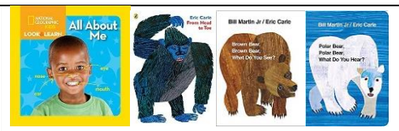
NOTE: The Science curriculum is planned on a two-year rolling programme for EYFS/KS1 and a three-year rolling programme for Y3/4/5. Year 6 cover the content each year, therefore the Year 6 content is only shown on Year A. Please see the 'Whole School Science Programme' for more information.

YEAR A Curriculum Map Science

EYFS

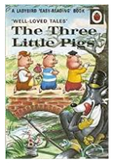
Autumn Humans / Materials	Spring Animals	Summer Plants/Living Things and their Habitats
Links to previous learning	**Links to previous learning**	**Links to previous learning**
Sort images of humans according to their age. Observe how does a baby changes over time. Use all their senses in hands-on exploration of natural materials Explore collections of materials with similar and/or different properties. Talk about the differences between materials and changes they notice.	Understand the key features of the life cycle of an animal. Begin to understand the need to respect and care for the natural environment and all living things.	Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant. Begin to understand the need to respect and care for the natural environment and all living things.
Knowledge	**Knowledge**	**Knowledge**
Humans **My Body, My Senses** I know some basic body parts. I know about the five senses: smell, hearing, taste, touch and sight. I know that the parts of the body linked to the five senses. **Materials** **Let's Build** I know some common materials. (After exploration) I know some basic properties of some common materials. I know what some materials are used for (e.g. glass for windows) I know that different materials can be used for different purposes. **Seasonal Changes** **https://explorify.uk/en/activities/zoom-in-zoom-out/tangled-up** **https://explorify.uk/en/activities/zoom-in-zoom-out/winter-wonder**	***2021 - LOCKDOWN LEARNING*** **Animals** **Animals all around us** I know some environments that are different to the one in which I live. I know the names of a variety of pets / farm animals. I know that animals have babies. I know the names of some babies (e.g. puppy, kitten). **Animals** **Amazing African Animals** I know some environments that are different to the one in which I live. I know the names of some African animals (e.g. Lion, elephant, cheetah, Rhinoceros etc)	**Plants** **How does your garden grow?** I know the names of some of the plants growing in our school grounds and my garden (e.g. daisy and roses). I know that plants can be the same and different (e.g. some plants have flowers and some do not or flowers have petals but look different). I know plants grow (change over time). I know that I need to respect and care for the natural environment and all living things. **Living Things and their Habitats** **Minibeasts** I know the names of some common small animals (spiders, snails, worms, bees, caterpillars. I know that some of these small animals live in a garden. I know that some small animals live under rocks and logs.
Key Skills	**Key Skills**	**Key Skills**
Humans **My Body, My Senses** I can use all of my senses in hands-on exploration of natural materials. I can talk about my body and my senses, using a wide vocabulary. I can ask questions to find out more. I can organise my ideas and thoughts in well-formed sentences. I can answer why questions. **Materials** **Let's Build** I can use my senses to explore natural materials. I can gather a collection of natural materials. I can explore collections of materials with similar and/or different properties. I can talk about materials, using a wide vocabulary. I can talk about materials and changes I notice (e.g. squashing, melting, freezing etc) I can ask questions to find out more. I can organise my thoughts in well-formed sentences. I can answer why questions.	***2021 - LOCKDOWN LEARNING*** **Animals** **Animals all around us** I can listen to stories about people and their pets and talk about the pet's people keep. I can recognise common pets and farm animals during small world play. I can take part in an animal hunt and with help sort animals (e.g. an adult and a baby) I can talk about some animals I like. I can find out how to care for pets (e.g. a pet visiting in school). I can find out about farm animals (during a farm visit). I can ask questions to find out more. I can organise my thoughts in well-formed sentences. I can answer why questions. I can talk about pets/farm animals using a wide range of vocabulary **Animals** **Amazing African Animals** I can listen to stories about African animals. I can recognise some African animals (e.g. lion, elephant).	**Plants** **How does your garden grow?** I can use my senses in hands-on exploration of natural materials (e.g. soil, bark, sticks). I can gather seeds from the natural environment. I can gather seeds from fruit. I can use a magnifying glass or app to observe seeds and bulbs. I can draw seeds and bulbs. I use my senses to explore plants (seeds, leaves, stems). I can explore collections of materials with similar and/or different properties (bark, sticks, different types of leaves). I can plant seeds and with support, care for growing plants. I can grow vegetable tops. I can begin to understand the need to respect and care for the natural environment and all living things. I can answer why questions. I can talk about plants. **Living Things and their Habitats** **Minibeasts** I can explore the natural world around me.

	I can describe some African animals from different habitats, whilst reading books. I can talk about African animals during small world play. I can ask questions to find out more. I can organise my thoughts in well-formed sentences. I can answer why questions. I can talk about African Animals using a wide range of vocabulary.	I can describe what I see, hear and feel whilst outside. I can explore outdoor areas and look under rocks and near plants/in garden areas. I can create small world version of these habitats. I can ask questions to find out more. I can answer why questions. I can talk about minibeasts and their homes (habitats). I can help make a 'bug hotel'.
Vocabulary	**Vocabulary**	**Vocabulary**
Humans **My Body, My Senses** Body, arm, hand, fingers, head, ears, nose, eyes, mouth, leg, feet, toes, smell, touch, taste, hearing, sight, tongue **Materials** **Let's Build** Wood, metal, rock, stone, glass, window, plastic, test, change, same, material, bendy, stretchy, hard, soft	***2021 - LOCKDOWN LEARNING*** **Animals** **Animals all around us** Pets, duck, ducklings, hen, chicks, dog, puppy cat, kitten, fish, cow, pig, sheep, baby, adult, bird, paws, hooves, names of animals and their young, fur, tail, claws, swim, walk, run, jump, jump, fly, patterns, spots, stripes **Animals** **Amazing African Animals** Lion, elephant, hippopotamus, rhinoceros, snake, monkey, leopard, spots, stripes, meat, plants, names of animals, live, on land, in water, jungle, desert, North Pole, South Pole, sea, hot, cold, wet, dry, snow, ice, environment, polar regions, ocean, camouflage	**Plants** **How does your garden grow?** Plant, leaf, flower, tree, bark, stick, seeds, herbs, mint, basil, lettuce, cucumber, carrot, garden, grow, soil, water, watering can, hose pipe, wood, Ashmeadow, wildflowers **Living Things and their Habitats** **Minibeasts** Spider, web, caterpillar, worm, compost, bee, flower, butterfly, eggs, home/habitat, log, bark, cocoon, chrysalis, grow, change, die
Cultural opportunities	**Cultural opportunities**	**Cultural opportunities**
Humans Guide dog visit (in school) **Materials**	**Animals** **Animals all around us** Farm visit Pet visits (in school) **Animals** **Amazing African Animals** Dalton Zoo	**Plants** Ashmeadow – visit at least once, each season **Living Things and their Habitats** Ashmeadow, School grounds, Leighton Hall and Leighton Moss
Key values	**Key values**	**Key values**
School Values: Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. **British Values:** The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy. **Christian Star Qualities:** Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.	**School Values:** Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. **British Values:** The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy. **Christian Star Qualities:** Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.	**School Values:** Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. **British Values:** The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy. **Christian Star Qualities:** Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.
Book list & Resources	**Book list & Resources**	**Book list &** Resources
Humans **My Body, My Senses** All about me – National Geographic kids, Look and Learn From head to toe by Eric Carle Brown Bear, Brown Bear what do you see? by Eric Carle Polar Bear, Polar Bear what do you hear? By Eric Carle	**Animals,** **Animals all around us** **https://developingexperts.com/s/unit-library/units/116** Charlie and Lola, we honestly can look after your dog by Lauren Child My cat likes to hide in boxes by Eve Sutton Old McDonald had a farm (Little Golden Books)	**Plants** **How does your garden grow?** Oliver's vegetables by Vivienne French Grandpa's Garden by Stella Fry The Enormous Turnip by Irene Yates



https://explorify.uk/en/activities/zoom-in-zoom-out/orange-and-tasty
https://explorify.uk/en/activities/zoom-in-zoom-out/sweet-and-shiny

Materials
Let's Build
The Three Little Pigs



https://explorify.uk/en/activities/zoom-in-zoom-out/grey-ridges
https://explorify.uk/en/activities/zoom-in-zoom-out/silver-spots

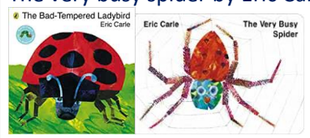
https://explorify.uk/en/activities/zoom-in-zoom-out/soft-nuzzle

Animals,
Amazing African Animals
Giraffes Can't Dance
Habu and the Lost Zebra, by Beth Solomon

https://explorify.uk/en/activities/zoom-in-zoom-out/green-scales

https://developingexperts.com/s/unit-library/units/104
https://explorify.uk/en/activities/zoom-in-zoom-out/hello-spring

Living Things and their Habitats
Minibeasts
https://developingexperts.com/s/unit-library/units/112
The bad-tempered ladybird by Eric Carle
The very busy spider by Eric Carle



https://explorify.uk/en/activities/whats-going-on/hungry-snails

YEAR A - Year 1

Year 1

Autumn 1: Animals including humans Autumn 2: Materials	Spring - Animals, including humans	Summer 1: Plants Summer 2: Living things and their habitats
Links to previous Learning	**Links to previous Learning**	**Links to previous Learning**
Use all their senses in hands-on exploration of natural materials Explore collections of materials with similar and/or different properties. Talk about the differences between materials and changes they notice.	Understand the key features of the life cycle of an animal. Begin to understand the need to respect and care for the natural environment and all living things.	Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant. Begin to understand the need to respect and care for the natural environment and all living things.
Knowledge	**Knowledge**	**Knowledge**
Animals, including Humans **My Body, My Senses** **Big Question: How do our senses help us understand the world?** I know that humans use their senses to find out about and understand the world. I know the five senses of the human body. I know the parts of the human body that is linked with each sense. I know that some people might not be able to use all their senses in the same way. (e.g. blind and deaf people) I know that humans feel with many parts of the body (not just hands). **Although we often use our fingers and hands to feel objects, the children should understand that we can feel with many parts of our body.* ***Possible misconceptions*** We only feel with our hands **Materials** **Let's Build** **Big Question: Where did The Three Little Pigs go wrong?**	***2021 - LOCKDOWN LEARNING*** **Animals, including Humans** **Animals all around us** **Big Question: Where do animals like to live?** As above. I know the names a variety of pets / farm animals including fish, amphibians, reptiles, birds and mammals. I know that animals eat certain things - some eat other animals, some eat plants, some eat both plants and animals. I know the names of a variety of common animals that are carnivores, herbivores and omnivores. I know that animals vary in many ways and have different structures e.g. wings, tails, ears etc. I know they also have different skin coverings e.g. scales, feathers, hair. **Animals, including Humans** **Amazing African Animals (Environmental Science)** **Big Question: What amazing animals live in Africa?** As above. I am beginning to know the names of the different animal groups: fish, amphibians, reptiles, birds and mammals.	**Plants** **Big Question: What do plants need to grow?** I know the names a variety of common wild and garden plants. I know the names of some common garden plants and wildflowers in the local area. (School and Ashmeadow). I know the basic structure of a variety of common flowering plants. **Living things and their habitats** **Let's investigate a microhabitat!** **Big Question: What requirements do Living Things have to grow and stay healthy?** As above. I know the names of common minibeasts in our local area. I know that minibeasts can be grouped according to their body parts. For example: insects / arachnids, worms (annelids). I know that a microhabitat provides shelter, food and water. I know that 'under a log' is a microhabitat. I know that under a log it is dark, cool and damp. I know that the log provides safety from some predators.

I know the difference between an object and the material from which it is made. I know the names of a variety of everyday materials, including wood, plastic, glass, metal, water and rock. I know that some materials are better than others for a purpose. I know that everyday materials are suitable for particular uses. I know that some solid shapes of some materials can be changed by squashing, bending, twisting and stretching. I know that John MacAdam was from Scotland and he invented road materials that became tarmac. ***Possible misconceptions*** Some children may think: • only fabrics are materials • only building materials are materials • only writing materials are materials • the word 'rock' describes an object rather than a material • 'solid' is another word for hard.	I know one or more feature/s of each animal group. I know what some animals eat, and I am beginning to use the correct vocabulary (e.g. herbivore and carnivore) I know that animals have basic needs.	
Key Skills	**Key Skills**	**Key Skills**
Animals, including Humans **My Body, My Senses** **Big Question: How do our senses help us understand the world?** *Working Scientifically* *Identifying and classifying* *Performing simple tests* *Gathering and recording data to help in answering questions* *Asking simple questions and recognising that they can be answered in different ways.* *Using observations and ideas to suggest answers to questions* I can draw and label the basic parts of the human body. I can identify each of the senses. I can say which part of the body is associated with each sense. (Classify) I can explore each sense. (research) I can investigate human senses e.g. Which part of the human body is good for feeling and which is not? Which food/flavours can I identify by taste? (Simple tests) ***Scientist*** *With support, I can find out about Linda Buck who won a Nobel Prize in 2004 for identifying nose receptors.* **Materials** **Let's Build** **Big Question: Where did The Three Little Pigs go wrong?** *Working Scientifically* *Engaging in practical enquiry to answer questions, by performing simple tests* *Gathering and recording data* *Using observations and ideas* *Identifying and classifying*	***2021 - LOCKDOWN LEARNING*** **Animals, including Humans** **Animals all around us** **Big Question: Where do animals like to live?** *Working Scientifically* *Engaging in practical enquiry to answer questions, by identifying and classifying* *Grouping and sorting* *Using observations and ideas to suggest answers to questions* I can identify a variety of common animals including fish, amphibians, reptiles, birds and mammals. I can name common pets and farm animals. I can take part in an animal hunt and with help, sort animals into groups. (Identifying and classifying) I can ask questions to find out how to care for common animals. (Research) I can talk about my findings. I can label external body parts of some pet and farm animals. **Animals, including Humans** **Amazing African Animals (Environmental Science)** **Big Question: What amazing animals live in Africa?** *Working Scientifically* *Engaging in practical enquiry to answer questions, by identifying and classifying.* *Asking simple questions and realising they can be answered in different ways* I can listen to non-fiction texts about African animals.	**Plants** **Big Question: What do plants need to grow?** *Working Scientifically* *Making observations and taking measurements, by observing closely, using simple equipment* *Recording and presenting evidence, by gathering and recording data to help in answering questions* *Using observations and ideas to suggest answers to questions* *Drawing diagrams showing parts of a plant* I can identify a variety of common wild and garden plants. I can identify and describe the basic structure of a variety of common flowering plants. I can identify plants through their leaves and other key characteristics. I can plant seeds and care for growing plants. I can make observations of some plants and explain why some things occur and talk about changes I can make predictions about what I think might happen, when we plant seeds. I can ask and answer questions in relation to growing and the changes I observe over time. I can make observations of seeds, flowers and leaves. I can represent what I have observed in different ways e.g. drawings, models, etc I can talk about what a plant needs to grow well. I can participate in comparative tests to find out what happens when plants are not given what they need. I can ask questions to find out more. ***Scientist*** *With support, I can find out about George Washington Carver*

I can describe the simple physical properties of a variety of everyday materials.
I can compare and group together a variety of everyday materials on the basis of their simple physical properties.
I can compare and test materials for a given purpose.
I can choose the best materials for a given purpose.
I can say why the material is best for a given purpose.

Scientist

With support, I can find out about John MacAdam and his idea to improve roads in the 1700s.

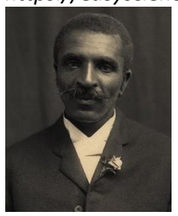
I can sort African animals according to their structures (e.g. wings, tails etc)
I can sort African animals according to the animal groups (amphibians, mammals, birds etc)
I can ask questions and suggest answers to questions about what African animals eat and their habitat.

Scientist

With support, I can find out about Jane Goodall and her work with chimpanzees. I can learn about Roots and Shoots.

https://explorify.uk/en/activities/who-is/jane-goodall

https://easyscienceforkids.com/george-washington-carver/



Living things and their habitats
Let's investigate a microhabitat!
Big Question: What requirements do Living Things have to grow and stay healthy?

Working Scientifically
Identifying and classifying
Making observations and taking measurements, observing closely using simple equipment.
Using observations and ideas to suggest answers to questions
Asking simple questions and realising they can be answered if different ways
Gathering and recoding data
Sorting and grouping
Performing simple tests

I can make careful observations of dead, living and plastic minibeasts to establish whether they are living or not.
I can use a tick sheet to identify minibeasts found in our local area.
I can sort and classify minibeasts, according to my own criteria.
I can make careful observations of minibeasts using simple equipment.
I can explore and compare the differences between things that are living, dead, and things that have never been alive
I can identify and name a variety of plants and animals in their micro-habitats
I can 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.
I can investigate where we find the most woodlice.

Vocabulary

My Body, My Senses
As above.
Human body, senses, taste, smell, touch, sight, hearing, mouth, nose, eyes, ears, tongue, teeth, skin, nostril, texture, feel, blind, deaf, identify, classify, research, comparative test

Let's Build
As above.
Object, material, wood, plastic, glass, metal, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, water, hard/soft, stretchy/stiff, shiny/dull, rough, smooth, bendy, floppy, waterproof, not waterproof, breaks/tears, see-through, not see-through, absorb, fair test, change, same, measure, keep the same, house, building, structure, strong, weak, burn, resistant

Vocabulary

2021 - LOCKDOWN LEARNING

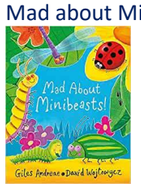
Animals all around us
As above.
Pets, farm, lamb, ewe, ram, sheep, foal, horse, stallion, mare, calf, cow, bull, duckling, duck, drake, gosling, goose, puppy, dog, cat, kitten, birds, mammals, live (live babies), eggs, hatch, spring, lambing, milking, dairy farm, livestock, beef, cattle, milk, dairy products, meat

Amazing African Animals
As above.
Mammals, birds, reptiles, amphibians, fish, dog, cat, fish, snake, tarantula, canary, legs, wings, beak, paws, bones, skeleton, mouth. omnivore, herbivore, carnivore, Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves

Vocabulary

Plants
Big Question: What do plants need to grow?
Leaves, flowers, blossom, petals, fruit, roots, berry, bulb, seed, trunk, branches, bark, stalk, bud, stem, compost, water, sunlight, warmth,

Living things and their habitats
Let's investigate a microhabitat!
As above.
Habitat, food, water, shelter, dead, living, insects, arachnids, clump of grass, crack (in a rock), dark, cool, rotting wood, safe (from predators), leaf litter, grass, camouflaged

Cultural Opportunities	Cultural Opportunities	Cultural Opportunities
Animals, including Humans **My Body, My Senses** Guide dog visit (in school) Visit to Aura – Kendal. **Materials** **Let's Build** Visits to our local environment to observe buildings/houses/homes	**Animals all around us** As above. 'Pets at Home' visit Pet visits (in school) Visit a local zoo (Dalton or Wildlife Oasis) Visit local farm **Animals, including Humans** **Amazing African Animals (Environmental Science)** Get involved in Roots and Shoots (rootsnshoots.org.uk) Chester Zoo virtual tours Webcams – Whipsnade Zoo (London), Edinburgh Zoo, Paignton Zoo (Devon) **Amazing African Animals** As above Chester Zoo virtual tours Webcams – Whipsnade Zoo (London), Edinburgh Zoo, Paignton Zoo (Devon)	**Plants** **Big Question: What do plants need to grow?** School garden, Ashmeadow – (throughout year, visit at least once, each season), Ashmeadow allotments Growing Well at Sizergh Barn **Let's investigate a microhabitat!** Ashmeadow, school grounds, Arnside Knott, Leighton Moss
Key values	**Key values**	**Key values**
School Values: Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. **British Values:** The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy. **Christian Star Qualities:** Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.	**School Values:** Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. **British Values:** The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy. **Christian Star Qualities:** Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.	**School Values:** Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. **British Values:** The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy. **Christian Star Qualities:** Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.
Book List & Resources	**Book List & Resources**	**Book List & Resources**
My Body, My Senses **https://developingexperts.com/s/unit-library/units/487** **https://explorify.uk/en/activities/have-you-ever/smelt-something-that-made-you-happy** **https://explorify.uk/en/activities/what-if/everything-tasted-the-same** **https://explorify.uk/en/activities/zoom-in-zoom-out/pink-and-bumpy** Brown Bear, Brown Bear what do you see? By Eric Carle Polar Bear, Polar Bear what do you hear? By Eric Carle It's Science – The five senses by S Hewitt  **Materials** The Three Little Pigs Three Little Pigs STEM Challenge (science-sparks.com) https://explorify.uk/en/activities/who-is/charles-macintosh https://explorify.uk/en/activities/have-you-ever/sorted-your-toys-in-different-ways https://developingexperts.com/s/unit-library/units/482 https://developingexperts.com/s/unit-library/units/481	**Animals around us** I want a Pet by Lauren Child Handa's Hen by Eileen Browne Looking after Cats and Kittens and Looking after Dogs and Puppies by Katherine Starke and Christyan Fox  **Amazing African Animals** Oi, get off our train by John Birmingham  https://www.bbc.co.uk/bitesize/topics/z6882hv/articles/zx38wmn (What animals need to survive) https://www.youtube.com/watch?v=mH7WkbE80Vg	**Plants** A tiny seed by Eric Carle Grandma's Saturday Soup by Sally Fraser and Derek Brazell  https://developingexperts.com/s/unit-library/units/485 **https://explorify.uk/en/activities/have-you-ever/grown-seeds-or-plants** **Living things and their habitats** **Let's investigate a microhabitat!** Mad about Minibeasts  113 - Exploring Micro-Habitats: Life Under Logs (Updated see video#213) - YouTube (Hidden Villa)

			(BBC teach – classifying animals) https://explorify.uk/en/activities/whats-going-on/to-flee-or-not-to-flee	What is a food chain? - BBC Bitesize Woodland, pond and ditch habitats - KS1 Science - BBC Bitesize Science Farm - Hedgerow Habitat Heroes - KS1 Microhabitats - YouTube https://developingexperts.com/s/unit-library/units/484 https://explorify.uk/en/activities/whats-going-on/hungry-snails
		YEAR A		
Year 2	Topic	**Autumn 1: Animals including humans – My Body, my senses** **Autumn 2: Materials – Let's Build**	**Spring - Animals, including humans**	**Summer 1: Plants** **Summer 2: Living things and their habitats**
		Links to previous Learning	**Links to previous Learning**	**Links to previous Learning**
		Animals, including Humans **My Body, My Senses** I know some basic body parts. I know about the five senses: smell, hearing, taste, touch and sight. I know that the parts of the body linked to the five senses. **Materials** **Let's Build** I know some common materials. (After exploration) I know some basic properties of some common materials. I know what some materials are used for (e.g. glass for windows) I know that different materials can be used for different purposes	***NOTE: 2021 - LOCKDOWN LEARNING*** **Animals, including Humans** **Animals all around us** I know some environments that are different to the one in which I live. I know the names of a variety of pets / farm animals. **Animals, including Humans** **Amazing African Animals** I know some environments that are different to the one in which I live. I know the names of some African animals (e.g. Lion, elephant, cheetah, Rhinoceros etc)	**Plants** **Big Question: What do plants need to grow?** I know the names of some of the plants growing in our school grounds and my garden (e.g. daisy and roses). I know that plants can be the same and different (e.g. some plants have flowers and some do not or flowers have petals but look different). I know plants grow (change over time). I know that I need to respect and care for the natural environment and all living things. **Living Things and their Habitats** **Minibeasts** I know the names of some common small animals (spiders, snails, worms, bees, caterpillars. I know that some of these small animals live in a garden. I know that some small animals live under rocks and logs.
		Knowledge	**Knowledge**	**Knowledge**
		Animals, including Humans **My Body, My Senses** **Big Question: How do our senses help us understand the world?** I know what senses do-that each of our senses sends a message to our brain I know that senses can work together, e.g. taste and smell. I know the basic parts of an eye and an ear and how they work. I know that I have taste buds on my tongue. I know how to look after our senses, in particular, our eyes and ears (e.g. do not look directly at the sun and do not stand close to a very loud speaker) I know that skin is the biggest organ in the body. I know that when a sense is missing, another sense/s is/are can become heightened and used in its place I know that Linda Brown Buck discovered how we smell things I know the difference between an object and the material from which it is made. I know the names of a variety of everyday materials, including wood, plastic, glass, metal, water and rock. I know that some materials are better than others for a purpose. I know that everyday materials are suitable for particular uses. I know that some solid shapes of some materials can be changed by squashing, bending, twisting and stretching. I know that John MacAdam was from Scotland and he invented road materials that became tarmac.	***2021 - LOCKDOWN LEARNING*** **Animals, including Humans** **Animals all around us** **Big Question: Where do animals like to live?** I know that animals have offspring which grow into adults. I know the young of some animals do not look like their parents e.g. tadpoles. I know that pets / farm animals are living things and have a variety of needs. I know the basic needs of animals, for survival (water, food and air). I know the animal classification groups, including fish, amphibians, reptiles, birds and mammals. I know that animals fit into different groups depending on special features. I know key features can be used to identify them. I know common animals that are carnivores, herbivores and omnivores. **Animals, including Humans** **Amazing African Animals (Environmental Science)** **Big Question: How can we help our animals?**	**Plants** **Big Question: What do plants need to grow?** I know that plants may grow from either seeds or bulbs. I know that seeds and bulbs germinate and grow into seedlings which then continue to grow into mature plants. I know that these mature plants may have flowers which then develop into seeds, berries, fruits etc. I know that seeds and bulbs need to be planted outside at particular times of year and they will germinate and grow at different rates. I know that some plants are better suited to growing in full sun and some grow better in partial or full shade. I know that plants also need different amounts of water and space to grow well and stay healthy. I know the lifecycle of a plant. I know what makes a plant, a living thing. I know that George Washington Carver was a famous scientist and that when he was young, he enjoyed learning about plants in the garden and he helped people who were enslaved, learn farming techniques. He developed 100 uses for peanuts **Living things and their habitats**

	I know that animals vary in many ways. I know that animals have different structures (e.g. wings, tails, ears etc I know they have different skin coverings (e.g. scales, feathers, hair) I know that these key features can be used to identify them. I know basic animal classification and the names of the different animal groups. I know the basic needs of animals, including humans, for survival, water, food, air and shelter. I know what some animals eat, and I can use the correct vocabulary (e.g. omnivore, herbivore and carnivore) I know that animals grow and how they change over time. I know that most living things live in habitats to which they are suited. I know what different habitats provide. I know what happens when basic needs are taken away. I know how animals obtain food (food chains). I know that some animals are threatened, endangered and extinct. I know that humans have had an impact on African animals (and animals throughout the world). I know that some African animals are threatened and some could become extinct.	**Let's investigate a microhabitat!** **Big Question: What requirements do Living Things have to grow and stay healthy?** I know the differences between things that are living, dead, and things that have never been alive I know 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. I know the names a variety of plants and animals in their habitats, including micro-habitats. I know how animals obtain their food from plants and other animals
Key Skills	**Key Skills**	**Key Skills**
Animals, including Humans **My Body, My Senses** **Big Question: How do our senses help us understand the world?** *Working Scientifically* *Identifying and classifying* *Performing simple tests* *Gathering and recording data to help in answering questions* *Asking simple questions and recognising that they can be answered in different ways.* *Using observations and ideas to suggest answers to questions* I can describe how senses work and draw labelled diagrams of the body part to help explain their function. I can share facts about Linda Buck's life and her discovery of how we smell. I can design and preform simple tests to explore what senses do and identify things humans do that use more than one sense. I can use my observations and ideas to explore and discover what happens when a sense is missing (explore what it might be like to be blind or deaf). ***Scientist*** *I can find out about Linda Buck who won a Nobel Prize in 2004 for identifying nose receptors.* 	***2021 - LOCKDOWN LEARNING*** **Animals, including Humans** **Animals all around us** **Big Question: Where do animals like to live?** As above. *Working Scientifically* *Engaging in practical enquiry to answer questions, by identifying and classifying* *Grouping and sorting* *Using observations and ideas to suggest answers to questions* I can describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). I can describe changes to animals as they grow (lifecycle) e.g. birds- egg, chick, juvenile, adult, egg. I can **research** how animals get air, food and water I can show empathy for animals (**link to pets**) and can show how I know an animal is happy and healthy. **Animals, including Humans** **Amazing African Animals (Environmental Science)** **Big Question: How can we help our animals?** *Working Scientifically* *Engaging in practical enquiry to answer questions, by identifying and classifying.*	**Plants** **Big Question: What do plants need to grow?** *Working Scientifically* *Making observations and taking measurements, by observing closely, using simple equipment* *Recording and presenting evidence, by gathering and recording data to help in answering questions* *Using observations and ideas to suggest answers to questions* *Comparing and contrasting* *Drawing diagrams showing parts of a plant* *Describing how they can identify and group* I can understand and describe the key features of the life cycle of a plant. I can grow and observe seeds and bulbs (potatoes, cress, sunflowers, beans) and record how they change over time. I can observe similar plants at different stages of growth. I can perform simple comparative tests that demonstrate the needs of plants by taking one need away at time. I can (based on my own criteria) identify and classify seeds and bulbs I can plant seeds and bulbs, care for them and then observe how they grow I can generate questions for investigation, e.g. do big seeds germinate more quickly? or which comes first the root or the shoot? I can (based on observations) identify patterns, e.g. bigger plants have bigger leaves. ***Scientist*** *I can find out about George Washington Carver*

Materials
Let's Build
Big Question: Where did The Three Little Pigs go wrong?
As above.

Working Scientifically
Engaging in practical enquiry to answer questions, by performing simple tests
Gathering and recording data
Using observations and ideas
Identifying and classifying
Predicting, observing, investigating, measuring and recoding

I can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
I can find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.
I can design and preform simple tests to explore the properties of materials.
I can compare the use of different materials for a particular purpose (building a home).
I can compare the use of one material for different purposes.

Scientist
I can find out about John MacAdam and his idea to improve roads in the 1700s.

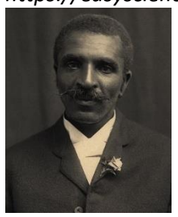
Asking simple questions and realising they can be answered in different ways
Answering questions and concluding
(They are supported to relate these to information they have gained from secondary sources.)

I can describe how different habitats provide for the basic needs of different kinds of animals and plants.
I can label external body parts and compare and contrast some animals.
I can research an African animal and demonstrate my knowledge of this animal by making a diorama (animal, habitat, food source).
I can find out how/why my animal may be endangered or threatened.
I can identify and classify animals and their babies, then sort animal into groups
I can ask and answer questions about endangered animals I have researched.

Scientist
I can find out about Jane Goodall and her work with chimpanzees. I can learn about Roots and Shoots.

https://explorify.uk/en/activities/who-is/jane-goodall

https://easyscienceforkids.com/george-washington-carver/



Living things and their habitats
Let's investigate a microhabitat!
Big Question: What requirements do Living Things have to grow and stay healthy?

Working Scientifically
Identifying and classifying
Making observations and taking measurements, observing closely using simple equipment.
Using observations and ideas to suggest answers to questions
Asking simple questions and realising they can be answered if different ways
Gathering and recoding data
Sorting and grouping
Performing simple tests
Identifying differences and similarities or changes related to simple scientific ideas and processes
Observing and recording with some accuracy

I can make careful observations of dead, living and plastic minibeasts to establish whether they are living or not.
I can use a tick sheet to identify minibeasts found in our local area.
I can sort and classify minibeasts, according to my own criteria.
I can make careful observations of minibeasts using simple equipment.
I can explore and compare the differences between things that are living, dead, and things that have never been alive
I can identify and name a variety of plants and animals in their micro-habitats
I can 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.
I can investigate where we find the most woodlice.

Vocabulary

Animals, including Humans
My Body, My Senses
**(NC Y1)*
As above.
Vision, pupil, lens, eye lid, iris, sclera, receptors, blind, brail, outer ear, inner ear, middle ear, ear canal, cones, rods, hearing aid, deaf, sign language, cochlea, dizzy, echo, sound waves, nervous system, organ, taste buds, sweet, bitter, salty, sour, umami, optical illusions, Nobel Prize, fragrant, scent, odour,

Materials

Vocabulary

2021 - LOCKDOWN LEARNING

Animals all around us
Lamb, ewe, ram, sheep, foal, horse, stallion, mare, calf, cow, bull, duckling, duck, drake, gosling, goose, puppy, dog, cat, kitten, mammals, live (live babies), eggs, hatch, spring, lambing, milking, dairy farm, livestock,

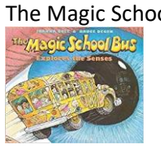
Animals, including Humans
Amazing African Animals (Environmental Science)

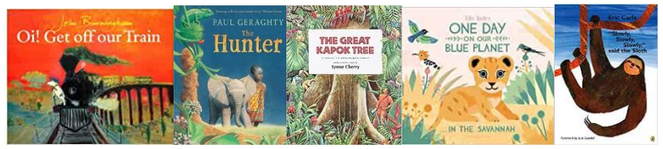
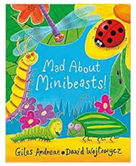
Vocabulary

Plants
Big Question: What do plants need to grow?

Seeds, bulbs, germination, seedlings, mature plants, growth, soil, compost, rot, cloche, greenhouse, function, roots, stem, leaves, flowers, petals, variety, nutrients, pollen, pollination, life cycle, diagram, labels, seed dispersal
light, shade, sun, warm, cool, water, grow, healthy

Let's investigate a microhabitat!

Let's Build Rubber, wool, cotton, nylon, clay, metal, plastic, rock, brick, paper, fabric, elastic, foil, card/cardboard, wood, glass, water, properties, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through, object, material, properties of materials, opaque, transparent and translucent, reflective, nonreflective, flexible, rigid Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching observations, record, classify, group, similar, safe, unusual, compare, suitability, suitable, unsuitable, purpose, recycle, recycling, reuse, reduce, biodegradable, environment, landfill site, recycling depot, shredded, liquid, solid, melted, pellets, raw materials, thickness, rolling, pressing, flexible, fair test	Identify, classify, mammal, bird, fish, amphibian, reptile, birth, live, hatch, scales, claws, fins, change, growth, warm blooded, cold blooded, habitats, rainforest, seashore, woodland, ocean, food chain, microhabitats, conditions, observe, living, dead, growth, empathy, healthy, survival, threatened, endangered, extinct, habitat, omnivore, herbivore, carnivore, predator, prey, wings, beak, paws, bones, skeleton, mouth, teeth, chew, bite, grind in danger, threat, extinct	Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, Microhabitats, inhabitants, investigate, preferred, categorize, identify, classify, conditions, survive, urban, woodland, pond, (under) log, (in) bushes, coast, coastal, rock pool, survey, pictogram, herbivore, carnivore, prey, predator
Cultural Opportunities	**Cultural Opportunities**	**Cultural Opportunities**
Animals, including Humans **My Body, My Senses** Visit from guide dogs and fundraising opportunity. Visit to Aura – Kendal. **Materials** **Let's Build** Visits to our local environment to observe buildings/houses/homes	**Animals all around us** 'Pets at Home' visit Pet visits to school Visit a local zoo (Dalton or Wildlife Oasis) Visit local farm **Animals, including Humans** **Amazing African Animals (Environmental Science)** Get involved in Roots and Shoots (rootsnshoots.org.uk) Chester Zoo virtual tours Webcams – Whipsnade Zoo (London), Edinburgh Zoo, Paignton Zoo (Devon) **Amazing African Animals** As above Chester Zoo virtual tours Webcams – Whipsnade Zoo (London), Edinburgh Zoo, Paignton Zoo (Devon)	**Plants** As above. School garden, Ashmeadow – (throughout year, visit at least once, each season), Ashmeadow allotments, Growing Well at Sizergh Barn, Leighton Moss, School grounds, visit Ashmeadow and Arnside Knott **Let's investigate a microhabitat!** Ashmeadow, school grounds, Leighton Moss and Arnside Knott
Key values	**Key values**	**Key values**
My Body, My Senses **Materials-Let's Build** **School Values:** Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. **British Values:** The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy. **Christian Star Qualities:** Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.	Materials – Animals **School Values:** Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. **British Values:** The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy. **Christian Star Qualities:** Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.	**Plants – Habitats** **School Values:** Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. **British Values:** The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy. **Christian Star Qualities:** Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.
Book List & Resources	**Book List & Resources**	**Book List & Resources**
My Body, My Senses https://developingexperts.com/s/unit-library/units/487 The Magic School bus explores the senses by Joanna Cole  https://www.bbc.co.uk/bitesize/topics/z9yycdm/articles/zqhbr82 (Parts of the body)	**Animals all around us** As above. Farmer Duck by Martin Waddell Looking after Rabbits and Guinea Pigs by Katherine Starke and Christyan Fox  	The Bee who spoke, by Al MacCuish Plant – DK Eye know The Golden Glow by Benjamin Flouw What's this? A seed's story by Caroline Mockford 

	https://www.bbc.co.uk/bitesize/topics/z9yycdm/articles/zxy987h (What are senses?) https://explorify.uk/en/activities/have-you-ever/smelt-something-that-made-you-happy https://explorify.uk/en/activities/what-if/everything-tasted-the-same https://explorify.uk/en/activities/zoom-in-zoom-out/pink-and-bumpy **Materials** **Let's Build** The True story of the Three Little Pigs by Jon Scieszka Acorn exploring materials series (wood, glass, plastic) Rock (by Harriet Mayer  https://www.bbc.co.uk/bitesize/topics/zrssgk7(Materials) https://www.bbc.co.uk/bitesize/topics/zrssgk7/articles/z9pgcdm https://www.bbc.co.uk/bitesize/topics/z8q9pbk (Working scientifically) https://explorify.uk/en/activities/who-is/charles-macintosh https://explorify.uk/en/activities/have-you-ever/sorted-your-toys-in-different-ways https://developingexperts.com/s/unit-library/units/482 https://developingexperts.com/s/unit-library/units/481	**Animals, including Humans** **Amazing African Animals (Environmental Science)** Oi get off my train, by John Birmingham The Hunter, by Paul Geraghty The Great Kapok Tree, by Lynne Cherry One Day on our Blue Planet series Slowly, slowly, slowly, said the Sloth, by Eric Carle  https://www.bbc.co.uk/bitesize/topics/z6882hv/articles/zx38wmn (What animals need to survive) https://www.youtube.com/watch?v=mH7WkbE80Vg (BBC teach – classifying animals) https://explorify.uk/en/activities/whats-going-on/to-flee-or-not-to-flee	**https://explorify.uk/en/activities/have-you-ever/grown-seeds-or-plants** https://developingexperts.com/s/unit-library/units/485 **Living things and their habitats** **Let's investigate a microhabitat!** Mad about Minibeasts  113 - Exploring Micro-Habitats: Life Under Logs (Updated see video#213) - YouTube (Hidden Villa) What is a food chain? - BBC Bitesize Woodland, pond and ditch habitats - KS1 Science - BBC Bitesize Science Farm - Hedgerow Habitat Heroes - KS1 Microhabitats - YouTube https://developingexperts.com/s/unit-library/units/484 https://explorify.uk/en/activities/whats-going-on/hungry-snails

YEAR A			
	Autumn 1: Forces (not magnetism) **Autumn 2:** Animals, including **humans**	**Spring 1: States of Matter** **Spring 2: Sound**	**Summer 1: Plants** **Summer 2: Earth and Space**
3	**Links to previous Learning** **Forces (KS1)** Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. **Animals** including humans: 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.	**Links to previous Learning** **Materials (Y1/2)** I know the difference between an object and the material from which it is made. I know the names of a variety of everyday materials, including wood, plastic, glass, metal, water and rock. I know that some materials are better than others for a purpose. I know that everyday materials are suitable for particular uses. I know that some solid shapes of some materials can be changed by squashing, bending, twisting and stretching. **Sound (Y1/2)** Senses activities – hearing and discussing sounds. I know what senses do-that each of our senses sends a message to our brain. I know how to look after our senses, in particular, our eyes and ears (e.g. do not look directly at the sun and do not stand close to a very loud speaker). Music – listening and distinguishing between sounds of instruments	**Links to previous Learning** **Plants:** Names of a variety of common wild and garden plants. Names of some common garden plants and wildflowers in the local area. (School and Ashmeadow). Know the basic structure of a variety of common flowering 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. **Earth and Space (Y2)** I can name the four seasons and identify when in the year they occur I can describe weather in different seasons over a year I can describe days as being longer (in time) in the summer and shorter in the winter
	Knowledge **Forces (not magnetism)** **Big Question**	**Knowledge** **States of matter** **Big Questions:**	**Knowledge** **Plants:** **Big Questions:**

What is a force and what does it do?
What are the similarities and differences between forces?
I know a force causes an object to start moving, stop moving, speed up, slow down or change direction.
I know that gravity is a force.
I know that gravity is a force that acts at a distance.
I know that everything is pulled to the Earth by gravity.
I know that this causes unsupported objects to fall. I know that air resistance and water-resistance are forces acting on moving surfaces.
I know the object may be moving through the air or water, or the air and water may be moving over a stationary object.
I know that friction acts on moving surfaces.
I know that thrust and lift (aeroplanes) work against gravity and air resistance and vice versa.
I know a mechanism is a device that allows a small force to be increased to a larger force.
I know the pay back is that it requires a greater movement. The small force moves a long distance and the resulting large force moves a small distance, e.g. a crowbar or bottle top remover.
I know that pulleys, levers and gears are all mechanisms, also known as simple machines.
I know when an object moves on a surface, the texture of the surface and the object affect how it moves.
I know it may help the object to move better or it may hinder its movement e.g. ice skater compared to walking on ice in normal shoes.

Animals including humans
Big Question:
How does it move?
I know that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food – they get nutrition from what they eat.
I know how the skeletons of birds, mammals (humans), fish, amphibians or reptiles are similar (backbone, ribs, skull, bones used for movement) and the differences in their skeletons.
I know that muscles, which are attached to the skeleton, help animals move parts of their body.
I know that animals can be grouped according to what they eat.
I know that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.
I know a variety of food chains, identifying producers, predators and prey.

Where does a puddle go?
Is water always wet?
I know that materials can be solids, liquids and gases.
I know that a solid keeps its shape and has a fixed volume.
I know a liquid has a fixed volume but changes in shape to fit the container.
I know a liquid can be poured and keeps a level, horizontal surface.
I know a gas fills all available space; it has no fixed shape or volume.
(Granular and powdery solids like sand can be confused with liquids because they can be poured, but when poured they form a heap and they do not keep a level surface when tipped.)
I know that each individual grain demonstrates the properties of a solid.
I know that melting is a state change from solid to liquid.
I know that freezing is a state change from liquid to solid.
I know that the freezing point of water is 0oC.
I know that boiling is a change of state from liquid to gas that happens when a liquid is heated to a specific temperature and bubbles of the gas can be seen in the liquid.
I know that water boils when it is heated to 100oC.
I know that evaporation is the same state change as boiling (liquid to gas), but it happens slowly at lower temperatures and only at the surface of the liquid.
I know that evaporation happens more quickly if the temperature is higher, the liquid is spread out or it is windy.
I know that condensation is the change back from a gas to a liquid caused by cooling.
I know that water at the surface of seas, rivers etc. evaporates into water vapour (a gas).
I know that this rises, cools and condenses back into a liquid forming clouds.
I know that when too much water has condensed, the water droplets in the cloud get too heavy and fall back down as rain, snow, sleet etc. and drain back into rivers etc. This is known as precipitation. This is the water cycle.

Sound
Big Questions:
How does sound help us experience our world?
What is sound?
How do we hear different sounds?
How are sounds made?
I know how sounds are made, associating some of them with something vibrating.
I know that sounds get fainter as the distance from the sound source increases.
I know a sound produces vibrations which travel through a medium from the source to our ears. I know that vibrations from sounds travel through a medium to the ear.

What do plants need to grow well?
I know the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow)
I know that many plants, but not all, have roots, stems/trunks, leaves, flowers/blossoms.
I know the functions of different parts of flowering plants: roots; stem/trunk; leaves; and flowers.
I know that the roots absorb water and nutrients from the soil and anchor the plant in place.
I know the stem transports water and nutrients/minerals around the plant and holds the leaves and flowers up in the air to enhance photosynthesis, pollination and seed dispersal.
I know the leaves use sunlight and water to produce the plant's food.
I know some plants produce flowers which enable the plant to reproduce.
I know that pollen, which is produced by the male part of the flower, is transferred to the female part of other flowers (pollination). I know this forms seeds, sometimes contained in berries or fruit which are then dispersed in different ways.
I know that different plants require different conditions for germination and growth.

Earth and Space
Big Question:
How big is space?
I know that the Sun is a star, and it is at the centre of our solar system.
I know that there are 8 planets (children can choose to name them, but not essential).
I know that these travel around the Sun in fixed orbits.
I know that Earth takes 365¼ days to complete its orbit around the Sun.
I know that Earth rotates (spins) on its axis every 24 hours. As Earth rotates half faces the Sun (day) and half is facing away from the Sun (night).
I know that the Earth rotates, (the Sun appears to move across the sky)
The Moon orbits the Earth.
I know it takes about 28 days to complete its orbit.
I know the Sun, Earth and Moon are approximately spherical.

	I know that different mediums such as solids, liquids and gases can carry sound, but sound cannot travel through a vacuum (an area empty of matter). I know the vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound. I know the loudness (volume) of the sound depends on the strength (size) of vibrations which decreases as they travel through the medium. Therefore, sounds decrease in volume as you move away from the source. I know that a sound insulator is a material which blocks sound effectively. I know that pitch is the highness or lowness of a sound and is affected by features of objects producing the sounds. For example, smaller objects usually produce higher pitched sounds.	
Key Skills **<u>Forces (not magnetism)</u>** **<u>Big Question</u>** **What is a force and what does it do?** **What are the similarities and differences between forces?** <u>*Working Scientifically*</u> *Recording and presenting evidence by, 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.* *as well as,* *Recording and presenting evidence, by, recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs (Year 5 only)* I can see that unsupported objects fall towards the Earth (because of gravity) I can notice the effects of air resistance, water-resistance and friction that act between moving surfaces. I can compare how things move on different surfaces. I can begin to recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. I can identify the effects of air resistance, water resistance and friction that act between moving surfaces. ***<u>Scientist</u>*** *I can find out about Isaac Newton (discovered gravity)* *www.theschoolrun.com/homework-help/sir-isaac-newton* 	**Key Skills** **<u>States of matter</u>** **Big Questions:** **Where does a puddle go?** **Is water always wet?** <u>*Working Scientifically*</u> *Engaging in practical enquiries to answer questions, Setting up simple practical enquiries, comparative and fair tests* *Recording and presenting evidence, gathering, recording, classifying and presenting data in a variety of ways to help in answering questions* I can compare and group materials together, according to whether they are solids, liquids or gases. I can 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). I can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. I can investigate rates of dissolving by carrying out comparative and fair test. I can create a chart or table grouping/comparing everyday materials by different properties I can separate mixtures by sieving, filtering and evaporation, choosing the most suitable method and equipment for each mixture. I can explore a range of non-reversible changes e.g. rusting, adding fizzy tablets to water, burning. I can carry out comparative and fair tests involving non-reversible changes e.g. What affects the rate of rusting? What affects the amount of gas produced? I can research new materials produced by chemists e.g. Spencer Silver (glue of sticky notes) and Ruth Benerito (wrinkle free cotton).	**Key Skills** **<u>Plants:</u>** **Big Questions:** **What do plants need to grow well?** <u>*Working Scientifically*</u> *Making observations and taking measurements, by making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers* I can observe what happens to plants over time when the leaves or roots are removed. I can observe the effect of putting cut white carnations or celery in coloured water. I can investigate what happens to plants when they are put in different conditions e.g. in darkness, in the cold, deprived of air, different types of soil, different fertilisers, varying amount of space. I can spot flowers, seeds, berries and fruits outside throughout the year I can observe flowers carefully to identify the pollen. I can observe flowers being visited by pollinators e.g. bees and butterflies in the summer. I can observe seeds being blown from the trees e.g. sycamore seeds. I can research different types of seed dispersal. I can classify seeds in a range of ways including by how they are dispersed. I can create a new species of flowering plant. **<u>Earth and Space</u>** **Big Question:** **How big is space?** <u>*Working Scientifically*</u> *Asking relevant questions and using different types of scientific enquiries to answer them*

Animals including humans

Health and Nutrition

Big Question

What is a healthy digestive system and how does it work?

What does our body do with the food we eat?

Working Scientifically

Asking questions and recognising that they can be answered in different ways
Asking relevant questions and using different types of scientific enquiries to answer them

I can construct and interpret a variety of food chains, identifying producers, predators and prey.
I can identify and grouping animals with and without skeletons
I can observe and compare their movement
I can give similarities e.g. they all have joints to help the animal move, and differences between skeleton

Scientist

Ivan Petrovich Pavlov

Russian scientist Ivan Pavlov conditioned his dogs to associate the sound of a bell with food. Eventually, the animals would drool in response to a ring, even when no reward was available.

I can 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.
I can use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.
I can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.
I can demonstrate that dissolving, mixing and changes of state are reversible changes.
I can 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.

Sound

Big Questions:

How does sound help us experience our world?

What is sound?

How do we hear different sounds?

How are sounds made?

Working Scientifically

Working Scientifically
Answering questions and concluding, identifying differences, similarities or changes related to simple scientific ideas and processes

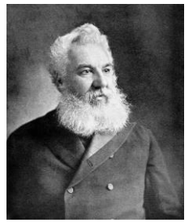
Recording and presenting evidence;
Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.
Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and table

I can find patterns between the pitch of a sound and features of the object that produced it.
I can find patterns between the volume of a sound and the strength of the vibrations that produced it.
I can name sound sources and state that sounds are produced by the vibration of the object.
I can state that sounds travel through different mediums such as air, water, metal.
I can give examples to demonstrate how the pitch of a sound are linked to the features of the object that produced it.
I can give examples of how to change the volume of a sound e.g. increase the size of vibrations by hitting or blowing harder.
I can give examples to demonstrate that sounds get fainter as the distance from the sound source increase.
I can use data to identify patterns in pitch and volume.

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

Scientist

I can find out about Mae Jemison (first African American women astronaut to go into space)
https://kids.britannica.com/kids/article/Mae-Jemison/400118

	Scientists *Alexander Graham Bell*  *Dame Evelyn Elizabeth Ann Glennie* *Audiologist* 	
Vocabulary Forces Force, push, pull, Earth, gravity, magnetic, act, surface, north pole, south pole, magnetic north, attract, repel, iron, steel, opposite, compass, magnetic field **Animals including humans:** Digestive system, digestion, mouth, teeth, saliva, salivary gland, oesophagus, stomach, small intestine, food pyramid, nutrients, large intestines, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain, decomposer	**Vocabulary** **States of matter** Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material **Sound** Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation	**Vocabulary** **Plants:** Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal) petal, stamen, carpel, fertilisation, nectar, ovule, pistil, nutrient, stigma, style, ovary, anther, filament **Earth and Space** Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, solar system, rotates, star, orbit, planets
Cultural Opportunities **Forces** TBC **Animals-Skeletons and Movement** TBC	**Cultural Opportunities** **States of matter** TBC **Sound** Link to music Interview a deaf member of the community	**Cultural Opportunities** Plants Visit Arnside Knott/Eddy's Land, to observe changes of plants over time (each term) **Earth and Space** Alston Observatory-Alston Lane, Preston, PR3 3BP
Key values **School Values:** Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. **British Values:** The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy. **Christian Star Qualities:** Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.	**Key values** **School Values:** Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. **British Values:** **Christian Star Qualities:** Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.	**Key values** **School Values:** Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. **British Values:** The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy. **Christian Star Qualities:** Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.
Book List & Resources **Forces** https://explorify.uk/teacher-support/science-teaching-support/forces-tackle-the-tricky-bits	**Book List & Resources** **ates of matter** https://explorify.uk/en/activities/have-you-ever/held-a-piece-of-chocolate-tightly-in-your-hand	**Book List & Resources** Plants: https://www.twinkl.co.uk/resource/tp2-s-023-planit-science-year-3-plants-unit-pack

	https://explorify.uk/en/activities/whats-going-on/scarf-shooter https://explorify.uk/en/activities/have-you-ever/ridden-your-bike-or-scooter-off-the-pavement https://developingexperts.com/s/unit-library/units/513 https://www.twinkl.co.uk/resource/science-forces-year-5-unit-pack-tp2-s-330 **Animals including humans:** **https://explorify.uk/en/activities/odd-one-out/whats-for-dinner** **https://explorify.uk/en/activities/odd-one-out/tropical-fruits (take it further)** **https://developingexperts.com/s/unit-library/units/493** **https://developingexperts.com/s/unit-library/units/503** https://www.twinkl.co.uk/resource/tp2-s-022-planit-science-year-3-animals-including-humans-unit-pack https://www.stem.org.uk/resources/community/collection/12601/year-3-animals-including-humans https://www.bbc.co.uk/bitesize/topics/zn22pv4	https://explorify.uk/en/activities/have-you-ever/needed-to-dry-something-quickly https://explorify.uk/en/activities/odd-one-out/where-is-the-water https://developingexperts.com/s/unit-library/units/505 https://www.twinkl.co.uk/resource/tp2-s-061-planit-science-year-4-states-of-matter-unit-pack **Sound** https://explorify.uk/en/activities/listen-what-can-you-hear/musical-beats https://explorify.uk/en/activities/have-you-ever/heard-your-neighbours-in-the-next-house-or-flat https://explorify.uk/en/activities/what-if/you-could-hear-every-sound-at-equal-volume https://explorify.uk/en/activities/zoom-in-zoom-out/hidden-depths https://developingexperts.com/s/unit-library/units/506 https://www.twinkl.co.uk/resource/tp2-s-157-new-planit-science-y4-sound-unit-pack	https://www.stem.org.uk/resources/community/collection/12535/year-3-plants https://www.bbc.co.uk/programmes/articles/Mf5rhbTkHLZ3fbJzScyDvC/primary-science-plants https://www.stem.org.uk/resources/elibrary/resource/314741/do-plants-need-soil-grow https://explorify.uk/en/activities/odd-one-out/three-weeds https://explorify.uk/en/activities/odd-one-out/three-weeds https://developingexperts.com/s/unit-library/units/486 **Earth and Space** https://explorify.uk/en/activities/whats-going-on/space-engineer https://explorify.uk/en/activities/odd-one-out/celestial-objects https://explorify.uk/en/activities/have-you-ever/spoken-to-a-friend-or-relative-somewhere-else-in-the-world-and-the-time-was-different https://developingexperts.com/s/unit-library/units/499 https://www.twinkl.co.uk/resource/tp2-s-100-planit-science-year-5-earth-and-space-unit-pack
YEAR A			
4	**Autumn 1: Forces (not magnetism)** **Autumn 2:** Animals, including **humans**	**Spring 1: States of Matter** **Spring 2: Sound**	**Summer 1: Plants** **Summer 2: Earth and Space**
	Links to previous Learning	**Links to previous Learning**	**Links to previous Learning**
	Forces Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. **Animals including humans: Health and Nutrition** 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.	**Materials (KS1)** I know the difference between an object and the material from which it is made. I know the names of a variety of everyday materials, including wood, plastic, glass, metal, water and rock. I know that some materials are better than others for a purpose. I know that everyday materials are suitable for particular uses. I know that some solid shapes of some materials can be changed by squashing, bending, twisting and stretching. **Sound (KS1)** Senses activities – hearing and discussing sounds. I know what senses do-that each of our senses sends a message to our brain. I know how to look after our senses, in particular, our eyes and ears (e.g. do not look directly at the sun and do not stand close to a very loud speaker). Music – listening and distinguishing between sounds of instruments	**Plants (KS1)** Names of a variety of common wild and garden plants. Names of some common garden plants and wildflowers in the local area. (School and Ashmeadow). Know the basic structure of a variety of common flowering 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. **Earth and Space (Y2)** I can name the four seasons and identify when in the year they occur I can describe weather in different seasons over a year I can describe days as being longer (in time) in the summer and shorter in the winter
	Knowledge	**Knowledge**	**Knowledge**
	Forces (not magnetism) **Big Question** **What is a force and what does it do?** **What are the similarities and differences between forces?** I know a force causes an object to start moving, stop moving, speed up, slow down or change direction. I know that gravity is a force.	**States of matter** **Big Questions:** **Where does a puddle go?** **Is water always wet?** I know that materials can be solids, liquids and gases. I know that a solid keeps its shape and has a fixed volume.	**Plants:** **Big Questions:** **What do plants need to grow well?** I know the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow)

I know that gravity is a force that acts at a distance.
I know that everything is pulled to the Earth by gravity.
I know that this causes unsupported objects to fall. I know that air resistance and water-resistance are forces acting on moving surfaces.
I know the object may be moving through the air or water, or the air and water may be moving over a stationary object.
I know that friction acts on moving surfaces.
I know that thrust and lift (aeroplanes) work against gravity and air resistance and vice versa.
I know a mechanism is a device that allows a small force to be increased to a larger force.
I know the pay back is that it requires a greater movement. The small force moves a long distance and the resulting large force moves a small distance, e.g. a crowbar or bottle top remover.
I know that pulleys, levers and gears are all mechanisms, also known as simple machines.
I know when an object moves on a surface, the texture of the surface and the object affect how it moves.
I know it may help the object to move better or it may hinder its movement e.g. ice skater compared to walking on ice in normal shoes.

Animals including humans
Big Question:
How does it move?
I know that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food – they get nutrition from what they eat.

I know how the skeletons of birds, mammals (humans), fish, amphibians or reptiles are similar (backbone, ribs, skull, bones used for movement) and the differences in their skeletons
I know that muscles, which are attached to the skeleton, help animals move parts of their body
I know that animals can be grouped according to what they eat.
I know that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.
I know a variety of food chains, identifying producers, predators and prey.

I know a liquid has a fixed volume but changes in shape to fit the container.
I know a liquid can be poured and keeps a level, horizontal surface.
I know a gas fills all available space; it has no fixed shape or volume.
(Granular and powdery solids like sand can be confused with liquids because they can be poured, but when poured they form a heap and they do not keep a level surface when tipped.)
I know that each individual grain demonstrates the properties of a solid.
I know that melting is a state change from solid to liquid.
I know that freezing is a state change from liquid to solid.
I know that the freezing point of water is 0oC.
I know that boiling is a change of state from liquid to gas that happens when a liquid is heated to a specific temperature and bubbles of the gas can be seen in the liquid.
I know that water boils when it is heated to 100oC.
I know that evaporation is the same state change as boiling (liquid to gas), but it happens slowly at lower temperatures and only at the surface of the liquid.
I know that evaporation happens more quickly if the temperature is higher, the liquid is spread out or it is windy.
I know that condensation is the change back from a gas to a liquid caused by cooling.
I know that water at the surface of seas, rivers etc. evaporates into water vapour (a gas).
I know that this rises, cools and condenses back into a liquid forming clouds.
I know that when too much water has condensed, the water droplets in the cloud get too heavy and fall back down as rain, snow, sleet etc. and drain back into rivers etc. This is known as precipitation. This is the water cycle.

Sound
Big Questions:
How does sound help us experience our world?
What is sound?
How do we hear different sounds?
How are sounds made?
I know how sounds are made, associating some of them with something vibrating.
I know that sounds get fainter as the distance from the sound source increases.
I know a sound produces vibrations which travel through a medium from the source to our ears. I know that vibrations from sounds travel through a medium to the ear.
I know that different mediums such as solids, liquids and gases can carry sound, but sound cannot travel through a vacuum (an area empty of matter).

I know that many plants, but not all, have roots, stems/trunks, leaves, flowers/blossoms.
I know the functions of different parts of flowering plants: roots; stem/trunk; leaves; and flowers.
I know that the roots absorb water and nutrients from the soil and anchor the plant in place.
I know the stem transports water and nutrients/minerals around the plant and holds the leaves and flowers up in the air to enhance photosynthesis, pollination and seed dispersal.
I know the leaves use sunlight and water to produce the plant's food.
I know some plants produce flowers which enable the plant to reproduce.
I know that pollen, which is produced by the male part of the flower, is transferred to the female part of other flowers (pollination). I know this forms seeds, sometimes contained in berries or fruit which are then dispersed in different ways.
I know that different plants require different conditions for germination and growth.

Earth and Space
Big Question:
How big is space?

I know that the Sun is a star, and it is at the centre of our solar system.
I know that there are 8 planets (can choose to name them, but not essential).
I know that these travel around the Sun in fixed orbits.
I know that Earth takes 365¼ days to complete its orbit around the Sun.
I know that Earth rotates (spins) on its axis every 24 hours. As Earth rotates half faces the Sun (day) and half is facing away from the Sun (night).
I know that the Earth rotates, (the Sun appears to move across the sky)
The Moon orbits the Earth.
I know it takes about 28 days to complete its orbit.
I know the Sun, Earth and Moon are approximately spherical.

	I know the vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound. I know the loudness (volume) of the sound depends on the strength (size) of vibrations which decreases as they travel through the medium. Therefore, sounds decrease in volume as you move away from the source. I know that a sound insulator is a material which blocks sound effectively. I know that pitch is the highness or lowness of a sound and is affected by features of objects producing the sounds. For example, smaller objects usually produce higher pitched sounds.	
Key Skills	**Key Skills**	**Key Skills**
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Working Scientifically
Asking questions and recognising that they can be answered in different ways
Asking relevant questions and using different types of scientific enquiries to answer them

I can construct and interpret a variety of food chains, identifying producers, predators and prey.
I can identify and grouping animals with and without skeletons
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Scientist
Ivan Petrovich Pavlov

Russian scientist Ivan Pavlov conditioned his dogs to associate the sound of a bell with food. Eventually, the animals would drool in response to a ring, even when no reward was available.

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Sound
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I can find patterns between the pitch of a sound and features of the object that produced it.
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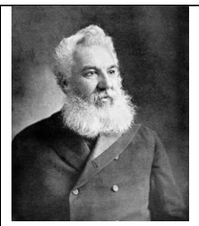
I can give examples of how to change the volume of a sound e.g. increase the size of vibrations by hitting or blowing harder.
I can give examples to demonstrate that sounds get fainter as the distance from the sound source increase.
I can use data to identify patterns in pitch and volume.

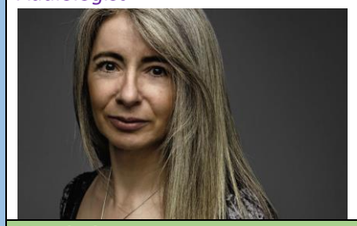
Scientists
Alexander Graham Bell

I can begin to describe the Sun, Earth and Moon as approximately spherical bodies.
I can begin to use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky

Scientist
I can find out about Mae Jemison (first African American women astronaut to go into space)
https://kids.britannica.com/kids/article/Mae-Jemison/400118



Dame Evelyn Elizabeth Ann Glennie
Audiologist



Vocabulary	Vocabulary	Vocabulary
Forces Force, push, pull, Earth, gravity, magnetic, act, surface, north pole, south pole, magnetic north, attract, repel, iron, steel, opposite, compass, magnetic field **Animals including humans:** Digestive system, digestion, mouth, teeth, saliva, salivary gland, oesophagus, stomach, small intestine, food pyramid, nutrients, large intestines, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain, decomposer	**States of matter** Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material **Sound** Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation	**Plants:** Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal) petal, stamen, carpel, fertilisation, nectar, ovule, pistil, nutrient, stigma, style, ovary, anther, filament **Earth and Space** Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, solar system, rotates, star, orbit, planets
Cultural Opportunities	**Cultural Opportunities**	**Cultural Opportunities**
Forces TBC **Animals** including humans School nurse to discuss diet and nutrition Links to sport and exercise (PE) and practical evidence gathering sessions.	**States of Matter** TBC **Sound** Link to music Interview a deaf member of the community	Plants Visit Arnside Knott/Eddy's Land, to observe changes of plants over time (each term) **Earth and Space** Alston Observatory-Alston Lane, Preston, PR3 3BP
Key values	**Key values**	**Key values**
School Values: Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. **British Values:** The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy. **Christian Star Qualities:** Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.	**School Values:** Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. **British Values:** The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy. **Christian Star Qualities:** Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.	**School Values:** Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. **British Values:** The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy. **Christian Star Qualities:** Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.
Book List & Resources	**Book List & Resources**	**Book List & Resources**
Forces	**States of matter**	Plants:

	https://explorify.uk/teacher-support/science-teaching-support/forces-tackle-the-tricky-bits https://explorify.uk/en/activities/whats-going-on/scarf-shooter https://explorify.uk/en/activities/have-you-ever/ridden-your-bike-or-scooter-off-the-pavement https://developingexperts.com/s/unit-library/units/513 https://www.twinkl.co.uk/resource/science-forces-year-5-unit-pack-tp2-s-330 **Animals including humans:** **https://explorify.uk/en/activities/odd-one-out/whats-for-dinner** **https://explorify.uk/en/activities/odd-one-out/tropical-fruits (take it further)** **https://developingexperts.com/s/unit-library/units/493** **https://developingexperts.com/s/unit-library/units/503** https://www.twinkl.co.uk/resource/tp2-s-022-planit-science-year-3-animals-including-humans-unit-pack https://www.stem.org.uk/resources/community/collection/12601/year-3-animals-including-humans https://www.bbc.co.uk/bitesize/topics/zn22pv4	https://explorify.uk/en/activities/have-you-ever/held-a-piece-of-chocolate-tightly-in-your-hand https://explorify.uk/en/activities/have-you-ever/needed-to-dry-something-quickly https://explorify.uk/en/activities/odd-one-out/where-is-the-water https://developingexperts.com/s/unit-library/units/505 https://www.twinkl.co.uk/resource/tp2-s-061-planit-science-year-4-states-of-matter-unit-pack **Sound** https://explorify.uk/en/activities/listen-what-can-you-hear/musical-beats https://explorify.uk/en/activities/have-you-ever/heard-your-neighbours-in-the-next-house-or-flat https://explorify.uk/en/activities/what-if/you-could-hear-every-sound-at-equal-volume https://explorify.uk/en/activities/zoom-in-zoom-out/hidden-depths https://developingexperts.com/s/unit-library/units/506 https://www.twinkl.co.uk/resource/tp2-s-157-new-planit-science-y4-sound-unit-pack	https://www.twinkl.co.uk/resource/tp2-s-023-planit-science-year-3-plants-unit-pack https://www.stem.org.uk/resources/community/collection/12535/year-3-plants https://www.bbc.co.uk/programmes/articles/Mf5rhbTkHLZ3fbJzScyDvC/primary-science-plants https://www.stem.org.uk/resources/elibrary/resource/314741/do-plants-need-soil-grow https://explorify.uk/en/activities/odd-one-out/three-weeds https://explorify.uk/en/activities/odd-one-out/three-weeds https://developingexperts.com/s/unit-library/units/486 **Earth and Space** https://explorify.uk/en/activities/whats-going-on/space-engineer https://explorify.uk/en/activities/odd-one-out/celestial-objects https://explorify.uk/en/activities/have-you-ever/spoken-to-a-friend-or-relative-somewhere-else-in-the-world-and-the-time-was-different https://developingexperts.com/s/unit-library/units/499 https://www.twinkl.co.uk/resource/tp2-s-100-planit-science-year-5-earth-and-space-unit-pack
YEAR A			
5	**Autumn 1: Forces (not magnetism)** **Autumn 2:** Animals, including **humans**	**Spring 1: States of Matter** **Spring 2: Sound**	**Summer 1: Plants** **Summer 2: Earth and Space**
	Links to previous Learning	**Links to previous Learning**	**Links to previous Learning**
	Forces Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. **Animals** including humans: 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.	**Materials (KS1)** I know the difference between an object and the material from which it is made. I know the names of a variety of everyday materials, including wood, plastic, glass, metal, water and rock. I know that some materials are better than others for a purpose. I know that everyday materials are suitable for particular uses. I know that some solid shapes of some materials can be changed by squashing, bending, twisting and stretching. **Sound (KS1)** Senses activities – hearing and discussing sounds. I know what senses do-that each of our senses sends a message to our brain. I know how to look after our senses, in particular, our eyes and ears (e.g. do not look directly at the sun and do not stand close to a very loud speaker). Music – listening and distinguishing between sounds of instruments	**Plants:** Names of a variety of common wild and garden plants. Names of some common garden plants and wildflowers in the local area. (School and Ashmeadow). Know the basic structure of a variety of common flowering 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. **Earth and Space (Y2)** I can name the four seasons and identify when in the year they occur I can describe weather in different seasons over a year I can describe days as being longer (in time) in the summer and shorter in the winter
	Knowledge	**Knowledge**	**Knowledge**
	Forces (not magnetism) **Big Question** **What is a force and what does it do?** **What are the similarities and differences between forces?**	**States of matter** **Big Questions:** **Where does a puddle go?** **Is water always wet?** I know that materials can be solids, liquids and gases.	**Plants:** **Big Questions:** **What do plants need to grow well?**

I know a force causes an object to start moving, stop moving, speed up, slow down or change direction.
I know that gravity is a force.
I know that gravity is a force that acts at a distance.
I know that everything is pulled to the Earth by gravity.
I know that this causes unsupported objects to fall. I know that air resistance and water-resistance are forces acting on moving surfaces.
I know the object may be moving through the air or water, or the air and water may be moving over a stationary object.
I know that friction acts on moving surfaces.
I know that thrust and lift (aeroplanes) work against gravity and air resistance and vice versa.
I know a mechanism is a device that allows a small force to be increased to a larger force.
I know the pay back is that it requires a greater movement. The small force moves a long distance and the resulting large force moves a small distance, e.g. a crowbar or bottle top remover.
I know that pulleys, levers and gears are all mechanisms, also known as simple machines.
I know when an object moves on a surface, the texture of the surface and the object affect how it moves.
I know it may help the object to move better or it may hinder its movement e.g. ice skater compared to walking on ice in normal shoes.

Animals including humans
Health and Nutrition
Big Question
What is a healthy digestive system and how does it work?
What does our body do with the food we eat?
Animals including humans
Big Question:
How does it move?
I know that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food – they get nutrition from what they eat.

I know how the skeletons of birds, mammals (humans), fish, amphibians or reptiles are similar (backbone, ribs, skull, bones used for movement) and the differences in their skeletons
I know that muscles, which are attached to the skeleton, help animals move parts of their body
I know that animals can be grouped according to what they eat.
I know that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.
I know a variety of food chains, identifying producers, predators and prey.

I know that a solid keeps its shape and has a fixed volume.
I know a liquid has a fixed volume but changes in shape to fit the container.
I know a liquid can be poured and keeps a level, horizontal surface.
I know a gas fills all available space; it has no fixed shape or volume.
(Granular and powdery solids like sand can be confused with liquids because they can be poured, but when poured they form a heap and they do not keep a level surface when tipped.)
I know that each individual grain demonstrates the properties of a solid.
I know that melting is a state change from solid to liquid.
I know that freezing is a state change from liquid to solid.
I know that the freezing point of water is 0oC.
I know that boiling is a change of state from liquid to gas that happens when a liquid is heated to a specific temperature and bubbles of the gas can be seen in the liquid.
I know that water boils when it is heated to 100oC.
I know that evaporation is the same state change as boiling (liquid to gas), but it happens slowly at lower temperatures and only at the surface of the liquid.
I know that evaporation happens more quickly if the temperature is higher, the liquid is spread out or it is windy.
I know that condensation is the change back from a gas to a liquid caused by cooling.
I know that water at the surface of seas, rivers etc. evaporates into water vapour (a gas).
I know that this rises, cools and condenses back into a liquid forming clouds.
I know that when too much water has condensed, the water droplets in the cloud get too heavy and fall back down as rain, snow, sleet etc. and drain back into rivers etc. This is known as precipitation. This is the water cycle.

Sound
Big Questions:
How does sound help us experience our world?
What is sound?
How do we hear different sounds?
How are sounds made?
I know how sounds are made, associating some of them with something vibrating.
I know that sounds get fainter as the distance from the sound source increases.
I know a sound produces vibrations which travel through a medium from the source to our ears. I know that vibrations from sounds travel through a medium to the ear.
I know that different mediums such as solids, liquids and gases can carry sound, but sound cannot travel through a vacuum (an area empty of matter).

I know the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow)
I know that many plants, but not all, have roots, stems/trunks, leaves, flowers/blossoms.
I know the functions of different parts of flowering plants: roots; stem/trunk; leaves; and flowers.
I know that the roots absorb water and nutrients from the soil and anchor the plant in place.
I know the stem transports water and nutrients/minerals around the plant and holds the leaves and flowers up in the air to enhance photosynthesis, pollination and seed dispersal.
I know the leaves use sunlight and water to produce the plant's food.
I know some plants produce flowers which enable the plant to reproduce.
I know that pollen, which is produced by the male part of the flower, is transferred to the female part of other flowers (pollination). I know this forms seeds, sometimes contained in berries or fruit which are then dispersed in different ways.
I know that different plants require different conditions for germination and growth.

Earth and Space
Big Question:
How big is space?
I know that the Sun is a star, and it is at the centre of our solar system.
I know that there are 8 planets (can choose to name them, but not essential).
I know that these travel around the Sun in fixed orbits.
I know that Earth takes 365¼ days to complete its orbit around the Sun.
I know that Earth rotates (spins) on its axis every 24 hours. As Earth rotates half faces the Sun (day) and half is facing away from the Sun (night).
I know that the Earth rotates, (the Sun appears to move across the sky)
The Moon orbits the Earth.
I know it takes about 28 days to complete its orbit.
I know the Sun, Earth and Moon are approximately spherical.

	I know the vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound. I know the loudness (volume) of the sound depends on the strength (size) of vibrations which decreases as they travel through the medium. Therefore, sounds decrease in volume as you move away from the source. I know that a sound insulator is a material which blocks sound effectively. I know that pitch is the highness or lowness of a sound and is affected by features of objects producing the sounds. For example, smaller objects usually produce higher pitched sounds.	
Key Skills **<u>Forces (not magnetism)</u>** **<u>Big Question</u>** **What is a force and what does it do?** **What are the similarities and differences between forces?** <u>*Working Scientifically*</u> *Recording and presenting evidence by, 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.* *as well as,* *Recording and presenting evidence, by, recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs (Year 5 only)* I can see that unsupported objects fall towards the Earth (because of gravity) I can notice the effects of air resistance, water-resistance and friction that act between moving surfaces. I can compare how things move on different surfaces. I can begin to recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. I can identify the effects of air resistance, water resistance and friction that act between moving surfaces. ***<u>Scientist</u>*** *I can find out about Isaac Newton (discovered gravity)* *www.theschoolrun.com/homework-help/sir-isaac-newton* 	**Key Skills** **<u>States of matter</u>** **Big Questions:** **Where does a puddle go?** **Is water always wet?** <u>*Working Scientifically*</u> *Engaging in practical enquiries to answer questions, Setting up simple practical enquiries, comparative and fair tests* *Recording and presenting evidence, gathering, recording, classifying and presenting data in a variety of ways to help in answering questions* I can compare and group materials together, according to whether they are solids, liquids or gases. I can 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). I can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. I can investigate rates of dissolving by carrying out comparative and fair test. I can create a chart or table grouping/comparing everyday materials by different properties I can separate mixtures by sieving, filtering and evaporation, choosing the most suitable method and equipment for each mixture. I can explore a range of non-reversible changes e.g. rusting, adding fizzy tablets to water, burning. I can carry out comparative and fair tests involving non-reversible changes e.g. What affects the rate of rusting? What affects the amount of gas produced? I can research new materials produced by chemists e.g. Spencer Silver (glue of sticky notes) and Ruth Benerito (wrinkle free cotton). I can 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.	**Key Skills** **<u>Plants</u>** **Big Questions:** **What do plants need to grow well?** <u>*Working Scientifically*</u> *Making observations and taking measurements, by making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers* *as well as,* *Making observations and taking measurements, by taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate (Year 5 only)* I can observe what happens to plants over time when the leaves or roots are removed. I can observe the effect of putting cut white carnations or celery in coloured water. I can investigate what happens to plants when they are put in different conditions e.g. in darkness, in the cold, deprived of air, different types of soil, different fertilisers, varying amount of space. I can spot flowers, seeds, berries and fruits outside throughout the year I can observe flowers carefully to identify the pollen. I can observe flowers being visited by pollinators e.g. bees and butterflies in the summer. I can observe seeds being blown from the trees e.g. sycamore seeds. I can research different types of seed dispersal. I can classify seeds in a range of ways including by how they are dispersed. I can create a new species of flowering plant. **<u>Earth and Space</u>** *<u>Working Scientifically</u>* *Asking relevant questions and using different types of scientific enquiries to answer them*

Animals including humans

Health and Nutrition

Big Question

What is a healthy digestive system and how does it work?

What does our body do with the food we eat?

Working Scientifically

Asking questions and recognising that they can be answered in different ways
Asking relevant questions and using different types of scientific enquiries to answer them

I can construct and interpret a variety of food chains, identifying producers, predators and prey.
I can identify and grouping animals with and without skeletons
I can observe and compare their movement
I can give similarities e.g. they all have joints to help the animal move, and differences between skeleton

Scientist

Ivan Petrovich Pavlov

Russian scientist Ivan Pavlov conditioned his dogs to associate the sound of a bell with food. Eventually, the animals would drool in response to a ring, even when no reward was available.

I can use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.
I can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.
I can demonstrate that dissolving, mixing and changes of state are reversible changes.
I can 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.

Sound

Big Questions:

How does sound help us experience our world?

What is sound?

How do we hear different sounds?

How are sounds made?

Working Scientifically

Answering questions and concluding, identifying differences, similarities or changes related to simple scientific ideas and processes

Recording and presenting evidence;
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 table

As well as,

Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs

I can find patterns between the pitch of a sound and features of the object that produced it.
I can find patterns between the volume of a sound and the strength of the vibrations that produced it.
I can name sound sources and state that sounds are produced by the vibration of the object.
I can state that sounds travel through different mediums such as air, water, metal.
I can give examples to demonstrate how the pitch of a sound are linked to the features of the object that produced it.
I can give examples of how to change the volume of a sound e.g. increase the size of vibrations by hitting or blowing harder.

as well as,

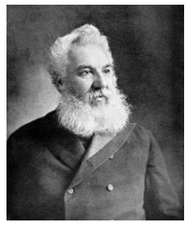
Identifying scientific evidence that has been used to support or refute ideas or arguments

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

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

Scientist

I can find out about Mae Jemison (first African American women astronaut to go into space)
https://kids.britannica.com/kids/article/Mae-Jemison/400118

	I can give examples to demonstrate that sounds get fainter as the distance from the sound source increases. I can use data to identify patterns in pitch and volume. *Scientists* *Alexander Graham Bell*  *Dame Evelyn Elizabeth Ann Glennie* *Audiologist* 	
Vocabulary Forces (not magnetism) Force, push, pull, Earth, gravity, magnetic, act, surface, opposite, Sir Isaac Newton, Galileo Galilei, parachute, air resistance, water resistance, friction, streamlined, buoyant, upthrust, friction, newton, lever, pulley **Animals including humans:** Digestive system, digestion, mouth, teeth, saliva, salivary gland, oesophagus, stomach, small intestine, food pyramid, nutrients, large intestines, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain, decomposer	**Vocabulary** **States of matter** Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material **Sound** Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation	**Vocabulary** **Plants:** Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal) petal, stamen, carpel, fertilisation, nectar, ovule, pistil, nutrient, stigma, style, ovary, anther, filament **Earth and Space** Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, solar system, rotates, star, orbit, planets
Cultural Opportunities Forces TBC Animals including humans School nurse to discuss diet and nutrition Links to sport and exercise (PE) and practical evidence gathering sessions.	**Cultural Opportunities** **States of matter** TBC **Sound** Link to music Interview a deaf member of the community	**Cultural Opportunities** **Plants** Visit Arnside Knott/Eddy's Land, to observe changes of plants over time (each term) **Earth and Space** Alston Observatory-Alston Lane, Preston, PR3 3BP
Key values **School Values:** Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. **British Values:** The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy. **Christian Star Qualities:** Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.	**Key values** **School Values:** Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. **British Values:** The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy.	**Key values** **School Values:** Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. **British Values:** The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy. **Christian Star Qualities:** Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.

	Christian Star Qualities: Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.	
Book List & Resources	**Book List & Resources**	**Book List & Resources**
Forces https://explorify.uk/teacher-support/science-teaching-support/forces-tackle-the-tricky-bits https://explorify.uk/en/activities/whats-going-on/scarf-shooter https://explorify.uk/en/activities/have-you-ever/ridden-your-bike-or-scooter-off-the-pavement https://developingexperts.com/s/unit-library/units/513 https://www.twinkl.co.uk/resource/science-forces-year-5-unit-pack-tp2-s-330 **Animals including humans:** **https://explorify.uk/en/activities/odd-one-out/whats-for-dinner** **https://explorify.uk/en/activities/odd-one-out/tropical-fruits (take it further)** **https://developingexperts.com/s/unit-library/units/493** **https://developingexperts.com/s/unit-library/units/503** https://www.twinkl.co.uk/resource/tp2-s-022-planit-science-year-3-animals-including-humans-unit-pack https://www.stem.org.uk/resources/community/collection/12601/year-3-animals-including-humans https://www.bbc.co.uk/bitesize/topics/zn22pv4	**States of matter** https://explorify.uk/en/activities/have-you-ever/held-a-piece-of-chocolate-tightly-in-your-hand https://explorify.uk/en/activities/have-you-ever/needed-to-dry-something-quickly https://explorify.uk/en/activities/odd-one-out/where-is-the-water https://developingexperts.com/s/unit-library/units/505 https://www.twinkl.co.uk/resource/tp2-s-061-planit-science-year-4-states-of-matter-unit-pack **Sound** https://explorify.uk/en/activities/listen-what-can-you-hear/musical-beats https://explorify.uk/en/activities/have-you-ever/heard-your-neighbours-in-the-next-house-or-flat https://explorify.uk/en/activities/what-if/you-could-hear-every-sound-at-equal-volume https://explorify.uk/en/activities/zoom-in-zoom-out/hidden-depths https://developingexperts.com/s/unit-library/units/506 https://www.twinkl.co.uk/resource/tp2-s-157-new-planit-science-y4-sound-unit-pack	Plants: https://www.twinkl.co.uk/resource/tp2-s-023-planit-science-year-3-plants-unit-pack https://www.stem.org.uk/resources/community/collection/12535/year-3-plants https://www.bbc.co.uk/programmes/articles/Mf5rhbTkHLZ3fbJzScyDvC/primary-science-plants https://www.stem.org.uk/resources/elibrary/resource/314741/do-plants-need-soil-grow https://explorify.uk/en/activities/odd-one-out/three-weeds https://explorify.uk/en/activities/odd-one-out/three-weeds https://developingexperts.com/s/unit-library/units/486 **Earth and Space** https://explorify.uk/en/activities/whats-going-on/space-engineer https://explorify.uk/en/activities/odd-one-out/celestial-objects https://explorify.uk/en/activities/have-you-ever/spoken-to-a-friend-or-relative-somewhere-else-in-the-world-and-the-time-was-different https://developingexperts.com/s/unit-library/units/499 https://www.twinkl.co.uk/resource/tp2-s-100-planit-science-year-5-earth-and-space-unit-pack

YEAR A

	Autumn 1: Light **Autumn 2: Electricity**	**Spring:** Animals including **humans**	**Summer 1 Evolution and Inheritance** **Summer 2: Living Things and their Habitats**
6	**Links to previous Learning**	**Links to previous Learning**	**Links to previous Learning**
	Light Recognise that they need light in order to see things and that dark is the absence of light. (Y3 - Light) Notice that light is reflected from surfaces. (Y3 - Light) Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3 - Light) Recognise that shadows are formed when the light from a light source is blocked by an opaque object. (Y3 - Light) Find patterns in the way that the size of shadows change. (Y3 - Light) 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. (Y5 - Properties and changes of materials) **Electricity** Identify common appliances that run on electricity. (Y4 - Electricity) Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. (Y4 - Electricity) 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. (Y4 - Electricity)	**Animals including humans** Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Y2 - Animals, including 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. (Y3 - Animals, including humans) Describe the simple functions of the basic parts of the digestive system in humans. (Y4 - Animals, including humans) Identify the different types of teeth in humans and their simple functions. (Y4 - Animals, including humans)	**Evolution and Inheritance** 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. (Y2 - Living things and their habitats) Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans) Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants) Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks) Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats) Describe the life process of reproduction in some plants and animals. (Living things and their habitats - Y5) **Living Things and their habitats** Recognise that living things can be grouped in a variety of ways. (Y4 - Living things and their habitats)

Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. (Y4 - Electricity) Recognise some common conductors and insulators, and associate metals with being good conductors. (Y4 - Electricity)		Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. (Y4 - Living things and their habitats) Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Y5 - Living things and their habitats) Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats)
Knowledge	**Knowledge**	**Knowledge**
<u>Light</u> **Big Questions:** **What is light?** **What can you see when there is absolutely no light?** **How do we see?** I know that we need light to see things. I know that light waves travel in straight lines called rays or beams. I know that light from the sun travels in a straight line and hits an object. I know that it then is reflected off that object and travels in a straight line to a person's eye so that they can see the object. I know the law of reflection states that the angle of incidence (the angle between the normal line and the incident ray of light) = the angle of reflection (the angle between the normal line and the reflected ray of light). Whenever light is reflected from a surface, it obeys this law. I know light travels as a wave, but it does not need a medium to travel through. It can travel through an airless space (unlike sound) I know refraction is when light bends as it passes from one medium to another (eg. From air to water): If you put a spoon in water, it looks bent) Visible Spectrum: I know that light is visible to the human eye, made up of colour. I know that a prism is a solid 3D shape with flat sides. The 2 ends are an equal shape and size. A transparent prism separates out visible light into all the colours of the spectrum (Isaac Newton). I know that a shadow is an area of darkness where light has been blocked. **<u>Electricity</u>** **Big Questions:** **Why are insulators as important as conductors?** **Can we vary the effects of electricity?** **What is electricity and how can you describe its movement in a circuit?** I know the symbols for the components in a circuit diagram I know difference between a parallel and series circuit I know a switch can make/break a circuit I know that a circuit is a path that an electrical current flow around. I know that a battery is made of cells that stores energy I know that a current is the flow of electrons (v small particles), measured in amps I know that voltage is the force that makes the electric current move through the wires	***<u>2021 - LOCKDOWN LEARNING</u>*** **<u>Animals, including Humans</u>** **Big Questions:** **How do you know the person next to you is alive?** **How are our body systems affected by our choices?** I know the main parts of the human circulatory system, I know the functions of the heart, blood vessels and blood. I know the heart pumps blood in the blood vessels around to the lungs. I know that oxygen goes into the blood and carbon dioxide is removed. I know the blood goes back to the heart and is then pumped around the body. I know that nutrients, water and oxygen are transported in the blood to the muscles and other parts of the body where they are needed. As they are used, they produce carbon dioxide and other waste products. I know that carbon dioxide is carried by the blood back to the heart and then the cycle starts again as it is transported back to the lungs to be removed from the body. This is the human circulatory system. I know the ways in which nutrients and water are transported within animals, including humans. I know the impact of diet, exercise, drugs and lifestyle on the way their body functions. I know that diet, exercise, drugs and lifestyle have an impact on the way our body functions. They can affect how well out heart and lungs work, how likely we are to suffer from conditions such as diabetes, how clearly, we think, and generally how fit and well we feel. I know that some conditions are caused by deficiencies in our diet e.g. lack of vitamins.	**<u>Evolution and Inheritance</u>** **<u>Big Questions:</u>** **Is adaptation immediate or does it take time?** **If a person like Usain Bolt had a daughter - would she be fast as well? Why?** I know that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. I know that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. I know features in the offspring are inherited from the parents. I know due to sexual reproduction; the offspring are not identical to their parents and vary from each other. I know that plants and animals have characteristics that make them suited (adapted) to their environment. If the environment changes rapidly, some variations of a species may not suit the new environment and will die. If the environment changes slowly, animals and plants with variations that are best suited survive in greater numbers to reproduce and pass their characteristics on to their young. I know that over time, these inherited characteristics become more dominant within the population. I know that over a very long period of time, these characteristics may be so different to how they were originally that a new species is created. I know that this is evolution. I know that fossils give us evidence of what lived on the Earth millions of years ago and provide evidence to support the theory of evolution. I know that more recently, scientists such as Darwin and Wallace observed how living things adapt to different environments to become distinct varieties with their own characteristics. **<u>Living Things and their habitats</u>** **Big Questions:** **How do micro-organisms help in the environment?** **How do mammals in water, survive?** I know that living things can be formally grouped according to characteristics. I know that plants and animals are two main groups but there are other livings things that do not fit into these groups e.g. micro-organisms such as bacteria and yeast, and toadstools and mushrooms. I know that plants can make their own food whereas animals cannot. I know that animals can be divided into two main groups: those that have backbones (vertebrates); and those that do not (invertebrates). I know that vertebrates can be divided into five small groups: fish; amphibians; reptiles; birds; and mammals.

I know that resistance is the difficulty that the electric current faces when flowing round a circuit I know that adding more cells to a complete circuit will make a bulb brighter, a motor spin faster or a buzzer make a louder sound. I know that if you use a battery with a higher voltage, the same thing happens. I know adding more bulbs to a circuit will make each bulb less bright. Using more motors or buzzers, each motor will spin more slowly, and each buzzer will be quieter. I know that turning a switch off (open) breaks a circuit so the circuit is not complete, and electricity cannot flow. Any bulbs, motors or buzzers will then turn off as well. I know that you can use recognised circuit symbols to draw simple circuit diagrams.		I know each group has common characteristics. I know that invertebrates can be divided into a number of groups, including insects, spiders, snails and worms. I know that plants can be divided broadly into two main groups: flowering plants; and non-flowering plants.
Key Skills	**Key Skills**	**Key Skills**
<u>Light</u> **Big Questions:** **What is light?** **What can you see when there is absolutely no light?** **How do we see?** *<u>Working Scientifically</u>* *Engaging in practical enquiry to answer questions, by planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary* I can explain that light travels in straight lines from light sources to our eyes, and from light sources to objects and then to our eyes I can understand how mirrors reflect light, and how they can help us see objects. I can investigate how refraction changes the direction in which light travels. I can investigate how a prism changes a ray of light. I can investigate how light enables us to see colours. I can explain why shadows have the same shape as the object that casts them. ***<u>Scientist</u>*** *I can research the work of C V Raman (for the discovery that when light passes through a transparent material, some of the light changes in wavelength. This phenomenon is now called Raman scattering.).* https://kids.britannica.com/students/article/CV-Raman/276648  **<u>Electricity</u>** **Big Question: Why are insulators as important as conductors?** **Can we vary the effects of electricity?**	***<u>2021 - LOCKDOWN LEARNING</u>*** **<u>Animals, including Humans</u>** **Big Questions:** **How do you know the person next to you is alive?** **How are our body systems affected by our choices?** *<u>Working Scientifically</u>* *Making observations and taking measurements, by taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where 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* I can draw a diagram of the circulatory system and label the parts and annotate it to show what the parts do. I can produce a piece of writing that demonstrates the key knowledge e.g. explanation text, job description of the heart. I can carry out a range of pulse rate investigations: • fair test – effect of different activities on my pulse rate • pattern seeking – exploring which groups of people may have higher or lower resting pulse rates • observation over time - how long does it take my pulse rate to return to my resting pulse rate (recovery rate) • pattern seeking – exploring recovery rate for different groups of people.	**<u>Evolution and Inheritance</u>** **<u>Big Questions:</u>** **Is adaptation immediate or does it take time?** **If a person like Usain Bolt had a daughter - would she be fast as well? Why?** *<u>Working Scientifically</u>* *Answering questions and concluding, by Identifying scientific evidence that has been used to support or refute ideas or arguments* I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. I can explain the process of evolution. I can give examples of how plants and animals are suited to an environment I can give examples of how an animal or plant has evolved over time e.g. penguin, peppered moths I can give examples of living things that lived millions of years ago and the fossil evidence we have to support this I can make observations of fossils to explain how fossils are created. I can give examples of fossil evidence that can be used to support the theory of evolution I can identify characteristics that will make a plant or animal suited or not suited to a particular habitat I can link the patterns seen in the model to real examples I can explain why the dominant colour of the peppered moth changed over a very short period. I can use secondary sources to research and compare scientists including Charles Darwin. I can begin to understand that scientific theories are disputed and debated. I can observe how animals adapt to their surroundings. I can analyse the advantages and disadvantages of different characteristics I can identify scientific evidence to support ideas like a palaeontologist. I can present findings and conclusions like an archaeologist. ***<u>Scientist</u>*** *I can research the work of Rosalind Franklin (Discovered the structure of DNA)* *www.coolkidfacts.com/rosalind-franklin*

What is electricity and how can you describe its movement in a circuit?

Working Scientifically
Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary

I can make simple circuits
I can draw circuit diagrams
I can recognise the symbols for the components in a circuit diagram
I can use recognised symbols when representing a simple circuit in a diagram.
To make a series circuit and recognise when/why a circuit will not work.
To know how to make a bulb brighter in a circuit.
I can 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.
I can systematically identify the effect of changing one component at a time in a circuit; designing and making a Xmas fair game, using electrical circuits and switches.

Scientist
I can research the work of Nikola Tesla (alternating current system).
www.coolkidfacts.com/nikola-tesla

I can research the negative effects of drugs (e.g. tobacco) and the benefits of a healthy diet and regular exercise by asking an expert or using carefully selected secondary sources.
I can use role play model to explain the main parts of the circulatory system and their role.
I can use subject knowledge about the heart whilst writing conclusions for investigations.
I can explain both the positive and negative effects of diet, exercise, drugs and lifestyle on the body.
I can present information e.g. in a health leaflet describing impact of drugs and lifestyle on the body.

Scientist
I can research the work of Marie M Daly (how food and diet can affect the health of the heart and the circulatory system)
www.biography.com/scientist/marie-m-daly

Living Things and their habitats

Big Questions:

How do micro-organisms help in the environment?

How do mammals in water, survive?

Working Scientifically
Recording and presenting evidence, by, recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs

Answering questions and concluding, by 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

I can give examples of animals in the five vertebrate groups and some of the invertebrate groups.
I can give the key characteristics of the five vertebrate groups and some invertebrate groups.
I can compare the characteristics of animals in different groups
Can give examples of flowering and non-flowering plants
Can use classification materials to identify unknown plants and animals.
I can create classification keys for plants and animals.
I can give a number of characteristics that explain why an animal belongs to a particular group.
I can use secondary sources to learn about the formal classification system devised by Carl Linnaeus and why it is important
I can use first-hand observation to identify characteristics shared by the animals in a group.
I can use secondary sources to research the characteristics of animals that belong to a group.
I can use information about the characteristics of an unknown animal or plant to assign it to a group.
I can classify plants and animals, presenting this in a range of ways e.g. Venn diagrams, Carroll diagrams and keys.
I can create an imaginary animal which has features from one or more groups.

Scientist
I can research the work of Carolus Linnaeus (created two scientific systems: the system for classifying plants and animals and the system for naming all living things).
https://kids.britannica.com/kids/article/Carolus-Linnaeus/625446

	
Vocabulary	**Vocabulary**	**Vocabulary**
Light Light, light source, ray, beam, reflection, incident ray and reflected ray, Refraction, distortion, Spectrum, prism, Shadow, Transparent, translucent, opaque **Electricity** Circuit, complete circuit, circuit diagram, current, battery, cells, bulb, buzzer, motor, switch, energy, electrons, amps, voltage, resistance, symbols, components.	**LOCKDOWN LEARNING** **Animals, including Humans** Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle	**Evolution and Inheritance** evolution, natural selection, fossil, adaptive traits, Inherited traits, offspring, inheritance, variations, characteristics, adaptation, habitat, environment, vary, suited, species **Living Things and their habitats** vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering, non-flowering
Cultural Opportunities	**Cultural Opportunities**	**Cultural Opportunities**
Light Expert Visitor: Guide dog - What it is like to be blind/colour blind. Raise awareness of disability. **Electricity** Staying safe with electricity Saving electricity (environmental awareness)	**Animals** Expert Visitor: Invite speaker in to do medical terminology session PSHE: Health Bus - making wise choices; the influence of peers on decision making; puberty and the increased influence of peers; being assertive Heart Start: Learn to do CPR – how to recognise signs of a heart attack and what to do.	**Evolution and Inheritance** Link to RE curriculum: creation and evolution discussion. Can a scientist be a Christian? **Living Things and their habitats** Expert Visitor: invite a speaker (microbiologist or similar)
Key values	**Key values**	**Key values**
School Values: Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. **British Values:** The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy.	**School Values:** Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. **British Values:** The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy.	**School Values:** Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. **British Values:** The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy.

Christian Star Qualities: Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.	**Christian Star Qualities:** Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.	**Christian Star Qualities:** Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.
Book List & Resources	**Book List & Resources**	**Book List & Resources**
Light https://www.twinkl.co.uk/resource/tp2-s-051-planit-science-year-6-light-unit-pack https://www.stem.org.uk/resources/community/collection/12741/year-6-light **https://explorify.uk/en/activities/have-you-ever/had-an-eye-test** **https://explorify.uk/en/activities/odd-one-out/shine-a-light** **https://developingexperts.com/s/unit-library/units/511** **Electricity** **https://developingexperts.com/s/unit-library/units/508** http://www.learningcircuits.co.uk/learning.html http://www.switchedonkids.org.uk/electrical-safety-in-your-home https://www.bbc.co.uk/teach/class-clips-video/science-ks1ks2-how-is-electricity-made/zfhfgwx http://flash.topmarks.co.uk/4055 https://explorify.uk/en/activities/have-you-ever/not-been-able-to-find-a-battery-when-you-need-one https://explorify.uk/en/activities/whats-going-on/nuclear-energy-scientist https://explorify.uk/en/activities/the-big-question/how-can-the-wind-help-us	**Animals** **https://developingexperts.com/s/unit-library/units/510** https://www.stem.org.uk/resources/community/collection/13109/year-6-animals-including-humans https://www.twinkl.co.uk/resources/planit-science-primary-teaching-resources/planit-science-primary-teaching-resources-y6/planit-science-primary-teaching-resources-y6-animals-including-humans https://explorify.uk/en/activities/the-big-question/what-is-a-balanced-diet-for-us-and-the-planet https://explorify.uk/en/activities/listen-what-can-you-hear/skip-a-beat	**Evolution and Inheritance** https://www.twinkl.co.uk/resource/tp2-s-121-new-planit-science-year-6-evolution-and-inheritance-unit-pack https://www.stem.org.uk/resources/community/collection/12648/year-6-evolution-and-inheritance https://developingexperts.com/s/unit-library/units/39 **https://explorify.uk/en/activities/have-you-ever/found-it-difficult-to-spot-an-animal-because-of-its-colour** **https://explorify.uk/en/activities/odd-one-out/blackbird-variation** **https://explorify.uk/en/activities/zoom-in-zoom-out/star-shaped-survivor** **Living Things and their habitats** https://explorify.uk/en/activities/mission-survive/surviving-on-mars https://explorify.uk/en/activities/odd-one-out/thorny-issue https://developingexperts.com/s/unit-library/units/509