

Year Group	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2	Additional Events
Nursery	It's good to be me. Life cycle.	It's good to be part of a family.	My family and their jobs.	We are all special	Little explorers, I wonder what?	How does your garden grow? Starting school.	
	<p><u>Rationale</u> – to encourage curiosity in the world around them by providing opportunities for open ended play and exploration</p> <p><u>Skills</u> <u>Communication and Language</u></p> <ul style="list-style-type: none"> - Understand 'why' questions, like: "Why do you think the caterpillar got so fat?" <p><u>Physical Development</u></p> <ul style="list-style-type: none"> - Make healthy choices about food, drink, activity and discussing the importance of toothbrushing. <p><u>Understanding the World</u></p> <ul style="list-style-type: none"> • Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Talk about what they can see, using a wide vocabulary. • Begin to make sense of their own life-story and family's history. • Explore how things work. • Plant seeds and care for growing plants. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things. • Explore and talk about different forces they can feel. • Talk about the differences between materials and changes they notice. <p><u>Substantive Vocabulary</u> – seasons, change, leaf, plants, fall, habitat, living, warm, sunlight, grow, tree, Leaf, flower, seed, same, different, ice, frozen, melted, icicle, life cycle, egg, chick, hen, hatch, bud, magnet, sink, float, smooth, hard, soft, rough, shiny, pig, cow, sheep, dog, cat, horse.</p>						<p>On-site learning: Skype a scientist – linked to different topics. British Science week.</p> <p>Potential off-site learning: Outdoor learning</p>

	<p><u>Knowledge-</u> Explore the natural world around them:</p> <ul style="list-style-type: none">• Notice the effect of season on plants, weather, clothing• To know how to sort and group by simple properties including material something is made from, if it is an animal/plant/person• Opportunities around pulling and pushing forces e.g. wagons, pullies in the sand etc.• Baking and cooking activities• Melting• Growing plants – Grass Heads/Sunflowers• To know that we need to help us live?• Mini-beast hunt – looking at habitats and how to care for them• Changes in state – for example different ways to cook an egg• Life-cycle of a caterpillar/butterfly					
Reception	It's good to be me Seasons/Natural world: Autumn	It's good to be you.	Who are you? Seasons/Natural world: Winter	Let's explore Seasons/Natural world: Spring	Near and Far Seasons/Natural world: Summer	On-site learning: Skype a scientist – linked to different topics. British Science week.
	<p><u>Skills</u> <u>Communication and Language</u></p> <ul style="list-style-type: none">• Learn new vocabulary.• Ask questions to find out more and to check what has been said to them.• Articulate their ideas and thoughts in well-formed sentences.• Describe events in some detail.• Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen.• Use new vocabulary in different contexts. <p><u>Physical Development</u></p> <ul style="list-style-type: none">• Know and talk about the different factors that support their overall health and wellbeing:<ul style="list-style-type: none">○ regular physical activity○ healthy eating○ toothbrushing○ sensible amounts of 'screen time'○ having a good sleep routine○ being a safe pedestrian <p><u>Understanding the World</u></p> <ul style="list-style-type: none">• Explore the natural world around them.• Describe what they see, hear and feel while they are outside.• Recognise some environments that are different to the one in which they live.• Understand the effect of changing seasons on the natural world around them. <p><u>Substantive Vocabulary</u></p> <ul style="list-style-type: none">• Spring• Summer• Autumn• Winter• Seasons• Adjectives to describe the weather (e.g. sunny, cloudy, hot, warm, cold, shower, raining, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, windy, rainbow)• Animals (dog, cat, bird, horse, sheep, cow, pig, rabbit, bumblebee, mice)					Potential off-site learning: Stewarts park Outdoor learning

- Young, growth
- Plants, tree, bark, branch, twig, stick, leaf
- Horse chestnut tree, oak tree, conker, acorn
- Flowers, new life, buds, blossom wild flowers (daisy, dandelion)
- Habitat
- Adjectives to describe hair (black, brown, dark, light, blonde, ginger, grey, white, long, short, straight, curly)
- Adjectives to describe eyes (blue, brown, green, grey), skin (black, brown, white),
- Adjectives to describe height (big/tall, small/short, bigger/smaller)
- Adjectives to describe a family (baby, toddler, child, adult, old person, old, young, brother, sister, mother, father, aunt, uncle, grandmother, grandfather, cousin, friend, family)
- Head, neck, face, shoulders, arms, legs, hands, feet, ankle, elbow, knee, fingers, toes, eyes, nose, mouth, chin, cheeks etc.

Substantive Knowledge-

- Pupils will enjoy learning about their body, their senses and how to be safe and healthy.
- Explore the natural world around them:
- Explore the outside area – the woodland area.
 - Describe what they can see (or have seen) on a walk outside.
 - Join in with songs and poems about the natural world e.g. Incey Wincey Spider.
 - Name and recognise some basic animals (cat, dog, sheep, cow, horse, pig) and consider their habitats.
 - Consider how do these animals differ to those found in other parts of the world (polar bear,

Substantive Knowledge-

- Pupils will learn about themselves and all the good things that make them unique and different to others.
- They will have opportunity to talk about themselves and the members of their family and/or household.

Substantive Knowledge-

Explore the natural world around them:

- Draw pictures of things I have seen in the natural world e.g. a flower.
- Look closely at animals/plants and notice the different parts e.g. do they have wings? How many legs does it have?
- Describe what they hear, see and feel in the outside environment.
- Recognise some flowers including daffodils and poppies.

Weather:

- Know that weather changes through the seasons.
- Describe some of the changes that happen in Autumn, Winter, Spring

Change of states for example:

- Explore ice melting.
- Know that ice is cold.
- Describe what is happening.
- Know that when ice melts it becomes water.
- Melting chocolate, consider the following questions: Will it stay the same when heated? Why has the chocolate melted?
- Explore floating and sinking in continuous provision areas.

Substantive Knowledge-

Explore the natural world around them:

- Recognise and name some minibeasts (snail, worm, ladybird, ant, spider), animals and birds (robin, blackbird).
- Look closely at the features of a minibeast and draw it e.g. a ladybird.
- Describe the changes taking place for example in the life cycle of a frog.
- Recognise and name a tadpole and frogspawn.
- Describe the life cycle of a caterpillar.
- Recognise and name a butterfly. Link this to how they have changed since being babies.

Weather:

- Describe some of the changes that happen in Summer.

Change of states:

- Explore magnets and a range of magnetic and non-magnetic objects. Say what they notice.
- Know that magnetic objects are attracted to magnets.
- Explore floating and sinking in continuous provision areas.

	<p>camel, zebra, penguin)</p> <p>Weather:</p> <ul style="list-style-type: none"> • Discuss what the weather is like today. • Discuss the season and how we know it is that season. • Describe what happens in Autumn – leaves changing colour, leaves falling off the trees, weather getting colder and wetter. • Describe what happens in winter – cold weather, animals hibernate, trees bare, no flowers. <p>Forces:</p> <ul style="list-style-type: none"> • Explore floating and sinking. • Predict whether something will float or sink. • Test their prediction and say what happened. 				
Science Capital	<p>A scientist just like me - https://pstt.org.uk/resources/curriculum-materials/ASJLM</p> <p>Phizzi professionals - https://www.ogdentrust.com/resources/?curriculum=&age=&series=phizzi-professional</p> <p>Skype a scientist - https://www.skypeascientist.com/</p> <p>The STEM Hub - https://thestemhub.org.uk/ambassadors-at-work/ambassador-profiles</p>				

Year 1	Seasons – Taught throughout the year.			On-site learning: Skype a scientist – linked to different topics. British Science week. Fuji film engineering to visit and hold workshop Potential off-site learning: Washington Wetland Centre Stewarts park. Famous Scientists to study Dr Jane Goodall Dr David Attenbrough Charles Macintosh Liam Dutton Beatrix Potter
	<u>Rationale</u> – – to use real life and life experiences to make and articulate scientific observations of change over time.			
	<u>National Curriculum Objectives</u> – Observe changes across the four seasons - Observe and describe weather associated with the seasons and how day length varies			
	<u>Substantive Knowledge – Seasonal Change</u> <ul style="list-style-type: none">To know that in the UK, the day length is the longest at mid-summer (about 10 hours) and gets shorter each day until mid-winter (about 8 hours) before getting longer again.To know that the weather also changes with the seasons.To know that in the UK, it is usually colder and rainier in winter, and hotter and dryer in the summer.To know that the changes in the weather cause many other changes. Some examples are: number of mini-beasts found outside; seed and plant growth; leaves on trees and types of clothes worn by people.			
	<u>Substantive Vocabulary</u> – Winter, Spring, Summer, Autumn, weather, cold, warm, changes			
	Everyday Materials	Plants	Animals including Humans	
	<u>National Curriculum Objectives</u> <ul style="list-style-type: none">Distinguish between an object and the material from which it is madeIdentify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rockDescribe the simple physical properties of a variety of everyday materialsCompare and group together a variety of everyday materials on the basis of their simple physical properties	<u>National Curriculum Objectives</u> <ul style="list-style-type: none">Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.Identify and describe the basic structure of a variety of common flowering plants, including trees.	<u>National Curriculum Objectives</u> <ul style="list-style-type: none">Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.Identify and name a variety of common animals that are carnivores, herbivores and omnivores.Describe and compare the structure of a variety of common animalsIdentify, name, draw and label basic parts of the human body and say which part of the body is associated with each sense.	

	<u>Substantive Knowledge</u> <ul style="list-style-type: none"> Are objects and the materials they're made from different things? What are some of the names of everyday materials - wood, plastic, glass, metal, water and rock. How would describe the following materials: wood, plastic, metal, glass, fabric, paper (hard, soft, strong, weak, absorbent, heavy, light, solid, runny, smooth, or rough). Can everyday materials be compared and grouped based on their basic physical properties? 	<u>Substantive Knowledge</u> <ul style="list-style-type: none"> What do the terms "deciduous" and "evergreen" mean? What are some of the names of deciduous trees? (birch, oak, maple). What are some of the names of evergreen trees? (conifers, fir, pine). Can you point to or name the parts of a tree like the roots, trunk, branches and leaves? What are some of the names of common flowering plants - rose, daffodil, peony, marigold. What is the basic structure of flowering plants, including trees - roots, stem, leaves and flower. 	<u>Substantive Knowledge</u> <ul style="list-style-type: none"> What are some of the names of common animals? (fish, amphibians, reptiles, birds and mammals). What are some of the names of common animals that are carnivores, herbivores and omnivores? What are the basic parts of the human body? Which part of the body is associated with each of the five senses? 	
	<u>Substantive Vocabulary –</u> <ul style="list-style-type: none"> Wood, plastic, glass, metal, water, rock, physical, compare, group, shiny, stretchy, rough 	<u>Substantive Vocabulary –</u> <ul style="list-style-type: none"> Wild, garden, deciduous, evergreen, flowering, habitat, leaves, petals, fruit, root, bulb, seed, trunk, branches, stem 	<u>Substantive Vocabulary –</u> <ul style="list-style-type: none"> Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves Names of animals (dog, cat, bird, horse, sheep, cow, pig, rabbit, bumblebee, mice, spider, goat, duck) Parts of the human body including those within the school's RSE policy Senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ears, tongue 	
WORKING SCIENTIFICALLY FOCUS AND TAPS ASSESSMENT	Transparency asking simple questions and recognising that they can be answered in different way Can I test whether a material is opaque or transparent? Can I compare materials based on their transparency? Can I find different ways to test for transparency?	Plant Structures observing closely, using simple equipment Can I say what is similar and different between plants? Can I label the parts of a plant?	Body Parts using their observations and ideas to suggest answers to questions Can I observe and name parts of the body? Can I use my observations to say which part of the body is associated with each sense?	
Science Capital	A scientist just like me - https://pstt.org.uk/resources/curriculum-materials/ASJLM Phizzi professionals - https://www.ogdentrust.com/resources/?curriculum=&age=&series=phizzi-professional Skype a scientist - https://www.skypeascientist.com/ The STEM Hub - https://thestemhub.org.uk/ambassadors-at-work/ambassador-profiles			

Year 2	Materials	Animals Including Humans	Living Things and Their Habitats	Plants	On-site learning: Skype a scientist – linked to different topics: Faelan Mourmourakis British Science week. Potential off-site learning: Washington Wetland Centre Stewarts park. Famous Scientists to study Garrett Morgan Dr Eugenie Clark Leo Baekeland Rachel Carson Marie Clark Taylor Dr Kelly Blacklock
	<u>National Curriculum Objectives</u> <ul style="list-style-type: none"> Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular use. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. 	<u>National Curriculum Objectives</u> <ul style="list-style-type: none"> Notice that animals, including humans, have offspring which grow into adults Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene 	<u>National Curriculum Objectives</u> <ul style="list-style-type: none"> Explore and compare the differences between things that are living, dead, and things that have never been alive. Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. Identify and name a variety of plants and animals in their habitats, including micro-habitats. Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. 	<u>National Curriculum Objectives</u> <ul style="list-style-type: none"> 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. 	
	<u>Substantive Knowledge</u> <ul style="list-style-type: none"> Why are objects made from specific materials? For example, why is a water bottle made from plastic? How are the properties of materials tested and compared to help decide what they should be used for? 	<u>Substantive Knowledge</u> <ul style="list-style-type: none"> What are the names of animals and their offspring? (a dog and its puppy or a cow and its calf) How do different animals grow and change as they become adults? Which young animals look different from 	<u>Substantive Knowledge</u> <ul style="list-style-type: none"> How can you tell if something is living, dead, or has never been alive? What kinds of things are classed as living, dead, or never alive? (e.g. plants, animals, twigs, plastic, metal) What plants can you find living in different habitats and micro-habitats? What animals can you find living in different habitats and micro-habitats? What makes a habitat suitable for the plants and animals that live there? What is a micro-habitat and where can you find them in places like a woodland? How do the conditions in a micro-habitat, such as light, dark, damp, or dry, affect what lives there? 	<u>Substantive Knowledge</u> <ul style="list-style-type: none"> How do plants grow from seeds or bulbs into mature plants? What happens to a seed or bulb after it is planted? Why do seeds and bulbs need to be planted at certain times of the year? How do different plants grow at different rates? Which plants grow best in full sun and which prefer shade? How do water, light and space affect how well a plant grows? 	

	<ul style="list-style-type: none"> Can some materials be used for different purposes? Can you share any examples? Can the same object be made using different materials? Can you share any examples? Can any materials change shape when you bend, stretch, squash, or twist them? 	<p>their parents when they are born?</p> <ul style="list-style-type: none"> What do all animals, including humans, need to survive? (food, water, and air). What are the main food groups: fruit and vegetables, carbohydrates, protein, dairy, and fats and sugary foods. What do we need to do to stay healthy? (regular exercise and good hygiene, like washing and brushing teeth). 	<ul style="list-style-type: none"> How do the plants and animals in a habitat depend on each other? How can we show how animals get their food using a food chain? 		
	<u>Substantive Vocabulary –</u> <ul style="list-style-type: none"> Identify, compare, wood, plastic, metal, glass, brick, rock, paper, cardboard, solid, squashing, bending, twisting, stretching 	<u>Substantive Vocabulary –</u> <ul style="list-style-type: none"> Offspring, adults, hatch, grow, survival, water, food, air, exercise, eating healthy, hygiene, growth Names of animals and their babies (dog/puppy, cat/kitten, bird/fledglings, sheep/lamb, cow/calf, horse/foals), heartbeat. 	<u>Substantive Vocabulary –</u> <ul style="list-style-type: none"> living, dead, never been alive, habitats, suited, micro-habitats, food chain 	<u>Substantive Vocabulary –</u> <ul style="list-style-type: none"> Seed, bulbs, plants, water, light, temperature, grow, healthy, germination, reproduction 	
WORKING SCIENTIFICALLY FOCUS AND TAPS	Materials Hunt gathering and recording data to	Hand Spans using their observations and	Rocket Mice performing simple tests	Nature Spotters identifying and classifying	

ASSESSMENT	<p>help in answering questions</p> <p>Can I observe closely to find objects made of different materials?</p> <p>Can I record my findings?</p>	<p>ideas to suggest answers to questions</p> <p>Can I use my observations to compare handspans?</p> <p>Can I use my observations to answer my own questions about handspans?</p>	<p>Am I systematic with my testing?</p> <p>Can I use my test results to answer questions?</p>	<p>Can I use a spotter sheet to identify animals and plants?</p> <p>Can I classify the types of animals and plants that I have found?</p>	
Science Capital	<p>A scientist just like me - https://pstt.org.uk/resources/curriculum-materials/ASJLM</p> <p>Phizzi professionals - https://www.ogdentrust.com/resources/?curriculum=&age=&series=phizzi-professional</p> <p>Skype a scientist - https://www.skypeascientist.com/</p> <p>The STEM Hub - https://thestemhub.org.uk/ambassadors-at-work/ambassador-profiles</p>				

Year 3	Rocks	Forces and Magnets	Light	Plants	Animals including Humans	On-site learning:
	<p><u>National Curriculum Objectives</u></p> <ul style="list-style-type: none"> Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties Describe in simple terms how fossils are formed when things that have lived are trapped within rock Recognise that soils are made from rocks and organic matter. 	<p><u>National Curriculum Objectives</u></p> <ul style="list-style-type: none"> Compare how things move on different surfaces Notice that some forces need contact between two objects, but magnetic forces can act at a distance Observe how magnets attract or repel each other and attract some materials and not others Compare and group together a variety of everyday materials on the basis of whether they are 	<p><u>National Curriculum Objectives</u></p> <ul style="list-style-type: none"> Recognise that they need light in order to see things and that dark is the absence of light Notice that light is reflected from surfaces Recognise that light from the sun can be dangerous and that there are ways to protect their eyes Recognise that shadows are formed when the light from a light source is blocked by an opaque object Find patterns in 	<p><u>National Curriculum Objectives</u></p> <ul style="list-style-type: none"> Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant Investigate the way in which water is transported 	<p><u>National Curriculum Objectives</u></p> <ul style="list-style-type: none"> Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. Identify that humans and some other animals have skeletons and muscles for support, protection and movement. 	<p>Skype a scientist – linked to different topics: Faelan Mourmourakis</p> <p>British Science week. Fuji film engineering to visit and hold workshop</p> <p>Potential off-site learning: Washington Wetland Centre Stewarts park.</p> <p>Famous Scientists to study: CV Raman Carl Linnaeus Mary Anning George Washington Isaac Newton</p>

		<p>attracted to a magnet, and identify some magnetic materials</p> <ul style="list-style-type: none"> Describe magnets as having two poles <p>Predict whether two magnets will attract or repel each other, depending on which poles are facing.</p>	<p>the way that the size of shadows changes.</p> <ul style="list-style-type: none"> 	<p>within plants</p> <ul style="list-style-type: none"> Explore the part that flowers play in the life cycle of flowering plants including pollination, seed formation and seed dispersal. 	
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<p><u>Substantive Knowledge</u></p> <ul style="list-style-type: none"> What are rocks? What are some common types of rocks? How do different types of rock vary in properties such as hardness, grain size, shape and water absorption? What is soil made of? How do rock particles and organic matter affect its properties? How do the type and size of rock particles influence soil characteristics? What are fossils and how were they formed from plants and animals millions 	<p><u>Substantive Knowledge</u></p> <ul style="list-style-type: none"> What are the two simple forces? What is friction? How does friction affect how an object moves? How does an ice skater move differently to a person walking on normal shoes? What is a magnet? What are the names of some magnetic materials? What are the magnetic poles on a magnet? How do the two magnetic poles behave when they are brought together? What do the 	<p><u>Substantive Knowledge</u></p> <ul style="list-style-type: none"> How do we see objects? How can we define dark? What are the names of some sources of light? Which types of surfaces reflect light? Why should we never look directly at the Sun? How can we protect our eyes from bright light? What happens if an object blocks light? How can you change the size of a shadow? 	<p><u>Substantive Knowledge</u></p> <ul style="list-style-type: none"> What are the main functions of roots, stems, leaves, and flowers in flowering plants? How do roots absorb water and minerals from the soil? How do stems support the plant and transport water, minerals and food? How do leaves make food through photosynthesis? What role do flowers play in plant reproduction and seed formation? How do fruits help with seed 	<p><u>Substantive Knowledge</u></p> <ul style="list-style-type: none"> Why do animals need to eat food, while plants can make their own? What different nutrients are found in food and why does the body need them? (e.g. carbohydrates, proteins, fats, vitamins, minerals, water, and fibre) How do animals get the nutrients their bodies need? How do skeletons and muscles help animals, including humans, to move and stay protected? What is the human skeleton made of? Why do muscles work in pairs in the body? 	
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	<ul style="list-style-type: none"> of years ago? In what types of rock are fossils found? What role do minerals play in fossilisation? 	<ul style="list-style-type: none"> following scientific terms mean - repel and attract. What is the name of a force that needs contact? What is the name of a force that can work from a distance? 		<ul style="list-style-type: none"> dispersal? Why do plants need different conditions to grow 		
	<u>Substantive Vocabulary</u> – fossils, soils, sandstone, granite, marble, pumice, crystals, absorbent, sedimentary, igneous, metamorphic	<u>Substantive Vocabulary</u> - Magnetic, contact, attract, repel, force, friction, poles, push, pull, south, non-magnetic, north, sliding friction, static friction, resist	<u>Substantive Vocabulary</u> – light, Shadows, Source, Dark, reflective, reflection, opaque, translucent, transparent	<u>Substantive Vocabulary</u> – air, light, water, photosynthesis nutrients, soil, reproduction, transportation, dispersal, pollination, flower, germination, stigma, ovary	<u>Substantive Vocabulary</u> – nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine	
WORKING SCIENTIFICALLY FOCUS AND TAPS ASSESSMENT	Rock Reports gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Can I group rocks based on their properties? Can I talk about, draw a diagram or write about my findings? Can I draw conclusions about the most/least wearing rock?	Magnet tests setting up simple practical enquiries, comparative and fair tests Can I decide on an approach to compare magnet strength? Can I recognize and compare variables?	Making Shadows reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions Can I make a series of careful observations? Can I record my observations in a systematic way that relates to the question?	Function of a Plant Stem using straightforward scientific evidence to answer questions or to support their findings. Can I make careful observations? Can I use my observations to suggest how water is transported?	Skeletons asking relevant questions and using different types of scientific enquiries to answer them Can I ask questions about the diversity of human skeletons? Can I turn questions into a form that can be investigated?	
Science Capital	A scientist just like me - https://pstt.org.uk/resources/curriculum-materials/ASJLM Phizzi professionals - https://www.ogdentrust.com/resources/?curriculum=&age=&series=phizzi-professional					

Year 4	Animals Including Humans	Electricity	Sound	Living Things and Their Habitats	States of Matter	On-site learning: Skype a scientist – linked to different topics: Karen Adler CCI – Virtual visit to British Science week. Wood engineering to visit to hold workshop Potential off-site learning: Potential trip to the life centre. Stewarts park. Famous Scientists to study: CV Raman Carl Linnaeus Jill Robinson Marie Curie Jacques Cousteau
	<u>National Curriculum Objectives</u> <ul style="list-style-type: none"> Describe the simple functions of the basic parts of the digestive system in humans Identify the different types of teeth in humans and their simple functions Construct and interpret a variety of food chains, identifying producers, predators and prey. 	<u>National Curriculum Objectives</u> <ul style="list-style-type: none"> Identify common appliances that run on electricity Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit Recognise some common conductors and insulators, and associate metals 	<u>National Curriculum Objectives</u> <ul style="list-style-type: none"> Identify how sounds are made, associating some of them with something vibrating Recognise that vibrations from sounds travel through a medium to the ear Find patterns between the pitch of a sound and features of the object that produced it Find patterns between the volume of a sound and the strength of the vibrations that produced it Recognise that sounds get fainter as the distance from the sound source increases. 	<u>National Curriculum Objectives</u> <ul style="list-style-type: none"> Recognise that living things can be grouped in a variety of ways Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment Recognise that environments can change and that this can sometimes pose dangers to living things. 	<u>National Curriculum Objectives</u> <ul style="list-style-type: none"> Compare and group materials together, according to whether they are solids, liquids or gases Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature 	

		with being good conductors.				
	<u>Substantive Knowledge</u> <ul style="list-style-type: none"> What are the main parts of the human digestive system and what do they do? What happens to food after you swallow it? What are the different types of teeth we have and what is each one used for? What is a food chain? In a food chain, what is a producer? Can you give an example? What is the difference between a predator and prey? Can you name one of each? What might happen if a predator disappears from a food chain? 	<u>Substantive Knowledge</u> <ul style="list-style-type: none"> What are the names of three appliances in your home or classroom that use electricity? What are the main parts of a simple circuit? Can you name at least three? What do you need to make a bulb light up in a simple series circuit? If the wires aren't connected properly or the battery is missing from a circuit, will the bulb still light? What happens when you open a switch in a circuit? What about when you close it? What materials are conductors of electricity? Which of these is a good insulator: metal, plastic, or copper wire? Why? 	<u>Substantive Knowledge</u> <ul style="list-style-type: none"> How is a sound made? What do we mean when we say something is vibrating? Can you feel or see it? How do vibrations from a sound reach your ears? What do they travel through? What happens to the pitch of a sound when you pluck a short string compared to a long one? Do bigger drums make higher or lower sounds than smaller drums? What makes a sound loud or quiet? Why does a sound get quieter the further you are from it? Can you think of an example? Can sound travel through solids, liquids, and gases? What about a vacuum (an empty space)? 	<u>Substantive Knowledge</u> <ul style="list-style-type: none"> How can we group living things? What is a classification key? How does a classification key help us identify living things? What things can cause changes in an environment? Can you name one natural and one human cause? How might cutting down trees or building houses affect the animals that live in that area? What could happen to a pond and its animals if the water dries up? 	<u>Substantive Knowledge</u> <ul style="list-style-type: none"> Which of these materials are solids, liquids and gases: ice, milk, air, metal, juice and steam? What happens to chocolate when it gets warm? What does this tell you about how solids can change state? At what temperature does water freeze and boil? Why are these temperatures important? What is evaporation? What is condensation? Why do puddles dry up faster on a hot day than on a cold one? How do evaporation, condensation and precipitation work together in the water cycle? 	

Phizzi professionals - <https://www.ogdentrust.com/resources/?curriculum=&age=&series=phizzi-professional>

Skype a scientist - <https://www.skypeascientist.com/>

The STEM Hub - <https://thestemhub.org.uk/ambassadors-at-work/ambassador-profiles>

Year 5	Forces	Earth and Space	Animals including Humans	Properties and changes of materials	Living things and their habitats	On-site learning
	<u>National Curriculum Objectives</u> <ul style="list-style-type: none"> Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object Identify the effects of air resistance, water resistance and friction, that act between moving surfaces Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. 	<u>National Curriculum Objectives</u> <ul style="list-style-type: none"> Describe the movement of the Earth, and other planets, relative to the Sun in the solar system Describe the movement of the Moon relative to the Earth Describe the Sun, Earth and Moon as approximately spherical bodies Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. 	<u>National Curriculum Objectives</u> <ul style="list-style-type: none"> Describe the changes as humans develop to old age. 	<u>National Curriculum Objectives</u> <ul style="list-style-type: none"> Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating Give reasons, 	<u>National Curriculum Objectives</u> <ul style="list-style-type: none"> Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird Describe the life process of reproduction in some plants and animals. 	<p>Skype a scientist – linked to different topics:</p> <p>Karen Adler CCI – Virtual visit to the science industry. British Science week.</p> <p>Off-site learning Stewarts park.</p> <p>Famous Scientists to study Galileo Galilei Sir Issaa Newton Dr Stephen Hawkins Mae Jameson David Attenborough</p>

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

- Demonstrate that dissolving, mixing and changes of state are reversible changes.
- Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.

Substantive Vocabulary

- What is gravity and how does it cause objects to fall toward the Earth?
- How does air resistance affect the motion of objects through air?
- How does water resistance affect the motion of objects through water?
- What is friction and how does it act between moving surfaces?
- How do air resistance, water resistance and friction affect motion in everyday life?
- How do mechanisms like levers, pulleys, and gears help us use force more effectively?

Substantive Vocabulary

- What is the Sun?
- What role does the sun play in our solar system?
- Where is the Sun located in our solar system?
- How many planets are in our solar system and what do they do in relation to the Sun?
- How do the planets, including Earth, travel around the Sun?
- How long does it take for the Earth to complete one orbit around the Sun?
- How long does it take for the Earth to rotate once on its axis?
- Why do we experience day and night on Earth?
- Why does the Sun appear to move across the sky during the day?
- What does the Moon orbit, and how long does one orbit take?
- What are the shapes of the

Substantive Vocabulary

- What happens to babies in terms of growth when they are young?
- Why are babies very dependent on their parents?
- What kinds of skills do children learn as they grow and develop?
- What changes occur in the body during puberty?
- How do the changes during puberty enable an adult to reproduce?

Substantive Vocabulary

- How do the properties and states of materials (solid, liquid, gas) affect their uses?
- What are some key properties of materials, such as hardness, transparency, conductivity and magnetic attraction?
- What happens when materials dissolve in a liquid?
- How can you tell if a material is soluble or insoluble?
- How can mixtures be separated using methods like filtering, sieving and evaporation?
- Which changes to materials are reversible and which changes result in new materials and are not reversible?

Substantive Vocabulary

- How do plants and animals reproduce as part of their life cycle?
- How does sexual reproduction work in animals, including humans?
- What is the difference between animals that give birth to live young and those that lay eggs?
- What is metamorphosis?
- Which animals undergo metamorphosis during their life cycle?
- How do plants reproduce both sexually and asexually?
- What are some examples of asexual reproduction in plants?
- How can gardeners reproduce plants asexually using cuttings?
- How does sexual reproduction in plants occur and what role do wind and insects play in pollination?

		Sun, Earth and Moon?				
	<u>Substantive Vocabulary</u> – <ul style="list-style-type: none"> air resistance, water resistance, friction, gravity, Newton, gears, pulleys 	<u>Substantive Vocabulary</u> - <ul style="list-style-type: none"> Earth, sun, moon, axis, rotation, day, night, phases of the moon, star, constellation, planet 	<u>Substantive Vocabulary</u> - <ul style="list-style-type: none"> fetus, embryo, womb, gestation, baby, toddler, adolescent, adult, elderly, growth, development, puberty 	<u>Substantive Vocabulary</u> – <ul style="list-style-type: none"> hardness, solubility, transparency, conductivity, magnetic, filter, sieve, evaporation, dissolving, mixing, solution, solute 	<u>Substantive Vocabulary</u> – <ul style="list-style-type: none"> life cycle, mammal, reproduction, insect, amphibian, bird, offspring 	
WORKING SCIENTIFICALLY FOCUS AND TAPS ASSESSMENT	Spinners taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate Can I systematically collect results? Can I improve accuracy by repeating measurements?	Space Craters recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs Can I use simple tables to record results? Can I present results in a bar graph or line graph?	Growth Survey taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate Can I record and present results clearly?	Dissolving planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Can I plan a fair test to investigate factors that affect the speed at which solids dissolve in water?	Life Cycles reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations Can I present my research clearly? Can I present using scientific language?	

Science Capital	A scientist just like me - https://pstt.org.uk/resources/curriculum-materials/ASJLM Phizzi professionals - https://www.ogdentrust.com/resources/?curriculum=&age=&series=phizzi-professional Skype a scientist - https://www.skypeascientist.com/ The STEM Hub - https://thestemhub.org.uk/ambassadors-at-work/ambassador-profiles					
Year 6	Light <u>National Curriculum Objectives</u> <ul style="list-style-type: none">Recognise that light appears to travel in straight linesUse the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eyeExplain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyesUse the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.	Electricity <u>National Curriculum Objectives</u> <ul style="list-style-type: none">Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuitCompare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switchesUse recognised symbols when representing a simple circuit in a diagram.	Living Things and Their Habitats <u>National Curriculum Objectives</u> <ul style="list-style-type: none">Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animalsGive reasons for classifying plants and animals based on specific characteristics.	Evolution and Inheritance <u>National Curriculum Objectives</u> <ul style="list-style-type: none">Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years agoRecognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parentsIdentify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	Animals Including Humans <u>National Curriculum Objectives</u> <ul style="list-style-type: none">Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and bloodRecognise the impact of diet, exercise, drugs and lifestyle on the way their bodies functionDescribe the ways in which nutrients and water are transported within animals, including humans.	On-site learning: Skype a scientist – linked to different topics: Karen Adler CCI – Virtual visit to the science industry. British Science week. Potential off-site learning: Secondary school visit. Ropner park. Visitors Famous Scientists to study Charles Darwin Louis Pasteur Rachel Carson Thomas Edison Carl Linnaeus

Substantive Knowledge-

- How does light travel?
- How do we see objects?
- What is the difference between light coming directly from a source and light reflected from an object?
- What causes shadows to form?
- Why does the shape of a shadow match the outline of the object blocking the light?

Substantive Knowledge-

- What happens to a bulb, motor, or buzzer when you add more cells or use a battery with a higher voltage in a complete circuit?
- How does adding more bulbs, motors, or buzzers to a circuit affect their performance?
- What happens to a circuit and its components when a switch is turned off (opened)?
- How can recognised circuit symbols be used to draw simple circuit diagrams?

Substantive Knowledge-

- How are living things classified based on observable characteristics?
- What are the main groups of living things and which organisms don't fit into plants or animals?
- How can plants and animals be further classified into sub-groups based on specific traits?
- What are the key characteristics of vertebrate and invertebrate groups?
- How do plants and animals differ in how they obtain food?
- How can a classification key be created and used to group organisms?

Substantive Knowledge-

- How do living things produce offspring?
- How are features inherited from parents?
- Why are offspring produced through sexual reproduction not identical to their parents or to each other?
- How are plants and animals adapted to their environments?
- What happens to species when the environment changes rapidly?
- How do slow environmental changes affect which plants and animals survive and reproduce?
- How do inherited characteristics become more common in a population over time?
- How can changes over a very long period of time lead to the creation of a new species?
- How do fossils provide

Substantive Knowledge

- What are the functions of blood and blood vessels?
- What are the main parts of the human circulatory system?
- What are their functions?
- How does the human heart work?
- How can you investigate the effect of exercise on heart rate?
- What are the effects of smoking on the body?
- How do diet and exercise affect body weight and how the body functions?
- What health conditions can be caused by deficiencies in our diet, such as a lack of vitamins?

				<p>evidence for what lived on Earth millions of years ago and support the theory of evolution?</p> <ul style="list-style-type: none"> What did scientists like Darwin and Wallace observe about how living things adapt to their environments? 		
	<u>Substantive Vocabulary</u> – light source, light diagram reflection, periscope, filter, shadow, straight line	<u>Substantive Vocabulary</u> – cells, wires, bulbs, switches, buzzers, battery, circuit, series, conductors, insulators, amps, volts, cell	<u>Substantive Vocabulary</u> – classification, vertebrates, invertebrates, micro-organisms, amphibians, reptiles, mammals, insects	<u>Substantive Vocabulary</u> – fossils, adaption, evolution, characteristics, reproduction, genetics	<u>Substantive Vocabulary</u> – circulatory, heart, blood, vessels, veins, arteries, aorta, atrium, capillaries, carbon dioxide, oxygenated, deoxygenated, value, exercise, respiration, pulse, respiration, vena cava, ventricle, via	
WORKING SCIENTIFICALLY FOCUS AND TAPS ASSESSMENT	Investigating Shadows recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs Can I make accurate measurements? Can I plot results accurately on a line graph?	Bulb Brightness planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Can I create a scientific question that identifies the change and measure? Can I identify control variables to make it a fair test?	Invertebrate Research Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations Can I report and present information about an invertebrate classification group?	Fossil Habitats identifying scientific evidence that has been used to support or refute ideas or arguments Can I use evidence to develop ideas? Can I discuss if my evidence supports my ideas?	Heartrate Pose using test results to make predictions to set up further comparative and fair tests Can I explain and make predictions based on previous results? Can I carry out a scientific enquiry to answer a question?	
Science Capital	A scientist just like me - https://pstt.org.uk/resources/curriculum-materials/ASJLM					

	<p>Phizzi professionals - https://www.ogdentrust.com/resources/?curriculum=&age=&series=phizzi-professional</p> <p>Skype a scientist - https://www.skypeascientist.com/</p> <p>The STEM Hub - https://thestemhub.org.uk/ambassadors-at-work/ambassador-profiles</p>
Scaffold/ Support	As the curriculum is experiential, no pupil should be assessed for science based on their ability to write scientifically. TAPs assessments and the STEM website provides ideas for each unit and how questioning can be used to support the progress of all pupils. Pupils should be supported through their acquisition of Working Scientifically skills.
GD	Pupils working at GD are challenged with the use of direct, effective questioning. TAPs assessments provide ideas for how to assess pupils are at this level. The STEM website provides ideas for each unit as to how pupils can be challenged both in terms of knowledge and Working Scientifically skills.
Science Capital	<p>"Science capital refers to science-related qualifications, understanding, knowledge (about science and 'how it works'), interest and social contacts (e.g. knowing someone who works in a science-related job)." (ASPIRES, 2013).</p> <p>At Oxbridge Lane Primary School, we aim to equip children with the essential skills, knowledge, qualifications and understanding that they need for future success. Within science, our initial focus will be providing pupils with an understanding of how these skills and key knowledge can help them to unlock future STEM careers.</p>