasonal change (Y1) Earth in space (Y5) (SC&EIS)	Key Vocabulary	Key Scientist link	Book/Story link
Y1	a) observe changes across the four seasons b) observe and describe weather associated with the seasons and how day length varies.	Summer, Spring, Autumn, Winter, Sun, Day, Moon, Night, Light, Dark	George James Symons (Meteorologist) Anders Celsius (Astronomer, Physicist & Mathematician)) Frances Beaufort (Hydrographer)	The Storm Whale in Winter (ice-melting and freezing) Benji Davies I am the Seed that grew the tree- A nature poem for every day of the year National Trust (Fiona Waters) Out and About: A First Book of Poems Shirley Hughes Leaf Man Lois Ehlert Storm Sam Usher Tree: Seasons Come, Seasons Go Patricia Hegarty & Britta Teckentrup Goodbye Summer, Hello Autumn Kenard Pak Goodbye Autumn, Hello Winter Kenard Pak

Goodbye Winter, Hello Spring
 Kenard Pak
Poems About Seasons
 Brian Moses & Ellie Jenkins

Year 2, Year 3, Year 4 - none

Yr5
 a) describe the movement of the Earth, and other planets, relative to the Sun in the solar system
 b) describe the movement of the Moon relative to the Earth
 c) describe the Sun, Earth and Moon as approximately spherical bodies
 d) use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.

Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, star, constellation

Galileo Galilei
 (Astronomer, Physicist & Engineer)

 Mae Jemison
 (Astronaut)

George's Secret Key to the Universe
 Lucy Hawking, Stephen Hawking & GaryParsons
The Skies Above My Eyes
 Charlotte Guillain & Yuval Zommer
 Planetarium: Welcome to the Museum
 Roman Prinja
Armstrong: The Adventurous Journey of a Mouse to the Moon
 Torben Kuhlmann
Cosmic
 Frank Cottrell Boyce
Curiosity: The Story of a Mars Rover
 Markus Motum
When the Stars Come Out: Exploring the Magic and Mysteries of the Night-Time
 Nicola Edwards
Once Upon a Star: The Story of Our Sun
 James Carter & Mar Hernandez

Y 6 none