Science

Unit Overviews

Science

Overview of Topics

	Autumn Term	Spring Term	Summer Term
EYFS (Seed Class)	**Understanding the world:** • Who is in my family? • What does my house look like? • Harvest Festival • Toys through time - materials	**Understanding the world:** • Trees, plants and flowers • Animals, habitats and homes	**Understanding the world:** • David Attenborough • Wild and wonderful creatures • Pets • Plants
KS1 A (Seed Class)	Brilliant builders Weather art	Art and nature Habitats and homes	Wild and wonderful creatures People and their pets
KS1 B (Seed Class)	Brilliant builders Exploring changes	Growing things Food chains	Amazing me Wild weather
LKS2 A (Sapling Class)	This Planet Rocks Fit for Success	Sounds Spectacular! A World of Living Things	Feast of Flowers, Fruits & Seeds What's the Matter?
LKS2 B (Sapling Class)	The Circle of Life Greatly Green Flowers	Shining the Light Electric Personalities	Magnetic Fun and Games Habitat Helpers
UKS2 A (Blossom Class)	Survival of the fittest The human species	Illustrating Lifecycles Materials consultants	The classification code Medical manoeuvres
UKS2 A (Blossom Class)	Electric Art Theatre Lighting Technicians	Space! including scientist study: Tiera Guinn Welcome to force-land	Special effects materials Sensational science

EYFS

Autumn	Spring	Summer
Understanding the world: • Who is in my family? • What does my house look like? • Harvest Festival • Toys through time - materials	**Understanding the world:** • Trees, plants and flowers • Animals, habitats and homes	**Understanding the world:** • David Attenborough • Wild and wonderful creatures • Pets • Plants

Key Stage 1

(Years 1 and 2)

Big Question Link: Do you remember?
Unit grid: Science- Brilliant Builders!
Year A/Year B
Autumn/ Spring/ Summer

<table>
<tr><th>Prior Learning Links</th><th>Key NC Objectives</th><th colspan="2">Session overviews</th><th>Unit Outcomes</th></tr>
<tr><td>EYFS
Understanding the world statements</td><td rowspan="4">Content
i. distinguish between an object and the material from which it is made
ii. identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock
iii. describe the simple physical properties of a variety of everyday materials
iv. compare and group together a variety of everyday materials on the basis of their simple physical properties
v. identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
vi. find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

Working Scientifically
i. asking simple questions and recognising that they can be answered in different ways
ii. observing closely, using simple equipment
iii. performing simple tests
iv. identifying and classifying
v. using their observations and ideas to suggest answers to questions
vi. gathering and recording data to help in answering questions</td><td>1</td><td>We're Going on a Material Hunt!
Play 'I-Spy the Material' game in the classroom, before discussing why different materials have been used. Sort items according to their properties and consider what it would be like if the tables were made of jelly or the chairs were chocolate.</td><td rowspan="6">Help identify the best building material for the Three Little Pigs</td></tr>
<tr><td>Key Vocabulary</td><td>2</td><td>Material Pairs and Properties
Think carefully about the different materials and their properties, and play games in pairs with items from the classroom. Write songs based on the properties in materials and sing together at the end of the session.</td></tr>
<tr><td rowspan="2">Rough
Smooth
Flat
Bumpy
Sharp
Blunt
Wood
Metal
Plastic
Glass
Rock
Materials
Properties
Magnetic
Non- magnetic
Useful</td><td>3</td><td>Sticking Together
Play with magnets and explore their properties. Discover what's attracted to them and why. Create games using the magnets and metal objects in the classroom.</td></tr>
<tr><td>4</td><td>Odd One Out
Play 'Odd One Out' by carefully considering the properties of some objects, sort objects in the classroom and then have fun imagining a world where nothing is rigid!</td></tr>
<tr><td></td><td>5</td><td>Three Little Pigs: Brilliant Builders?
Listen to the story of the three little pigs and, in small groups, recreate using straw, twigs and bricks. Make predictions and a video.</td></tr>
<tr><td></td><td>6</td><td>Three Little Pigs: Alternative Materials
Using alternative building materials recreate the story of the three little pigs and predict what will happen to their houses!</td></tr>
<tr><td colspan="2">Big Question Link</td><td colspan="3">Vision and Values Link</td></tr>
<tr><td colspan="2">Do you remember what the three little pigs used as their building materials?</td><td colspan="3">Wisdom – making wise choices about materials</td></tr>
</table>

Big Question Link: Do you remember?
Unit grid: Science- Weather Art
Year A/Year B
Autumn/ Spring/ Summer

<table>
<tr><td>Prior Learning Links</td><td>Key NC Objectives</td><td colspan="2">Session overviews</td><td>Unit Outcomes</td></tr>
<tr><td>EYFS
Understanding the world statements</td><td rowspan="4">Content
i. observe changes across the four seasons
ii. observe and describe weather associated with the seasons and how day length varies

Working Scientifically
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vi. gathering and recording data to help in answering questions</td><td>1</td><td>Four Seasons
Talk about the four seasons and what weather is associated with each season. Think about the similarities and differences between the seasons and create a collage together as a class.</td><td rowspan="4">Windsocks
Weather vanes
Suncatchers
Sundials
Shadow theatres</td></tr>
<tr><td>Key Vocabulary</td><td>2</td><td>Windsock Wonder
Go outside and experience the wind in the playground. How do we know it is windy? Make a wind sock and a weather vane to measure the direction of the wind. Which is best and why?</td></tr>
<tr><td>Rain
Snow
Storm
Thunder
Lightening
Warm
Cold
Forecast
Summer
Autumn
Spring
Winter
Seasons

Wind
Strength
Direction
Sun
Light sources
Shadow
Day
Night
Shadow length
Change
Light
Dark</td><td>3</td><td>Spinners and Spirals
Experience the wind in the playground and imagine what it would be like if it was blowing really hard. Make bottle wind spinners and spirals to explore the strength of the wind.</td></tr>
<tr><td></td><td>4</td><td>Looking at Light
Learn about the sun and what a light source is. Play with torches, lamps and candles. Design sun catchers for the classroom with coloured, dark and reflective materials.</td></tr>
<tr><td></td><td>5</td><td>Creating Sundials
Make group sundials and observe what happens. Why do they work and what would be the reasons for them not working?</td></tr>
<tr><td></td><td>6</td><td>Shadow Theatre
Go outside and have fun with shadows. Make them jump, chase each other and play shadow tag. Make a shadow theatre in the classroom and perform to an audience</td></tr>
<tr><td colspan="2">Big Question Link</td><td colspan="3">Vision and Values Link</td></tr>
<tr><td colspan="2">Do you remember a really windy day? What happened?</td><td colspan="3">Endurance – investigating different weather related events.</td></tr>
</table>

Big Question Link: Where shall we go?
Unit grid: Science- Art and Nature
Year A/Year B
Autumn/ Spring/ Summer

<table>
<tr><td>Prior Learning Links</td><td rowspan="4">Key NC Objectives</td><td colspan="2">Session overviews</td><td rowspan="4">Unit Outcomes</td></tr>
<tr><td>EYFS
Understanding the world statements</td><td rowspan="3">1</td><td rowspan="3">Where does it come from?
Sort materials into plant and non-plant and marvel at how useful plants can be! Sort objects in the classroom and become Materials Investigators.</td></tr>
<tr><td>Key Vocabulary</td></tr>
<tr><td>Plant
Leaf
Grow
Weed
Change
Living
Water
Healthy
Similar too
Different from
Useful

Seed
Bean
Water
Warmth
Nutrients
Leaves
Stem
Roots
Trunk
Bark</td></tr>
<tr><td colspan="2">Content
i. identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
ii. identify and describe the basic structure of a variety of common flowering plants, including trees
iii. observe and describe how seeds and bulbs grow into mature plants
iv. find out and describe how plants need water, light and a suitable temperature to grow and stay healthy

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vi. gathering and recording data to help in answering questions</td><td>2</td><td>Helicopters!
Think about the different ways that plants can disperse their seeds, including seeds designed to stick on animals and humans. Using clay or modroc, create a large burr.</td><td rowspan="7">Burrs
Sculptures
Models
Playground art</td></tr>
<tr><td></td><td>3</td><td>What lives in the garden?
Go outside and look carefully at the plants and flowers. Understand more of the role pollen plays in the growing of fruit and vegetables and create a large pollen sculpture out of clay</td></tr>
<tr><td></td><td>4</td><td>What's inside a flower?
Ever wondered what is inside a flower? Take a look at flowers outside in the playground and then make a large model in the classroom.</td></tr>
<tr><td></td><td>5</td><td>Looking closely
Look closely at plants, including roots, stems and bulbs. Can you draw what you see through the magnifying glass? Can you label the parts of the plant?</td></tr>
<tr><td></td><td>6</td><td>What's inside a tree?
Look around at all the different trees in the area. Do leaf and bark rubbings outside, talk about trees and then create a large piece of art on the playground floor.</td></tr>
<tr><td colspan="3">Big Question Link</td><td colspan="2">Vision and Values Link</td></tr>
<tr><td colspan="3">Where shall we go to see flowers?</td><td colspan="2">Respect – caring for our environment and stewardship</td></tr>
</table>

Big Question Link: Where shall we go?
Unit grid: Science- Habitats and Homes
Year A/Year B
Autumn/ Spring/ Summer

<table>
<tr><td>Prior Learning Links</td><td>Key NC Objectives</td><td colspan="2">Session overviews</td><td>Unit Outcomes</td></tr>
<tr><td>EYFS
Understanding the world statements
Y1&2
Art and Nature</td><td rowspan="7">Content
i. explore and compare the differences between things that are living, dead and things that have never been alive
ii. 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

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vi. gathering and recording data to help in answering questions</td><td>1</td><td>Playground allotment
Take large tubs and tyres into the playground and plant edible plants. Learn about the right conditions for growth and attracting the right mini-beasts to the allotment.</td><td rowspan="7">“allotment” of edible plants
Bug hotels</td></tr>
<tr><td>Key Vocabulary</td><td>2</td><td>Micro-habitats
Tend to the allotment and review the plant growth. Are there any mini-beasts the allotment habitat would benefit from? How will you attract them? Make micro-habitats to encourage them to live in the allotment.</td></tr>
<tr><td>Growth Grow
Germination Allotment
Planting Produce
Edible Soil
Mini-beasts Wash
Habitats Cook
Harvest</td><td>3</td><td>Farming
Find out more about farming first hand and play farms in the classroom. Understand why farms are so important to the food chain and why farmers think protecting the environment is so important.</td></tr>
<tr><td></td><td>4</td><td>Designing a Bug Hotel
Drawing on your knowledge of habitats, design a bug hotel. Incorporate many different micro-habitats to encourage a variety of guests.</td></tr>
<tr><td></td><td>5</td><td>Make a Bug Hotel
Using the group designs, build a bug hotel in the school grounds. Create micro-habitats layers using found materials such as sticks, leaves, tubes or moss.</td></tr>
<tr><td></td><td>6</td><td>Harvest the spoils
Harvest the edible foods you have been growing in the allotment. Study, smell and feel them before turning them into a class snack.</td></tr>
<tr><td colspan="2">Big Question Link</td><td colspan="3">Vision and Values Link</td></tr>
<tr><td colspan="2">Which kind of habitats would you like to visit?</td><td colspan="3">Respect – caring for the environment and stewardship</td></tr>
</table>

Big Question Link: What is home?
Unit grid: Science- Wild and Wonderful Creatures
Year A/Year B
Autumn/ Spring/ Summer

<table>
<tr>
<td>Prior Learning Links</td>
<td>Key NC Objectives</td>
<td colspan="2">Session overviews</td>
<td>Unit Outcomes</td>
</tr>
<tr>
<td>EYFS
Understanding the world statements
Y1&2
Art and nature
Homes and habitats</td>
<td rowspan="3">Animals, including humans
i. identify and name a variety of common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates
ii. identify and name a variety of common animals that are carnivores, herbivores and omnivores
iii. describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles, mammals and invertebrates, and including pets)
iv. identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense
i. notice that animals, including humans, have offspring which grow into adults
ii. find out about and describe the basic needs of animals, including humans, for survival (water, food and air)
iii. describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene

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<td>1</td>
<td>Different kinds of animals
Use plastic toys to talk about the characteristics of different animals. Sort them into groups and write facts around large outlines of different creatures</td>
<td rowspan="7">Letters in bottles
Mini bottle scenes
Lift-the-flap books
Safari in a tray
Tour guides</td>
</tr>
<tr>
<td>Key Vocabulary</td>
<td>2</td>
<td>We are Wonderful Creatures too!
Create a desert island in the classroom using blue sheets of material for the water and yellow for the island. Imagine being stranded on the island. What would make you happy? What would your needs be? Send letters in bottles across the material sea, asking for essential provisions!</td>
</tr>
<tr>
<td>Birds
Fish
Reptiles
Mammals
Invertebrates
Group
Classify
Carnivores
Herbivores
Omnivores

Basic needs
Water
Food
Air
Breathing
Survival
Offspring
Babies
Adults
Habitats</td>
<td>3</td>
<td>Habitats in a Bottle
Use craft and natural materials to create mini scenes in plastic bottles for different wild creatures.</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Flaps and Facts
Label the bottle scenes with facts and researched information. Make lift-the-flap books to accompany the bottles.</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Micro-safaris
Research the habitats, offspring and basic need s of African animals and make a safari in a tray, using plastic toys and natural materials.</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Tour guides and visitors
Record a tour guide for the Tray Safari and invite visitors to try it out!</td>
</tr>
<tr>
<td colspan="2">Big Question Link</td>
<td colspan="3">Vision and Values Link</td>
</tr>
<tr>
<td colspan="2">What does home look like for different creatures?</td>
<td colspan="3">Respect – caring for the environment and stewardship</td>
</tr>
</table>

Big Question Link: What is home?
Unit grid: Science- People and their pets
Year A/Year B
Autumn/ Spring/ Summer

<table>
<tr>
<td>Prior Learning Links</td>
<td>Key NC Objectives</td>
<td colspan="2">Session overviews</td>
<td>Unit Outcomes</td>
</tr>
<tr>
<td>EYFS
Understanding the world statements
Y1&2
Art and nature
Habitats and homes
Wild and wonderful creatures</td>
<td rowspan="3">Content
i. identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals
ii. identify and name a variety of common animals that are carnivores, herbivores and omnivores
iii. describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)
iv. identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense

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vi. gathering and recording data to help in answering questions</td>
<td>1</td>
<td>Go Exploring!
Go on an exploration around the school grounds, looking at animals' behaviours and habitats. Talk about the behaviour patterns you can see and consider: do similar animals live in similar places?</td>
<td rowspan="7">Imaginary pet designs</td>
</tr>
<tr>
<td>Key Vocabulary</td>
<td>2</td>
<td>Where Do Woodlice Like Living?
Observe woodlice outside in their own habitat. Look at their features and, bearing these in mind, consider and predict what type of place a woodlouse would like to live. Then try it out and record where the woodlice go</td>
</tr>
<tr>
<td>Notice
Patterns
Behaviour
Habitat
Living things
Damp
Shady
Dry
Observations
Prediction
Habitat
Happy
Healthy
Explore
Investigate
Observe
Birds
Fish
Amphibians
Reptiles
Mammals
Invertebrates
Group
Similarities and differences</td>
<td>3</td>
<td>Puppy Has Made a Mess!
Oh no! There has been a puppy in the classroom and it has done a wee on the floor! Plan an investigation to test the absorbency of different types of paper. Predict which paper will be the best at soaking up the wee and then test them to find out.</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Design an Imaginary Pet!
Play 'What animal am I?' and learn about the differences between birds, fish, amphibians, reptiles, mammals and invertebrates. Sort the animals into groups according to their features, using questions such as: Do they have fur or no fur? Dangerous or tame? Feathers or no feathers? Consider why some animals are kept as pets and others aren't. Then design your own imaginary pet</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>My Pet is Happy!
Discuss together what pets like and what you need to do to keep them happy and healthy. Think about what sort of care the home-made pets might need. Ask and share the questions: How do I keep my pet happy and healthy?</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Bring Pets to School Day
Invite your pets (and their owners) into school! Listen to them, feel and smell them and record your observations in video and photographs. Ask their owners questions about keeping them happy and healthy. Ask: What makes these animals good pets? What do they all have in common? NB risk assessment required. Consider the best way to manage this.</td>
</tr>
<tr>
<td colspan="2">Big Question Link</td>
<td colspan="3">Vision and Values Link</td>
</tr>
<tr>
<td colspan="2">What kind of homes do different pets need?</td>
<td colspan="3">Respect – caring for the environment and stewardship</td>
</tr>
</table>

Big Question Link: Who can help me?
Unit grid: Science- Brilliant Builders, Comparing Materials
Year A/Year B
Autumn/ Spring/ Summer

<table>
<tr><td>Prior Learning Links</td><td>Key NC Objectives</td><td colspan="2">Session overviews</td><td>Unit Outcomes</td></tr>
<tr><td>EYFS
Understanding the world statements</td><td rowspan="8">i. distinguish between an object and the material from which it is made
ii. identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock
iii. describe the simple physical properties of a variety of everyday materials
iv. compare and group together a variety of everyday materials on the basis of their simple physical properties
v. identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
vi. find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

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vi. gathering and recording data to help in answering questions</td><td>1</td><td>Fixing a torn umbrella: Part 1
Look at a selection of materials and consider which one is best for fixing a broken umbrella. Explain your selection and predict the outcome.</td><td rowspan="8">Materials art work</td></tr>
<tr><td>Key Vocabulary</td><td>2</td><td>Fixing a torn umbrella: Part 2
Test a selection of materials using a pipette to simulate raindrops and consider why some materials let water through and others do not.</td></tr>
<tr><td>Waterproof
Absorbent
Breaks, tears
Materials
Properties
Absorbency
Strong
Weak
Hypothesis</td><td>3</td><td>Are Bricks Absorbent?
Think about hard materials and their absorbent properties. Which building materials are absorbent? Why are they so? Test different hard materials and record the results.</td></tr>
<tr><td></td><td>4</td><td>Mopping Up
Explore the properties of different kitchen papers and disposable cloths. Rise to the challenge of mopping water from the floor. Which paper is the most absorbent? Which will be the best for mopping up the spillage?</td></tr>
<tr><td></td><td>5</td><td>Waterproofing Materials
Explore different fabric and investigate their waterproof nature using a dropper of water. How can we make the fabrics waterproof? Colour them in with wax crayon and repeat the investigation</td></tr>
<tr><td></td><td>6</td><td>Printing
Explore the textures and properties of different materials by printing with a selection of items. Make a large collective piece of art showing the variety of materials used by the class.</td></tr>
<tr><td colspan="2">Big Question Link</td><td colspan="3">Vision and Values Link</td></tr>
<tr><td colspan="2">How can knowing the properties of materials help us?</td><td colspan="3">Making wise choices about which materials to use</td></tr>
</table>

Big Question Link: How has life changed?
Unit grid: Science- Exploring Changes
Year A/Year B
Autumn /Spring/Summer

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<tr><th>Prior Learning Links</th><th>Key NC Objectives</th><th colspan="2">Session overviews</th><th>Unit Outcomes</th></tr>
<tr><td>EYFS
Understanding the world
Y1&2
Brilliant builders</td><td rowspan="7">Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock
Describe the simple physical properties of a variety of everyday materials
Compare and group together a variety of everyday materials on the basis of their simple physical properties
Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</td><td>1</td><td>Ice Watching
Children to observe how ice melts over the course of the lesson. Children to use scientific vocabulary and observation skills to observe the ice. Children begin talking about states of matter.</td><td rowspan="7">Wax and paint patterns
Machine designs</td></tr>
<tr><td>Key Vocabulary</td><td>2</td><td>Frozen!
Small world characters are stuck in the ice! How will we help them to get out?
Encourage children to think of ideas to melt the ice quickly and slowly without hitting or breaking the ice.</td></tr>
<tr><td rowspan="5">Water
Ice
Melts
Frozen
Observe
Materials
Properties
Absorbency
Waterproof
Strong
Resist</td><td>3</td><td>Puddle Patrol Part 1
Identify puddles around the school grounds. Why do we get puddles?
Measure puddles, what happens to puddles over time? How does the weather affect puddles?</td></tr>
<tr><td>4</td><td>Puddle Patrol Part 2
Children to observe how a puddle changes throughout the day. Children to measure the puddle first thing, and multiple times throughout the day.</td></tr>
<tr><td>5</td><td>Wonderful Wax!
Think back to last half term where we learnt about waterproof materials.
What does waterproof mean?
Children to explore creating designs with the wax and paint to develop patterns.</td></tr>
<tr><td>6</td><td>Changing Materials
What happens to the particles in a solid when it is heated up?
Children will melt crayons and pour them into moulds to change the shape of them.
Can children design a machine to recycle broken crayons into new shapes?</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td colspan="2">Big Question Link</td><td colspan="3">Vision and Values Link</td></tr>
<tr><td colspan="2">Have the materials used for things changed?</td><td colspan="3">Making wise choices about which materials to use</td></tr>
</table>

Big Question Link: Who can help me?
Unit grid: Science- Growing Things
Year A/Year B
Autumn/ Spring/ Summer

<table>
<tr>
<td>Prior Learning Links</td>
<td rowspan="3">Key NC Objectives</td>
<td colspan="2">Session overviews</td>
<td>Unit Outcomes</td>
</tr>
<tr>
<td>EYFS
Understanding the world statements</td>
<td>1</td>
<td>What's Growing Outside?
Explore the outdoor area at school and look at plants that are growing. Talk about what they are and what they will look like when they are fully grown. Map out the school garden area and decorate with sketches, facts and labels.</td>
<td rowspan="7">Maps and plans
Potato plants
Garden centre
Plant art
Cress sandwiches</td>
</tr>
<tr>
<td>Key Vocabulary</td>
<td>2</td>
<td>Spuds
Look at different potatoes and potato products. Working in teams, prepare tubs for growing, and plant a chitted potato. As a team, how will you keep your potato plant healthy?</td>
</tr>
<tr>
<td>Plant
Leaf
Grow
Weed
Change
Living
Water
Healthy
Similar too
Different from
Potato
Chitting
Different
Seeds

Garden centre
Warmth
Light
Dry
Wet
Moist
Growth
Germination
Seed coat
Bean
Nutrients
Leaves
Stem
Roots</td>
<td>Content
i. identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
ii. identify and describe the basic structure of a variety of common flowering plants, including trees
iii. observe and describe how seeds and bulbs grow into mature plants
iv. find out and describe how plants need water, light and a suitable temperature to grow and stay healthy

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vi. gathering and recording data to help in answering questions</td>
<td>3</td>
<td>Beans in Bags
Set up a garden centre in the classroom and plant seeds in a jar or bag. Predict what will happen and start to watch them grow. How will you keep your seeds healthy?</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Grow Some Cress!
Think about the conditions for healthy plant growth and plant your own cress seeds. Record their growth. How long will it take for them to be long enough to eat?</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Bean Update
Record the growth of the bean and look at how they have developed over the last few weeks. Can you recreate the plant with craft materials? Can you label the parts of the plant?</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Cress Sandwiches
Look really closely at the little cress plants and draw what you see. Then pop them into cheese or egg sandwiches for a snack!</td>
</tr>
<tr>
<td colspan="2">Big Question Link</td>
<td colspan="3">Vision and Values Link</td>
</tr>
<tr>
<td colspan="2">How does growing things help us?</td>
<td colspan="3">Respect – caring for the environment and stewardship</td>
</tr>
</table>

Big Question Link: Who can help me?
Unit grid: Science- Food Chains
Year A/Year B
Autumn/ Spring/ Summer

<table>
<tr><td>Prior Learning Links</td><td>Key NC Objectives</td><td colspan="2">Session overviews</td><td>Unit Outcomes</td></tr>
<tr><td>EYFS
Understanding the world statements
Y2 only
Habitats and homes</td><td rowspan="7">Content
i. explore and compare the differences between things that are living, dead and things that have never been alive
ii. 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
iii. identify and name a variety of plants and animals in their habitats, including micro-habitats
iv. 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

Working Scientifically
i. asking simple questions and recognising that they can be answered in different ways
ii. observing closely, using simple equipment
iii. performing simple tests
iv. identifying and classifying
v. using their observations and ideas to suggest answers to questions
vi. gathering and recording data to help in answering questions</td><td>1</td><td>Exploring Food Chains
Role play food chains in the hall! Understand that, in a healthy habitat, all living things depend on each other in different ways.</td><td rowspan="7">String food chains
Habitat and food chain dioramas
Class aquarium
Food chain cycle dance</td></tr>
<tr><td>Key Vocabulary</td><td>2</td><td>Creating Food Chains
Think about some simple food chains and make a food chain using laminated cards and string. Challenge each other to string them up in the right order.</td></tr>
<tr><td>Food Chain
Predator
Habitats
Dependence
Dead
Alive
Habitat
Savannah
Rainforest
Tundra
Micro-Habitat
Features
Ocean
Water</td><td>3</td><td>Dead or Alive!
Look at a live spider, a dead spider and a toy spider. What are some of the differences between the live spider and the dead one? And the dead spider and the toy one? How can we work out what's alive and not alive? Is it sometimes difficult to tell? Armed with all these questions, go outside and collect something alive, something dead and something that was never alive. Sort these specimens into three categories.</td></tr>
<tr><td></td><td>4</td><td>Food Chain Dioramas
Research creatures in larger habitats and ask: why do these living things live there? Create dioramas of different habitats and label with research information about the food chain.</td></tr>
<tr><td></td><td>5</td><td>Classroom Aquarium
Think about water food chains and reconstruct in tanks of water using found materials, toys and laminated images. Make plastic bag jelly fish and invite others to visit the classroom 'aquarium'. Place information signs around the aquarium.</td></tr>
<tr><td></td><td>6</td><td>Creating Food Chains
Think further about food chains and look at the transfer of energy from the sun, through the members of the food chain, and back into the ground. Can you represent this cycle in a dance?</td></tr>
<tr><td colspan="2">Big Question Link</td><td colspan="3">Vision and Values Link</td></tr>
<tr><td colspan="2">Who helps us get our food?</td><td colspan="3">Giving back to the community – how can we ensure everyone has enough to eat?</td></tr>
</table>

Big Question Link: Are we there yet?
Unit grid: Science – Amazing me!
Unit grid: Year A/Year B
Autumn/Spring /Summer

<table>
<tr><th>Prior Learning Links</th><th>Key NC Objectives</th><th colspan="2">Session overviews</th><th>Unit Outcomes</th></tr>
<tr>
<td>- Brilliant Builders
- Exploring Changes
- Growing Things
- Food Chains</td>
<td rowspan="2">Animals, Including Humans:
- Notice that animals, including humans, have off-spring, which grow into adults.
- Identify, name, draw and label the basic parts of the human body and say which of the body is associated with each sense.
- 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.</td>
<td>1</td><td>Wow! We have changed!
Identify common features and compare similarities and differences.
Play memory games to encourage further talk about the passing of time and to demonstrate their understanding
Observe changes over time between the baby photos and current ones, discussing differences between ‘baby me’ and ‘present me’</td>
<td rowspan="2">Class display
Market stalls
Venn diagrams
Balanced lunchboxes
Sandwiches</td>
</tr>
<tr>
<td>Key Vocabulary:
Compare
Describe
Similar
Different
Notice patterns
Compare
Measure
Record
Predict
Gather
Centimetre
Millimetre
Ears
Senses
Hearing
Spotting patterns
Touch

Sight
Smell
Taste
Hear
Fruits
Vegetables
Bread
Rice
Potatoes
Pasta
Milk
Dairy
Food high in fat/sugar
Meat
Fish
Eggs
Beans</td>
<td>2</td><td>Body Patterns
Name parts of their bodies and collect information about their bodies by observing, measuring and noticing patterns.
Make a class wall display of Our Body Patterns, with photographs and measurements, to show their understanding and learning, considering a number of ways to present the data and their conclusions</td>
</tr>
<tr>
<td colspan="2"></td>
<td>3</td><td>Playground Sounds
Understand that we hear sounds with out ears and that hearing is one of our senses.
Talk to each other about what makes a difference to how well they can hear a whistle when it is blown. Together, draw up instructions for optimum hearing of the playground whistle, to demonstrate their learning and understanding
Extend the investigation by considering if hoods make a difference to hearing</td>
<td></td>
</tr>
<tr>
<td colspan="2"></td>
<td>4</td><td>Sorting Using Senses
Understand that we use our senses to classify things into groups.
Identify the differences between fruit and vegetables using our senses and classify them. Set up a Senses Market Stall in the classroom, sorting produce by using our senses . Classify foods using a Venn diagram</td>
<td></td>
</tr>
<tr>
<td colspan="2"></td>
<td>5</td><td>All Our Senses
Understand that we have different ways of exploring the world and that often our senses work together to help us do that. .Go outside to explore the school grounds using different senses. Explore what it is like when the sense of sight is taken away
Explore the idea of pairs of senses working together</td>
<td></td>
</tr>
<tr>
<td colspan="2"></td>
<td>6</td><td>Balancing Lunch Boxes
Design a balanced lunch box on paper to serve as a reminder of how much food each food group is required for a balanced lunch. Make healthy sandwiches to pack in a picnic. Record the healthy picnic in photographs and share learning with invited guests.</td>
<td></td>
</tr>
<tr><th colspan="3">Big Question Link</th><th colspan="2">Vision and Values Link</th></tr>
<tr><td colspan="3">Are we there yet to create healthy children who grow up into healthy adults?</td><td colspan="2">Endurance – working through investigations</td></tr>
</table>

Big Question Link: Are we there yet?
Unit grid: Science- Wild Weather
Year A/Year B
Autumn/ Spring/ Summer

<table>
<tr><td>Prior Learning Links</td><td rowspan="2">Key NC Objectives</td><td colspan="2">Session overviews</td><td>Unit Outcomes</td></tr>
<tr><td>EYFS
Understanding the world statements
Yw only
Weather art</td><td>1</td><td>What do we know about weather?
Think about what we already know about weather and look at how weather forecasters tell us what weather to expect. Explore making forecasts about the weather at school, using weather symbols and notes made 'on location' in the playground.</td><td rowspan="7">Collage
Rainfall gauge
Thermometer boxes</td></tr>
<tr><td>Key Vocabulary</td><td rowspan="6">Content
i. observe changes across the four seasons
ii. observe and describe weather associated with the seasons and how day length varies

Working Scientifically (KS1 WS)
i. asking simple questions and recognising that they can be answered in different ways
ii. observing closely, using simple equipment
iii. performing simple tests
iv. identifying and classifying
v. using their observations and ideas to suggest answers to questions
vi. gathering and recording data to help in answering questions</td><td>2</td><td>Wondering About Weather
Go outside and observe the weather, drawing what you see and describing what you hear and feel. Then go back inside, to create a collage about the seasons for the classroom</td></tr>
<tr><td>Rain
Snow
Storm
Thunder
Lightening
Cloudy
Clothing
Warm
Cold
Forecast
Summer
Autumn
Winter
Spring
Seasons

Day
Night
Shadow
length
Change
Light
Dark
Weather
Rainfall
Precipitation
Data
Wind
Direction
Gauge
Patterns</td><td>3</td><td>Shadow Surprises!
Go outside and have fun with shadows. Make them jump, chase each other and play shadow tag. Draw round them to see if they change during the day.</td></tr>
<tr><td>4</td><td>Weather stations! Measuring rainfall
Look at weather in the playground, at the rain falling and what it sounds like. Make a rainfall gauge and record the results.</td></tr>
<tr><td>5</td><td>Weather Stations! Measuring wind direction
Look at the wind in the playground and wonder if there is a link between wind direction and rainfall. Does the wind change direction during the day? Make a wind-sock to measure the direction of the wind in the playground.</td></tr>
<tr><td>6</td><td>Weather Stations! Making a thermometer box
Measure the temperature inside the classroom and outside and wonder how different that would be in different seasons. Make a thermometer box to house a thermometer and use it outside in the playground.</td></tr>
<tr><td colspan="2">Big Question Link</td><td colspan="3">Vision and Values Link</td></tr>
<tr><td colspan="2">How does the weather affect how quickly we get to places?</td><td colspan="3">Respect – looking after the environment and stewardship, respecting the weather</td></tr>
</table>

Lower Key Stage 2 (Years 3 and 4)

Big Question: What does it mean to be human?
Unit grid: This Planet Rocks
Year A/Year B
Autumn/Spring/Summer

<table>
<tr><th>Prior Learning Links</th><th>Key NC Objectives</th><th colspan="2">Session overviews</th><th>Unit Outcomes</th></tr>
<tr>
<td>KS1 Science:
identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.

Key Vocabulary

rock, sandstone, limestone, chalk, granite, slate, marble, classification, observation, Petrologist, man-made rocks, brick, tile, concrete, igneous, sedimentary, metamorphic, permeable, impermeable, acid, erosion, pipette, identification key, bedrock, properties, paleontologist, fossil, ichthyosaur, plesiosaur, ammonite, sediment, minerals, soil, micro-organisms, organic matter, particles, sand, silt, fair test, compare, sort, predict</td>
<td>Rocks
✓ Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.
✓ Describe in simple terms how fossils are formed when things that have lived are trapped within rock.
✓ Recognise that soils are made from rocks and organic matter.

Working Scientifically
✓ Ask relevant questions and use different types of scientific enquiries to answer them.
✓ Make systematic and careful observations.
✓ Record findings using simple scientific language, drawings and labelled diagrams.
✓ Set up simple practical enquiries and comparative and fair tests.
✓ Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
✓ Use straightforward scientific evidence to answer questions or to support their findings.
✓ Gather, record, classify and present data in a variety of ways to help answer questions.
✓ Identify differences, similarities or changes related to simple scientific ideas and processes.
✓ Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</td>
<td>1</td><td>Rock Stars
Hook/context: Mr Crag wants to make a documentary for children on rocks and fossils called This Planet Rocks! They would like children to present the show and be the rock experts. Agree to help and begin to find out more about rocks by observing, drawing and describing 6 different types and learning their names.</td>
<td>A documentary about rocks, soils and fossils called ‘This Planet Rocks!’

End of unit quiz</td>
</tr>
<tr><td>2</td><td>Become Rock Detectives
The next part of the programme will need to explain to viewers how rocks are made. Discover the 3 different types of rock – sedimentary, igneous and metamorphic and explain these to the viewers. Conduct different tests to determine which kind of rock the samples are.</td></tr>
<tr><td>3</td><td>Rock Quest
Take iPads out into the local area (school ground, churchyard, parish playing field etc.) and get children to film any rocks they find. Use knowledge of the properties of rocks to determine why particular rocks were selected for different tasks and look for evidence of erosion.</td></tr>
<tr><td>4</td><td>Fabulous Fossils
Mr Crag needs you to become fossil experts. Discover the great 19th century fossil hunter Mary Anning’s contribution to science. Understand the process of fossil formation and be able to describe it in simple terms.</td></tr>
<tr><td>5</td><td>Let’s be Soil Detectives
Mr Crag needs you to become experts with some fascinating hands-on investigations to discover what soil is made of and whether all soil is the same. Investigate, discover and classify the different components of soil. Use soil samples for each child’s garden to gather evidence on how different soils can vary and suggest reasons for this.</td></tr>
<tr><td>6</td><td>Lights, Camera, Action!
Recap on all their previous learning and vocabulary by completing a Rock, Fossil and Soil quiz. Work as a team to present, film, direct and produce your own section for the pilot TV series This Planet Rocks.</td></tr>
<tr><td colspan="2">Biq Question Link</td><td colspan="3">Vision and Values Link</td></tr>
<tr><td colspan="2">What’s the difference between a human and a rock?</td><td colspan="3">How did Mary Anning show aspiration and endurance?</td></tr>
</table>

Big Question: What does it mean to be human?
Unit grid: Science – Fit for Success
Year A/Year B
Autumn/Spring/Summer

<table>
<tr><th>Prior Learning Links</th><th>Key NC Objectives</th><th colspan="2">Session overviews</th><th>Unit Outcomes</th></tr>
<tr>
<td>This unit should either follow or run alongside the DT unit on cooking.
KS1 Science:
• I identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.
• I describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</td>
<td rowspan="3">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.
✓ Identify that humans and some other animals have skeletons and muscles for support, protection and movement.
Working Scientifically
✓ Gather, record, classify and present data in a variety of ways to help answer questions.
✓ Record findings using simple scientific language, bar charts and tables.
✓ Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
✓ Identify differences, similarities or changes related to simple scientific ideas and processes.
✓ Use straightforward scientific evidence to answer questions or to support their findings-pattern seeking enquiry.
✓ Setup simple practical enquiries and comparative and fair tests.
✓ Make systematic and careful observations and, where appropriate, take accurate measurements using standard units.
✓ Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</td>
<td>1</td><td>Nutrition
Introduce the hook/context: a hockey team need fitness advice so the children are going to become their fitness advisors. Find out about human nutrition.</td>
<td rowspan="3">Tables and charts to display data

Healthy, balanced meal plans

Labelled skeletons

An investigation into the link between muscles and regular exercise.

An investigation into the link between breathing and muscles.

A presentation to advise a hockey player on how to have a healthier lifestyle and improve their fitness.

End of unit quiz</td>
</tr>
<tr>
<td>Key Vocabulary</td>
<td>2</td><td>What is a balanced diet?
Find out about different food groups, the nutrients they provide and the impact they have on the body. Plan some healthy, balanced meals for the hockey team. (LINK TO DT UNIT ON COOKING)</td>
</tr>
<tr>
<td>Fitness
Nutrition / Balanced diet
Carbohydrates (energy)
Proteins (growth)
Fruits and vegetables (vitamins and minerals, immune system)
Dairy (calcium)
Water/hydration
Fats and oils
Skeleton
Endoskeleton
Exoskeleton
Hydro-skeleton
Functions: Support / Structure / Movement (Joints) / Protection
Muscles: Contract / Relax
Voluntary/involuntary</td>
<td>3</td><td>Skeletons and Bones
The hockey team members have had some problems with injuries and backache. They need expert advice from their fitness coaches so you need to brush up on your knowledge of skeletons, bones and joints. Make a labelled skeleton. Find out about different types of skeletons and their pros/cons.</td>
</tr>
<tr>
<td colspan="2">Biq Question Link
How do humans stay fit and healthy?</td>
<td colspan="2">Vision and Values Link
How do we stay healthy so we can live life to the full?</td>
<td></td>
</tr>
<tr>
<td colspan="2"></td>
<td>2</td><td>Skeletons
Find out about different types of skeletons and their purposes. Label parts of the human skeleton.</td>
<td></td>
</tr>
<tr>
<td colspan="2"></td>
<td>3</td><td>Muscles
Investigate how muscles work and identify some of the muscles in the human muscular system.</td>
<td></td>
</tr>
<tr>
<td colspan="2"></td>
<td>4</td><td>Moving Muscles
Muscle strains have caused problems for the hockey players and some people experience muscle fatigue during matches. Can you help? Investigate the link between muscle strength and regular training and exercise.</td>
<td></td>
</tr>
<tr>
<td colspan="2"></td>
<td>5</td><td>A breath of fresh air
Some of the hockey players report feeling out of breath when running up and down the hockey pitch in training and in matches. Could it be that improved fitness would mean they get less puffed out? Learn how the heart and lungs get oxygen to the muscles where it is needed to make energy.
Plan and carry out an investigation in groups.</td>
<td></td>
</tr>
<tr>
<td colspan="2"></td>
<td>6</td><td>Health and Fitness Coaching Session
Create presentation for the hockey team based on everything learnt.</td>
<td></td>
</tr>
</table>

Big Question: How do we use...?
Unit grid: Sounds Spectacular!
Year A/Year B
Autumn/Spring/Summer

<table>
<tr><td>Prior Learning Links</td><td>Key NC Objectives</td><td colspan="2">Session overviews</td><td>Unit Outcomes</td></tr>
<tr><td>KS1 Programme of Study for Working Scientifically
Key Vocabulary
Key Vocabulary
Music, sound, noise, investigate, explain, vibration, vibrate, ears, hear, travel, air, water, solid, source, soundwaves, soundproof, medium, transmit, detect, energy, decibel, fair test, data, graph, loudness, volume, strength, rhythm, stronger, weaker, pitch, note, high, low, tune, instrument, change</td><td>Sound
✓ Identify how sounds are made, associating some of them with something vibrating.
✓ Find patterns between the volume of a sound and the strength of the vibrations that produced it.
✓ Recognise that vibrations from sounds travel through a medium to the ear.
✓ Recognise that sounds get fainter as the distance from the sound source increases.
✓ Find patterns between the pitch of a sound and features of the object that produced it.
Working Scientifically
✓ Ask relevant questions and use different types of scientific enquiries to answer them.
✓ Set up simple practical enquiries and comparative and fair tests.
✓ Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.
✓ Gather, record, classify and present data in a variety of ways to help answer questions.
✓ Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.
✓ Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
✓ Identify differences, similarities or changes related to simple scientific ideas and processes.
✓ Use straightforward scientific evidence to answer questions or to support findings.
✓ Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</td><td>1</td><td>Sound all around
Introduce hook/context: Dave, the leader of the new rhythm band is asking for our help as sound consultants. Investigate how different sounds are made.

Good vibrations challenge
Dave wants to rehearse in his garage but will the sound pass through solid objects like doors and walls and upset the neighbours? Investigate the nature of vibrations through touch and sight as well as hearing. Set up fair tests to investigate the transmission of sound through different materials.

I'm all ears!
The band now needs you to find out how the audience will hear the sound when the vibrations reach their ears. Consider different animal ears as sound detectors and design a class investigation to compare hearing with bare ears, a cupped hand around your ear or a cardboard animal ear.

Pump up the volume!
The band is trying to create a new piece of music that tells the story of a historic battle. Can you create a marching rhythm that gets louder and then gets quieter and fades away? Explore how you can vary the volume of a sound. Explain changes of volume/loudness in terms of energy and strength of vibration.

Pitch it high, pitch it low!
The band needs your help to find out how to make tuned instruments from everyday items. Explore how the pitch of a note can change by varying the length, size and tightness of the vibrating object. Make tuned instruments out of everyday objects.

Sounds like fun!
Create posters to teach others about sound.</td><td>An investigation into how different sounds can be made with everyday objects
An investigation into vibrations that you can see and touch as well as hear
An investigation into the transmission of sound through different materials
An investigation to compare different shaped ears
A class performance of a marching rhythm that gets louder and quieter and an explanation of the science behind it
Tuned instruments made from everyday objects
Posters to teach others about sound
End of unit quiz</td></tr>
<tr><td colspan="2">Biq Question Link</td><td colspan="3">Vision and Values Link</td></tr>
<tr><td colspan="2">How do we use our ears to hear? How do we use vibrations to make sounds?</td><td colspan="3">To promote diversity by raising awareness of the deaf community.</td></tr>
</table>

Big Question: How do we use...?
Unit grid: Science – A World of Living Things
Year A/Year B
Autumn/Spring /Summer

<table>
<tr>
<td>Prior Learning Links</td>
<td>Key NC Objectives</td>
<td colspan="2">Session overviews</td>
<td>Unit Outcomes</td>
</tr>
<tr>
<td>KS1 Science Curriculum
I identify and name a variety of common animals, including fish, amphibians, reptiles, birds and mammals.
I describe and compare the structure of a variety of common animals.
I explore and compare the differences between things that are living, dead, and things that have never been alive.
I identify and name a variety of plants and animals in their habitats, including micro-habitats.</td>
<td rowspan="3">Living things and their habitats
✓ Recognise that living things can be grouped in a variety of ways.
✓ Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.
Working Scientifically
✓ Ask relevant questions and use different types of scientific enquiries to answer them.
✓ Identify differences, similarities or changes related to simple scientific ideas and processes.
✓ Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment.
✓ Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.
✓ Gather, record, classify and present data in a variety of ways to help answer questions.
✓ Set up simple practical enquiries and comparative and fair tests.
✓ Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
✓ Use straightforward scientific evidence to answer questions or to support their findings.</td>
<td>1</td>
<td>Is it living?
Find out about the 7 life processes and create an exciting double page of lift-up flaps to explain each one. This will become the first page of your very own pop-up/interactive book.</td>
<td rowspan="8">An interactive book that explains all about our incredible world of living things.

End of unit quiz</td>
</tr>
<tr>
<td>Key Vocabulary</td>
<td>2</td>
<td>A Kingdom of Plants
Think about how living things can be grouped and discover that animals and plants are in different kingdoms. Research some amazing facts about plants for interactive books and illustrate the page with an eye-catching pop-up tree and garden.</td>
</tr>
<tr>
<td>Identify / Group / Sort
Classification keys
Living organisms
Life Processes (MRS GREN: Movement, Respiration, Senses, Growth, Reproduction, Excretion, Nutrition)
In/vertebrates
Mammals, birds, reptiles, amphibians, fish</td>
<td>3</td>
<td>Amazing Invertebrates
Begin to discover the mysterious world of invertebrates. Go on a bug hunt in local environment and identify creatures using a key. Make an interactive invertebrate turning wheel for book.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>WE ARE EXPLORERS: Either go on a trip to Colchester Zoo and take part in their classification workshop or go on a minibeast hunt in the local area and classify them.</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Fantastic Fish and Astounding Amphibians
Make a branching tree with drinking straws and labels. What groups can be found in the section called vertebrates? Find out more about fish and amphibians and illustrate facts with an eye-catching pop-up pond page for book.</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Brilliant Birds and Remarkable Reptiles
What is the difference between birds and reptiles? Discover their characteristic features. Why do birds need feathers? Set up an investigation to find out how feathers can help birds keep a constant body temperature. Create an exciting pop-up sorting page on the features of birds and reptiles.</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Magnificent Mammals
Design and create a pop-up/interactive page on mammals to complete book. First, do some research on their special features.</td>
</tr>
<tr>
<td colspan="2">Biq Question Link</td>
<td colspan="3">Vision and Values Link</td>
</tr>
<tr>
<td colspan="2">How do we use... classification keys?</td>
<td colspan="3">How can we be respectful to all living things and give back to our local area?</td>
</tr>
</table>

Big Question: What's so important about water?
Unit grid: Feast of Flowers, Fruits and Seeds
Year A/Year B
Autumn/Spring/Summer

<table>
<tr>
<td>Prior Learning Links</td>
<td>Key NC Objectives</td>
<td colspan="2">Session overviews</td>
<td>Unit Outcomes</td>
</tr>
<tr>
<td rowspan="2">KS1 Science:
I identify and name a variety of common and garden plants, including deciduous and evergreen trees.
I identify and describe the basic structure of a variety of common flowering plants, including trees.
I observe and describe how seeds and bulbs grow into mature plants.
I find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</td>
<td rowspan="2">Plants
✓ Explore the part that flowers play in the life cycle of flowering plants.
Working Scientifically
✓ Make systematic and careful observations.
✓ Record findings using simple scientific language, drawings and labelled diagrams.
✓ Identify differences, similarities or changes related to simple scientific ideas and processes.
✓ Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
✓ Use straightforward scientific evidence to answer questions or to support their findings.
✓ Ask relevant questions and use different types of scientific enquiries to answer them.
✓ Set up simple practical enquiries and comparative and fair tests.
✓ Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</td>
<td>1</td>
<td>The Power of Flowers
Observe a range of different flowers closely using magnifiers. Record observations using annotated drawings, paintings and notes. Create a model flower and begin to know and name the male and female parts within it.</td>
<td rowspan="7">Annotated botanical illustrations

Model flowers

A waggle dance

Detailed drawings of fruits

Explanation of plant reproduction

An investigation into wind dispersal using paper spinners.

A display or presentation of 'A Feast of Flowers, Fruits and Seeds'

End of unit quiz</td>
</tr>
<tr>
<td>2</td>
<td>All in a Flower
Learn more about the mysterious reproductive parts in the centre of flowers and how the stigmas of one flower are dried to make the most expensive and exotic spice in the world – saffron (local link to Saffron Walden). Rehearse the names and functions of the parts within a flower. Create colourful labelled 3D flower models.</td>
</tr>
<tr>
<td>Key Vocabulary</td>
<td>3</td>
<td>Operation Pollination
Understand the role of bees and other insects in the pollination and fertilization of flowers. Discover how bees communicate the location of a nectar source through a waggle dance.</td>
</tr>
<tr>
<td>Botany, botanist, botanical, petals, reproduction, male, female, stigma, style, stamens, seed, nectar, pollination, fertilisation, bee, pollen, waggle dance, honey, hive, attract, transfer, ovary, ovules, pollen grains, fruit, pod, parent plant, dispersal, germination, investigate, fair test, record, results</td>
<td>4</td>
<td>Fruits Galore!
Understand the process of how fruits develop from pollinated flowers. Explain how fertilization takes place and how this leads to the development of fruits and seeds. Make detailed drawings of sections through fruits. Cut up fruits for a shared class fruit salad.</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Gone with the Wind!
Classify fruits according to their similarities and ask questions about the variety of fruits. Investigate wind dispersal by setting up a fair test to compare the flight of different paper spinners.</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>What a Feast!
Recap on all knowledge and understanding of flowers, fruits and seeds in end of unit quiz. Prepare a display/presentation to show 'A Feast of Flowers, Fruits and Seeds'.</td>
</tr>
<tr>
<td colspan="2">Big Question Link</td>
<td colspan="3">Vision and Values Link</td>
</tr>
<tr>
<td colspan="2">What's so important about water for plants?</td>
<td colspan="3">Why is our vision on a tree? What might the parts of the tree represent?</td>
</tr>
</table>

Big Question: What's so important about water?
Unit grid: What's the Matter?
Year A/Year B
Autumn/Spring/Summer

<table>
<tr>
<td>Prior Learning Links</td>
<td>Key NC Objectives</td>
<td colspan="2">Session overviews</td>
<td>Unit Outcomes</td>
</tr>
<tr>
<td>KS1 Science:
distinguish between an object and the material from which it is made
describe the simple physical properties of a variety of everyday materials
compare and group together a variety of everyday materials on the basis of their simple physical properties.
find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</td>
<td rowspan="3">States of Matter
✓ Compare and group materials together, according to whether they are solids, liquids or gases.
✓ Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)
✓ Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.
Working Scientifically
✓ Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.
✓ Gather, record, classify and present data in a variety of ways to help answer questions.
✓ Ask relevant questions and use different types of scientific enquiries to answer them.
✓ Use straightforward scientific evidence to answer questions or to support their findings.
✓ Identify differences, similarities or changes related to simple scientific ideas and processes.
✓ Set up simple practical enquiries and comparative and fair tests.
✓ Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.
✓ Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
✓ Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</td>
<td>1</td>
<td>Is it solid or liquid?
Hook/context: Carla is the head curator at the Dartspring Museum. She wants to open a new section on states of matter and needs some help. Explore a number of different materials and classify them as solids or liquids. Discuss and decide what properties make a solid and a liquid.</td>
<td rowspan="8">Design and explain a series of practical activities to teach children in a museum about states of matter.

End of unit quiz</td>
</tr>
<tr>
<td>Key Vocabulary</td>
<td>2</td>
<td>Gas! Gas! Gas!
Actively investigate the nature of gases through a variety of hands-on tasks. Draw conclusions about the nature of gases and relate findings to scientific principles.</td>
</tr>
<tr>
<td>states of matter, material, solid, liquid, gas, natural, manmade, classify, molecule, atom, bonds, air, oxygen, nitrogen, carbon dioxide, argon, change, state, bromine, ice, freeze, melt, heat, energy, solidify, evaporation, condensation, condense, water vapour, invisible, particles, collection, precipitation, water cycle</td>
<td>3</td>
<td>Changing States
Carla wants to serve themed food and drink in the museum café that shows visitors how matter can change state. Record the temperature of water in a jug before and after the addition of ice. Play an active game to simulate the arrangement of particles in solids, liquids and gases. Observe and record the changes in state in a dessert of ice cream and chocolate sauce by making an annotated drawing (Yr3) or writing an explanation (Yr4).</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Operation Pollination
Understand the role of bees and other insects in the pollination and fertilization of flowers. Discover how bees communicate the location of a nectar source through a waggle dance.</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Explore Evaporation and Condensation
Observe water changing state through a practical demonstration and use the correct scientific terms for these changes. Set up a fair test in groups to investigate the factors affecting the speed of evaporation. Either draw up a table to record the results of their investigation (Yr 4) or explain how water changes state using given scientific vocabulary appropriately (Y3).</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>GEOGRAPHY: The Water Cycle
Understand and explain the water cycle using appropriate scientific vocabulary. Consider the impact of water waste on people around the world.</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>What's the Matter?
Assess knowledge and vocab with end of unit quiz. Carla has one last challenge – help the Dartspring Museum by designing an exciting activity that helps visitors use the knowledge and scientific words they have learnt at the museum.</td>
</tr>
<tr>
<td colspan="2">Big Question Link</td>
<td colspan="3">Vision and Values Link</td>
</tr>
<tr>
<td colspan="2">How does water change state?</td>
<td colspan="3">Learning how to give back to the community by not wasting water.</td>
</tr>
</table>

Big Question: Who's in control?
Unit grid: The Circle of Life
Year A/Year B
Autumn/Spring/Summer

<table>
<tr><th>Prior Learning Links</th><th>Key NC Objectives</th><th colspan="2">Session overviews</th><th>Unit Outcomes</th></tr>
<tr>
<td rowspan="3">KS1 Science:
• I 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 find out about and describe the basic needs of animals, including humans, for survival (water, food and air).</td>
<td rowspan="3">Animals, including humans:
✓ Describe the simple functions of the basic parts of the digestive system in humans
✓ Identify the different types of teeth in humans and their simple functions
✓ Construct and interpret a variety of food chains, identifying producers, predators and prey
Working Scientifically:
✓ Asking relevant questions and using different types of scientific enquiries to answer them
✓ Setting up simple practical enquiries, comparative and fair tests
✓ Identifying differences, similarities or changes related to simple scientific ideas and processes
✓ Making systematic and careful observations
✓ Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
✓ 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</td>
<td>1-2</td>
<td>The Digestive System
Use a model of the human digestive system to explore how we digest food. Write a story from the perspective of a piece of food, explaining what happens to it at each stage of the system.</td>
<td rowspan="3">A functioning model of the human digestive system using everyday items e.g. tights for intestines.

A story of the digestive system from the perspective of a piece of food.

A labelled model of teeth.

An explanation of how an animal's teeth are adapted to their diet.

A variety of food chains and food webs.</td>
</tr>
<tr>
<td>3-4</td>
<td>Teeth
Investigate different types of teeth and their functions. Find out how animals' teeth are adapted to their diets. Make models of teeth.</td>
</tr>
<tr>
<td>5-6</td>
<td>Food Chains
Interpret and construct a variety of food chains and webs. Use 'Peruvian Food Chain Jenga' or another model to explore what happens when a food chain collapses. Consider the 'circle of life' and how energy is transferred back into the food chain when something decays.</td>
</tr>
<tr>
<td>Key Vocabulary</td>
<td colspan="3" rowspan="2"></td>
</tr>
<tr>
<td>digest/ion, digestive system, organ, saliva, peristalsis, stomach (acid), oesophagus (gullet), intestines (bowels), colon, rectum, anus, faeces, liver, pancreas (insulin), gland, bile (duct), gallbladder, enzyme, villi, absorb, jaw, gums, canines, incisors, molars, premolars, bite / tear / grind / chew, enamel, bacteria, tooth decay, diet, herbivore, omnivore, carnivore, adaption, features, predator, prey, survival, food chain, food web, producer, consumer, energy, scavengers, decomposers, breakdown</td>
</tr>
<tr><td colspan="2">Big Question Link</td><td colspan="3">Vision and Values Link</td></tr>
<tr><td colspan="2">Who's in control of the circle of life?</td><td colspan="3">How does the circle of life allow us to live life in all its fullness?</td></tr>
</table>

Big Question: Who's in control?
Unit grid: Science – Greatly Green Growers
Year A/Year B
Autumn/Spring/Summer

<table>
<tr>
<td>Prior Learning Links</td>
<td>Key NC Objectives</td>
<td colspan="2">Session overviews</td>
<td>Unit Outcomes</td>
</tr>
<tr>
<td>KS1 Science
• 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.</td>
<td rowspan="2">Plants
✓ 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.
✓ Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.
Working Scientifically
✓ Ask relevant questions and use different types of scientific enquiries to answer them.
✓ Set up simple practical enquiries and comparative and fair tests.
✓ Make systematic and careful observations and, where appropriate, take accurate measurements using standard units.
✓ Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.
✓ Gather, record, classify and present data in a variety of ways to help answer questions.
✓ Identify differences, similarities or changes related to simple scientific ideas and processes.
✓ Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
✓ Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
✓ Use straightforward scientific evidence to answer questions or to support their findings.</td>
<td>1</td>
<td>Let's Investigate
Agree to help the Greatly Green Growers in their growing competition and set up an investigation to find out what plants need to grow strong and healthy.</td>
<td rowspan="6">Investigation to find out what plants need to grow strong and healthy, including record of measurements and observations

Investigation into the way in which water is transported within plants

Graphs and charts to present data from investigations

Explanation of findings and conclusions from investigations

End of unit quiz</td>
</tr>
<tr>
<td>Key Vocabulary</td>
<td>2</td>
<td>Roots, Shoots and So Much More!
Measure investigation seedlings to record their progress and study some whole plants at close range, making detailed drawings and scientific observations.</td>
</tr>
<tr>
<td>plants, growth, light, warmth, air, soil, water, investigate, seedlings, research, height, root, stem, leaves, flowers, petals, shoots, buds, fruits, seeds, classify, data logger, light level, temperature, wilting, yellowing, measure, requirement, record, data, table, line graph, bar graph, transported, results, food, growth, Photosynthesis, carbon dioxide, nutrients, healthy, chlorophyll, energy, sunshine, shade, leggy, weak, greenhouse</td>
<td>3</td>
<td>Fruit, Shoot, Leaf or Root?
The Greatly Green Growers need some help to decide what to plant. The judges have given them a chart with a list of categories that have strange names like vegetable flowers, stem vegetables and salad fruits. Classify food plants according to the part of the plant that is eaten. Continue to take measurements and notes from seedling investigation.</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Crucial Requirements!
Spot differences in the health of seedlings and begin to think about reasons. Investigate the way in which water is transported within plants.</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Data! Data! Data!
Gather all the data you can to give the Greatly Green Growers. Review the results of our investigations and begin to draw conclusions. Use scientific knowledge to explain findings.</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Growing for Success!
Recap on all their knowledge and understanding of plants and what they need to grow. Use quiz to assess. Use notes and data from investigations to draw conclusions and present findings.</td>
</tr>
<tr>
<td colspan="2">Big Question Link</td>
<td colspan="3">Vision and Values Link</td>
</tr>
<tr>
<td colspan="2">Who's in control of growing plants?</td>
<td colspan="3">How can you look after plants wisely?</td>
</tr>
</table>

Big Question: What lights up the world?
Unit grid: Science – Shining the Light
Year A/Year B
Autumn/Spring/Summer

<table>
<tr><td>Prior Learning Links</td><td>Key NC Objectives</td><td colspan="2">Session overviews</td><td>Unit Outcomes</td></tr>
<tr><td>KS1 Programme of Study for Working Scientifically</td><td rowspan="2">Light
✓ Recognise that they need light in order to see things and that dark is the absence of light.
✓ Notice that light is reflected from surfaces.
✓ Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.
✓ Recognise that shadows are formed when the light from a light source is blocked by an opaque object.
✓ Find patterns in the way that the size of shadows change
Working Scientifically
✓ Ask relevant questions and using different types of scientific enquiries to answer them.
✓ Making systematic and careful observations and, where appropriate, take accurate measurements using standard units.
✓ Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
✓ Gather, record, classify and present data in a variety of ways to help answer questions.
✓ Identify differences, similarities or changes related to simple scientific ideas and processes.
✓ Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
✓ Use straightforward scientific evidence to answer questions or to support their findings.
✓ Set up simple practical enquiries and comparative and fair tests.
✓ Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.</td><td>1</td><td>In the dark
Hook/context: agree to help solve the curious case of the stolen diamond earrings. Actively investigate the nature of darkness, light and sight with a torch, a cardboard box and pencil holes. Use their findings to draw conclusions on how light travels and our dependence on light to see. Consider how these findings explain what the witnesses at the robbery saw.</td><td rowspan="7">A series of investigations involving light and shadows to solve the case of the stolen diamond earrings.

End of unit quiz</td></tr>
<tr><td>Key Vocabulary</td><td>2</td><td>Lights and reflectors
Predict and then investigate which colours show up best and least in the dark. Investigate the effect of shining a torch on various objects including reflective materials.</td></tr>
<tr><td rowspan="5">Light, beam, darkness, illuminate, straight lines, investigate, source, reflector, reflect, predict, fair test, reflective materials, mirror, image, angle, line of reflection, concave, convex, symmetrical, transparent, translucent, opaque, shadow, block, measure, distance, plot, graph, data, results, rainbow, white light, spectrum, prism, refraction, dispersion</td><td>3</td><td>Mirrors and reflections
Investigate how light reflects off mirrors and other shiny surfaces to give a clear reflection. Investigate how writing is reflected back to front and how back to front writing looks normal when viewed through a mirror. Experiment with angles of reflection using strings attached to a mirror</td></tr>
<tr><td>4</td><td>In the shadows
Investigate how objects made from different materials cast shadows. Understand how a shadow changes depending on the object's orientation.</td></tr>
<tr><td>5</td><td>Big shadow little shadow
Actively investigate how shadows change as the light source is moved. Take measurements and look for patterns in data to answer scientific questions.</td></tr>
<tr><td>6</td><td>Solving the case!
Find out how rainbows are formed. Take part in a quiz to assess knowledge on light. Review all the evidence to solve the crime.</td></tr>
<tr><td></td><td></td></tr>
<tr><td colspan="2">Big Question Link</td><td colspan="3">Vision and Values Link</td></tr>
<tr><td colspan="2">What lights up the world, scientifically?</td><td colspan="3">How can our school values light up the world?</td></tr>
</table>

Big Question: What lights up the world?
Unit grid: Science – Electric Personalities
Year A/Year B
Autumn/Spring/Summer

<table>
<tr><td>Prior Learning Links</td><td>Key NC Objectives</td><td colspan="2">Session overviews</td><td>Unit Outcomes</td></tr>
<tr><td>KS1 Programme of Study for Working Scientifically</td><td rowspan="3">Electricity
✓ Identify common appliances that run on electricity.
✓ Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.
✓ Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.
✓ Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
✓ Recognise some common conductors and insulators, and associate metals with being good conductors
Working Scientifically
✓ Asking relevant questions and using different types of scientific enquiries to answer them.
✓ Identifying differences, similarities or changes related to simple scientific ideas and processes.
✓ Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
✓ Using straightforward scientific evidence to answer questions or to support their findings.
✓ Setting up simple practical enquiries, comparative and fair test
✓ Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
✓ Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
✓ Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</td><td>1</td><td>It’s Electric
Explore a variety of electrical items and begin to ask questions, look for similarities and differences and form ideas and theories. Learn some basic scientific facts and vocabulary about electricity as an energy source, including some ways it can be generated and the potential dangers.</td><td rowspan="7">Design and make an ‘electric personality’ (electrical model of a robot, person or creature) using a series circuit.

End of unit quiz</td></tr>
<tr><td>Key Vocabulary</td><td>2</td><td>Crocodiles, Cells and Circuits
Explore how electrical components can be arranged to make a bulb light up and draw conclusions. Make predictions and test them out.</td></tr>
<tr><td>Electricity, cell, battery, plug, mains, cable, appliance, device, connection, power, danger, safety, circuit, wire, lead, crocodile clip, bulb, bulb holder, buzzer, energy, flow, current, switch, motor, component, conductor, insulator, disconnect, pressure, design, test, adapt, modify</td><td>3</td><td>Conductors and Insulators
Discover that some materials allow electricity to flow through them (electrical conductors) and others do not (electrical insulators). Relate this to switches. Test materials for conduction, record findings and draw conclusions.</td></tr>
<tr><td></td><td>4</td><td>Time to Design!
Plan a working electrical model (an ‘Electric Personality’) and build the circuit required. Understand the difference between an on/off switch and a pressure switch and build one of these into their circuit. Draw their circuit.</td></tr>
<tr><td></td><td>5</td><td>All Together Now!
Construct their models and revise knowledge learnt.</td></tr>
<tr><td></td><td>6</td><td>Finishing Touches
Test, evaluate and make improvements to models. Do end of unit quiz.</td></tr>
<tr><td colspan="2">Big Question Link</td><td colspan="3">Vision and Values Link</td></tr>
<tr><td colspan="2">How does electricity light up the world?</td><td colspan="3">How can we generate and use electricity wisely?</td></tr>
</table>

Big Question: What is stronger – people or their environment?
Unit grid: Science – Magnetic Fun and Games
Year A/Year B
Autumn/Spring/Summer

<table>
<tr><td>Prior Learning Links</td><td>Key NC Objectives</td><td colspan="2">Session overviews</td><td>Unit Outcomes</td></tr>
<tr><td rowspan="4">KS1 Science
• distinguish between an object and the material from which it is made
• describe the simple physical properties of a variety of everyday materials
• compare and group together a variety of everyday materials on the basis of their simple physical properties
• identify and compare the suitability of a variety of everyday materials</td><td rowspan="6">Forces and magnets
✓ Compare how things move on different surfaces
✓ Notice that some forces need contact between two objects, but magnetic forces can act at a distance
✓ Observe how magnets attract or repel each other and attract some materials and not others
✓ Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials
✓ Describe magnets as having two poles
✓ Predict whether two magnets will attract or repel each other, depending on which poles are facing
Working Scientifically
✓ Set up simple practical enquiries and comparative and fair tests.
✓ Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment.
✓ Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
✓ Ask relevant questions and use different types of scientific enquiries to answer them.
✓ Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
✓ Gather, record, classify and present data in a variety of ways to help answer questions.
✓ Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
✓ Use straightforward scientific evidence to answer questions or to support their findings.
✓ Identify differences, similarities or changes related to simple scientific ideas and processes.</td><td>1</td><td>All on the surface
Hook/context: Play and Learn (P&L) Toys make toys and games that are fun and great for learning. They have asked you to help them design and test some new products that work using forces and magnetism. Agree to help Ms Pullman from P & L Toys to compare the way vehicles move on different surfaces. Explore all the different ways forces can act on a variety of everyday objects. Classify each action as either a push, a pull or both. Conduct a fair test to compare the movement of vehicles on different surfaces.</td><td rowspan="7">A series of investigations to explore forces and magnetism

Groups create an educational toy or game that works using magnetism

End of unit quiz</td></tr>
<tr><td>Key Vocabulary</td><td>2</td><td>Forces to be reckoned with!
Classify forces as either pushes or pulls and understand that whilst some need contact, others do not. Investigate the force needed to pull an object carrying different weights, then plot on a bar graph.</td></tr>
<tr><td>Key Vocabulary
Force, push, pull, prediction, fair test, investigate, measure, friction, twist, gravity, magnetism, contact, Newton, force meter, plot, magnet, magnetic, attract, attraction, question, strength, fair test, investigation, non-magnetic, theory, metal, iron, steel, repel, poles, north, south, repulsion</td><td>3</td><td>A question of magnetism
Explore magnetism and generate scientific questions that can be investigated. Plan and carry out a fair test. Interpret results and draw conclusions.</td></tr>
<tr><td>4</td><td>Attractive materials
Encourage theories and predictions on which items will be magnetic. Turn their theories into questions that can be answered through scientific enquiry. Methodically test, classify and sort different items/ materials and thus raise more questions to consider. Record findings and report back on them to the class.</td></tr>
<tr><td>5</td><td>Poles apart
Explore how magnets behave towards one another and form theories to try to explain findings. Learn that magnets have 2 poles and that same poles repel whilst opposite poles attract.</td></tr>
<tr><td>6</td><td>Fun and games
Work in a group to devise and create an educational toy or game that works using magnetism. Do the end of unit quiz.</td></tr>
<tr><td colspan="2">Big Question Link</td><td colspan="3">Vision and Values Link</td></tr>
<tr><td colspan="2">What is stronger – people or magnets?</td><td colspan="3">To demonstrate endurance when carrying out scientific investigations to completion.</td></tr>
</table>

Big Question: What is stronger – people or their environment?
Unit grid: Science – Habitat Helpers
Year A/Year B
Autumn/Spring/Summer

<table>
<tr>
<td>Prior Learning Links</td>
<td>Key NC Objectives</td>
<td colspan="2">Session overviews</td>
<td>Unit Outcomes</td>
</tr>
<tr>
<td>KS1 Science
• 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</td>
<td rowspan="2">Living things and their habitats
✓ Recognise that environments can change and that this can sometimes pose dangers to living things.
Working Scientifically
✓ Make systematic and careful observations and, where appropriate, take accurate measurements.
✓ Gather, record, classify and present data in a variety of ways to help answer questions.
✓ Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
✓ Identify differences, similarities or changes related to simple scientific ideas and processes.
✓ Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables
✓ Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
✓ Set up simple practical enquiries and comparative and fair tests.
✓ Use straightforward scientific evidence to answer questions or to support their findings.</td>
<td>1</td>
<td>What is a habitat?
Discover that wildlife can be affected by human activity. Understand the meaning of key scientific words like habitat, ecosystem, survey and evidence. Undertake a habitat survey in the local environment. Review the findings of their survey and consider the interdependence of the living things that make up that particular ecosystem.</td>
<td rowspan="6">Survey of local environment

Poster to show how to reduce carbon dioxide production

LINK TO ENGLISH OUTCOME:
Saving Species Report

Educational display for Maggie’s Museum about habitat conservation and protecting endangered wildlife

End of unit quiz</td>
</tr>
<tr>
<td>Key Vocabulary
Environment, habitat, ecosystem, pollution, climate change, human activity, survey, evidence, data, adapted, adaptation, depend, survival, natural, manmade, changes, global warming, greenhouse gases, carbon dioxide, temperature, waste, landfill, incinerator, reduce, reuse, recycle, plastic, break down, material, deforestation, sustainable, unsustainable, population, species, endangered, threatened, erosion</td>
<td>2</td>
<td>Perfectly adapted
Understand that animals and plants are adapted to live in their own habitat. Classify habitat changes as natural or caused by humans.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Climate change
Understand what is meant by the term Climate Change and what is causing it. Set up a fair test to record the effect of a greenhouse on temperature. Make a poster to show how we can reduce the amount of carbon dioxide we produce.</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>What a waste!
Understand that the things humans throw away can have a very damaging effect on habitats. Classify and record waste items according to materials and their capacity to be reduced, reused and recycled.</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Disappearing habitats
Discover that some habitats are lost because humans use the land for another purpose. Research animals endangered by loss of habitat and present findings to the class.</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>All the fun of the fair!
Take part in end of unit quiz. Create an educational display for Maggie’s Museum on the theme of habitat conservation and protection of endangered wildlife. Attempt to persuade others to make better environmental choices by presenting scientific arguments backed up with evidence.</td>
</tr>
<tr>
<td colspan="2">Big Question Link</td>
<td colspan="3">Vision and Values Link</td>
</tr>
<tr>
<td colspan="2">What has more impact on habitats – people or natural changes?</td>
<td colspan="3">Give back to the community by encouraging people to look after the environment.</td>
</tr>
</table>

Upper Key Stage 2 (Years 5 and 6)

Big Question Link: How do you live?
Unit grid: Science: Survival of the fittest
Year A/Year B
Autumn/Spring/Summer

<table>
<tr>
<td>Prior Learning Links</td>
<td rowspan="3">Key NC Objectives</td>
<td colspan="2">Session overviews</td>
<td>Unit Outcomes</td>
</tr>
<tr>
<td>Y3&4
A World of living things
Feast of flowers, fruits and seeds
Circle of life</td>
<td rowspan="2">1</td>
<td rowspan="2">Play Inheritance Detectives
Play inheritance detective and identify inherited and environmental characteristics. Score survival points by identifying examples of variation through the creation of dog Top Trumps™ cards.</td>
<td rowspan="8">God top trump cards
Key scientist presentation
Cladogram
Just so story</td>
</tr>
<tr>
<td rowspan="7">Content
i. recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago
ii. recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
iii. identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution

Working scientifically
i. planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
ii. taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
iii. recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
iv. using test results to make predictions to set up further comparative and fair tests
v. 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
vi. identifying scientific evidence that has been used to support or refute ideas or arguments</td>
<td>2</td>
<td>Mutations, Adaptations and Survival
Take a look at mutations and how adaptation can prove useful in the real game of survival! Meet the man behind the theory of natural selection and play the variation game.</td>
</tr>
<tr>
<td>Key vocabulary</td>
<td>3</td>
<td>Extreme Survival and Adaptations
Play ‘survivor’ to see which creatures will survive in a range of environments and biomes. Can you score more survival points through your own living thing ‘survivor’ designs?</td>
</tr>
<tr>
<td>Offspring
Characteristics
Inherit
Inheritance
Environmental variation
Cladogram
Natural selection
Suited
Suitable
Evolution
Fossils
Environment
Adaptation
Theory
Opinion
Vary</td>
<td>4</td>
<td>Research the Evolutionary Pioneers!
Meet Darwin, Anning and Wallace - the evolutionary dream team - and find out the scientific importance of their work and have a go at proving their theories. Play ‘fossil, what if’ to top up your survivor score.</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Fossils and Evolutionary Trees
Have you ever wondered how the humble biscuit has evolved over the past 100 years? Well, this is your chance! Create a biscuit cladogram and use your evolutionary expertise in the exploration of bird flight and animal cladograms.</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>The Traditional Tale of the Giraffe’s Neck
How did the giraffe get a long neck and why does camel have a hump? Read some traditional folk tales to explain these features then find out the evolutionary facts behind the myths and write your own fact-based versions. Add up your survivor score - will you make it onto the leaders’ board?</td>
</tr>
<tr>
<td>Biq Question Link</td>
<td colspan="3">Vision and Values Link</td>
<td></td>
</tr>
<tr>
<td>How do our genes affect how we live?</td>
<td colspan="3">Promoting acceptance through an understanding of the part evolution and inheritance plays</td>
<td></td>
</tr>
</table>

Big Question Link: How do you live?
Unit grid: Science: The Human Species
Year A/Year B
Autumn/Spring/Summer

<table>
<tr>
<td colspan="4">Prior Learning Links</td>
<td rowspan="3">Key NC Objectives</td>
<td colspan="2">Session overviews</td>
<td>Unit Outcomes</td>
</tr>
<tr>
<td colspan="4">Y1&2
Amazing me
Y3&4
The circle of life
Y5&6
Survival of the fittest</td>
<td rowspan="2">1</td>
<td rowspan="2">Development and growth: from foetus to child
Explore gestation periods, foetal development and growth patterns, and create a visual display of findings.</td>
<td rowspan="2">‘Museum Exhibition’ to be displayed at Maggie’s Museum</td>
</tr>
<tr>
<td colspan="4">Key Vocabulary</td>
<td rowspan="2">2</td>
<td rowspan="2">Growth and Changes: adolescence & puberty
Create a Q&A section that covers all the issues raised by puberty as well as a Venn diagram of key changes</td>
</tr>
<tr>
<td>Causal relationships
Support/refute
Gestation
Life cycle
Sperm
Egg
Foetus
Development
Medicine
Alcohol
Analgesic
Hallucinogen
Capillaries
Heart
Circulatory system
Nutrients</td>
<td>Child
Change
Adolescence
Adolescent
Death
Puberty
Life cycle
Teenage
Timeline
Reproduction
Diet
Aging/old age
Exercise
Elderly
Lifestyle
Adult
Health</td>
<td>Disease
Blood
Blood vessel
Arteries
Veins
Pump
Oxygen
Carbon dioxide
Circulation
Addiction
Stimulant
Depressant
Cigarette
Water
Growth
Drugs</td>
<td rowspan="4">Content
i. describe changes as humans develop to old age
ii. identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood
iii. recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function
iv. describe the ways in which nutrients and water are transported within animals, including humans
Working scientifically
i. planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
ii. taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
iii. recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and graphs
iv. using test results to make predictions to set up further comparative and fair tests
v. reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms
vi. identifying scientific evidence that has been used to support or refute ideas or arguments</td>
<td>3</td>
<td>Growth and Change: adults, old age and timelines
Research and create a photographic section, and create a ‘humans timeline’ showing the key milestones in a human life and how they impact on the body.</td>
<td rowspan="4"></td>
</tr>
<tr>
<td>4</td>
<td>A Healthy Body
Discover the true impact (both visible and hidden) of diet, exercise, lifestyle, drugs and alcohol on the human body. Explore truths and myths and create a TV public service ‘advert’ that explores this impact and how to keep our bodies healthy.</td>
</tr>
<tr>
<td>5</td>
<td>Blood & the Heart
Explore the composition of blood and the role it has to play in the human body and the structure and function of the human heart. Create heart sculptures.. Discover how and why heart beat changes across activity and compare human heartbeats other animals.</td>
</tr>
<tr>
<td>6</td>
<td>Transport Systems
Explore the journey of platelets on their journey around the body. Share discoveries as a dramatic re-enactment. Explore how nutrients and water are transported throughout the body in blood and the processes used to pass in and out of blood through capillary walls.</td>
</tr>
<tr>
<td colspan="4">Biq Question Link</td>
<td colspan="3">Vision and Values Link</td>
<td rowspan="2"></td>
</tr>
<tr>
<td colspan="4">How do we live healthily?</td>
<td colspan="3">Being wise in decisions around living healthily.</td>
</tr>
</table>

Big Question Link: What do you believe?
Unit grid: Illustrating Life cycles
Year A/Year B
Autumn /Spring /Summer

<table>
<tr>
<td>Prior Learning Links</td>
<td>Key NC Objectives</td>
<td colspan="2">Session overviews</td>
<td>Unit Outcomes</td>
</tr>
<tr>
<td>Y1&2
Art and nature
Growing things
Y3&4
Feast of flowers, fruits and seeds
Greatly green flowers
The circle of life</td>
<td rowspan="2"><u>Working scientifically</u>
i. planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary ii. taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate iii. recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs iv. using test results to make predictions to set up further comparative and fair tests v. 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 vi. identifying scientific evidence that has been used to support or refute ideas or arguments</td>
<td>1</td>
<td>Flowering Plant Reproduction
Dissect a flower and explore the fascinating world of flowering plant reproduction. Capture the sexual structures of a flower and its life cycle in the form of a botanical drawing</td>
<td rowspan="7">Watercolour illustrations
Labelled dissections
Annotated lifecycle diagrams
Annotated scientific diagrams
Botanical drawings</td>
</tr>
<tr>
<td>Key Vocabulary

Gamete
Stamen
stigma
carpel
pistil
pollination
germination
flowering
sexual reproductio nlife cycle
seed
pollen
anther
filament
style
ovary
botanical
tubers
asexual

non-flowering
propagation
artificial
Life cycle
asexual & sexual reproductio nmetamorp hosis
amphibian
insect
Mammal
bird
sexual reproductio n gestation
foetus
sperm
egg

uterus
chick
egg
baby
adult
Natural scientist
naturalist
observation
conservatione ndangered
illustration
dissection
Corm
bulb
spores cutting
fern
moss
liverwort</td>
<td>2</td>
<td>Ways that Plants Reproduce Asexually
Investigate ways that plants reproduce asexually and continue to hone your botanical illustration skills. Have a go at growing new plants from a range of parent plant parts – you may be surprised at what will flourish!</td>
</tr>
<tr>
<td>3</td>
<td>Life Cycles: Insect and Amphibian
Watch some online footage of insect and amphibian life cycles to help create your own life cycle illustrations for your book. Set up an in-school habitat for your choice of insect and amphibian so that you can observe them over time.</td>
</tr>
<tr>
<td>4</td>
<td>Mammalian and Bird Life Cycles
Research mammalian and bird lifecycles for two of your local species and transform what you discover into beautiful natural history illustrations. Hone your research skills as you explore sexual reproduction in animals.</td>
</tr>
<tr>
<td>5</td>
<td>Contrasting Life Cycles from Around the World
Time to do some travelling! You will need to find some interesting and quirky animals and plants from around the world and explore their life cycles online. Make sure you find plenty of images so that you can create an informative but artistic representation of their life cycles in the form of scientific illustrations.</td>
</tr>
<tr>
<td>6</td>
<td>Becoming Natural Scientists
Recognise your role as natural scientists during this block and hone your skills further today. Learn about some significant naturalists and animal behaviourists and create a book section that explores the importance and impact of their work within the scientific community.</td>
</tr>
<tr>
<td colspan="3">Biq Question Link</td>
<td colspan="2">Vision and Values Link</td>
</tr>
<tr>
<td colspan="3">Scientific answers to how we came to be.</td>
<td colspan="2">Respect for living things</td>
</tr>
</table>

Big Question Link: What do you believe?
Unit grid: Material consultants
Year A/Year B
Autumn /Spring /Summer

<table>
<tr><th>Prior Learning Links</th><th>Key NC Objectives</th><th colspan="2">Session overviews</th><th>Unit Outcomes</th></tr>
<tr>
<td rowspan="3">setting up simple practical enquiries, comparative and fair tests
making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment,
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</td>
<td rowspan="5">i. compare and group together everyday materials on the basis of their properties, including their hardness, transparency, and conductivity (electrical and thermal)
ii. give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic

Working scientifically
i. planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
ii. taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
iii. recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
iv. using test results to make predictions to set up further comparative and fair tests
v. 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
vi. identifying scientific evidence that has been used to support or refute ideas or arguments</td>
<td>1</td>
<td>Recycling Challenge (comparing and grouping materials)
Your local recycling centre has sent you a letter asking for help sorting the materials they receive on a daily basis according to possible uses – make a list of suggested uses and create a properties tick grid for quick reference.</td>
<td rowspan="7">Recommendations to clients</td>
</tr>
<tr>
<td>2</td>
<td>Hot Porridge and Frozen Yogurt (thermal conductivity)
Frozen yogurt needs to stay cold, and porridge needs to stay hot. Can you investigate the insulating properties of a range of materials and make recommendations to one of your readers trying to enjoy breakfast on their morning commute?</td>
</tr>
<tr>
<td>3</td>
<td>Session 3
Packaging Problems (strength, transparency and absorption)
Since raising money through snack sales, Class 2 has gone from strength to strength. However the children want to know which are the best materials for different forms of packaging and storage jars.</td>
</tr>
<tr>
<td>Key Vocabulary</td>
<td>4</td>
<td>Café Challenge
A local cafe wants tables that are waterproof and light weight but that don’t scratch easily. Can you help?</td>
</tr>
<tr>
<td rowspan="2">opinion/fact, comparative, fair test, scatter graph, material & property names, enquiry, use, reasoning, insulator, conductor, thermal, prediction, accuracy, line graph, variables, accuracy, precision, scatter graph, comparable, strength, transparent, opaque, absorption, variables, scatter graph, strength, hardness, porous/non-porous, bar graph, electrical conductor, electrical insulator
comparative, limitations, scientific diagram, acoustic absorption</td>
<td>5</td>
<td>Toy Shop Challenge (electrical conductivity)
Innovation and learning are always key at Topps Toys – the new owner wants recommendations for materials that conduct electricity and those that won’t for a new electrical game.</td>
</tr>
<tr>
<td>6</td>
<td>Snoring Challenge (soundproofing)
One local resident wants some ear defenders to help her sleep through her partner’s snoring. Can you test out a range of materials that combine comfort and style with soundproofing?</td>
</tr>
<tr><td colspan="2">Biq Question Link</td><td colspan="3">Vision and Values Link</td></tr>
<tr><td colspan="2">Do you believe we recycle enough?</td><td colspan="3">Be respectful to our environment</td></tr>
</table>

Big Question Link: ¿Qué hizo que los mayas fueran increíbles?
Unit grid: The classification code
Year A/Year B
Autumn /Spring /Summer

<table>
<tr><th>Prior Learning Links</th><th>Key NC Objectives</th><th colspan="2">Session overviews</th><th>Unit Outcomes</th></tr>
<tr><td rowspan="2">setting up simple practical enquiries, comparative and fair tests
making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, 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</td><td rowspan="4">. describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals
ii. give reasons for classifying plants and animals based on specific characteristics
Working scientifically
i. recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
ii. 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
iii. identifying scientific evidence that has been used to support or refute ideas or arguments</td><td>1</td><td>Meeting Linnaeus
Meet the father of classification and have a look at his classic system still used today. Explore classification routes and make your own game of classification ‘pairs’.</td><td rowspan="7">Botanical drawings
New creatures</td></tr>
<tr><td>2</td><td>Spot the Odd One Out
Can you win at ‘odd one out’? Have a go, and then try your hand at using branching classification keys to see if you can unlock the subtle differences between certain plants and animals.</td></tr>
<tr><td rowspan="2">Key Vocabulary</td><td>3</td><td>Sweet Classification System
Develop your own feature-led sweets classification system then apply your classification knowledge and skills as you start creating more challenging zoological classification keys.</td></tr>
<tr><td>4</td><td>Back Yard Classification
Collect the next bit of the ‘classification code’ as you begin to put your classification skills to work: collect, record, classify and name some of the botanical beauties found on your doorstep.</td></tr>
<tr><td>Classification, kingdom, phylum, class, order, family, genus, species, Linnaeus, opinion, characteristics, classification key, similarities, differences, group, observations, support, refute, branching classification key, botanical illustration, micro-organism, organism, taxonomy</td><td>5</td><td>Unusual Creatures
The world is awash with unusual creatures, plants and organisms that need to be classified. Your studying is entering its advanced stages now and you need to show application of your skills.</td></tr>
<tr><td>6</td><td>New Creature Features: Classification
This is your opportunity to apply your skills and further develop your drawing skills to complement your classification skills. Earn a bonus clue as you design your own ‘new’ creatures to fit into the Animalia classification system.</td></tr>
<tr><td colspan="2">Biq Question Link</td><td colspan="3">Vision and Values Link</td></tr>
<tr><td colspan="2">What creature did you create?</td><td colspan="3">Are we as wise as Linneus?</td></tr>
</table>

Big Question Link: ¿Qué hizo que los mayas fueran increíbles?
Unit grid: Medical manoeuvres
Year A/Year B
Autumn /Spring /Summer

Prior Learning Links	Key NC Objectives	Session overviews		Unit Outcomes
All prior units Key Vocabulary life cycle, metamorphosis (complete/incomplete), egg, instar, larvae, pupae, disease, medicine, drug, environmental factors, side effects, property, prediction, accuracy, comparative, fair test, enquiry, Causal relationships, support/refute, life cycle, development, child, adolescence, puberty, reproduction, elderly, adult, growth, change, timeline, diet, exercise, lifestyle, health, drugs, addiction, disease, blood, blood vessels, arteries, veins, capillaries, heart, pump, oxygen, carbon dioxide, circulation, circulatory system, nutrients, water, pump, drugs, diet, lifestyle, exercise, shadow, light source, beam, ray diagram, dilation, Electricity, electrical circuit, complete circuit, circuit symbol, components, cell, battery, positive/negative, wire, crocodile clip, bulb, bright/dim, switch, buzzer, volume, motor, voltage, current, conductor, insulator	**Content** i. describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird ii. describe the life process of reproduction in some plants and animals iii. 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 iv. give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic v. describe the changes as humans develop to old age vi. identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood vii. recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function viii. describe the ways in which nutrients and water are transported within animals, including humans ix. associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit x. 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 xi. use recognised symbols when representing a simple circuit in a diagram xii. use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye xiii. explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes xiv. use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them **Working scientifically** i. planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary ii. taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate iii. recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs iv. using test results to make predictions to set up further comparative and fair tests v. 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 vi. identifying scientific evidence that has been used to support or refute ideas or arguments	1	**Mosquitoes and Medicine** Explore how understanding the life cycle of insects can help science treat, cure and even eradicate diseases. Take a look at the drugs used to treat malaria and create a fabulous travel clinic poster about malaria and mosquitos.	Poster Leaflet Webpage Podcast Storage system New equipment design
		2	**Medical Materials** A hospital has sent in a series of requests for materials recommendations. Set up a series of tests to see which materials would be best for the job and explore the medical applications of some very modern materials.	
		3	**Welcome to the World!** A hospital is keen to offer information leaflets for 'life' as a human. Can you take on the role of editor-in-chief and create an informative and guiding leaflet or webpage/site that will help people understand how they grow and change as well as how to stay healthy?	
		4	**The Well-oiled Human Machine** Have a go at creating a podcast for patients of GP surgeries, explaining how the circulatory system works and how to ensure it stays healthy and works like a well-oiled machine.	
		5	**Illumination Station** Explore the level of illumination for a range of lights used in hospitals and for medical procedures. Identify why they are fit for purpose by suggesting the relationship between the light sources and vision. Can you use your knowledge of shadows to create storage systems for surgical equipment?	
		6	**Medical Circuits** Can you match the circuit diagrams to a range of electrical medical equipment? Explore the key features of the circuits and why they are important, then design your own piece of medical equipment or machinery.	
Biq Question Link		Vision and Values Link		
What an amazing scientist you are.		Respect the knowledge you have		

Big Question Link: Evacuee or Refugee?
Unit grid: Science: Electric Art
Year A/Year B
Autumn /Spring /Summer

<table>
<tr><td>Prior Learning Links</td><td>Key NC Objectives</td><td colspan="2">Session overviews</td><td>Unit Outcomes</td></tr>
<tr><td>Y3&4
Electric personalities</td><td rowspan="6">Content
i. associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit ii. 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 iii. use recognised symbols when representing a simple circuit in a diagram

Working Scientifically
i. planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary ii. taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate iii. recording results using scientific diagrams and labels iv. using test results to make predictions to set up further comparative and fair tests v. 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 vi. identifying scientific evidence that has been used to support or refute ideas or arguments</td><td>1</td><td>Plan and carry out a series of age appropriate electrical circuit investigations. Create success criteria for their electric art challenge</td><td rowspan="8">An electric art installation</td></tr>
<tr><td>Key Vocabulary</td><td>2</td><td>Create annotated and exploded drawings/diagrams of their design ideas. Carry out a series of enquiries that explore the effects of voltage on simple electrical circuit components, recording results in graph form</td></tr>
<tr><td>Electricity, electrical circuit, complete circuit, circuit symbol, components, cell, battery, positive/negative, connect/connection, loose connection, wire, crocodile clip, bulb, bright/dim, switch, buzzer, volume, motor, fast(er)/slow(er), voltage, current, conductor, insulator, metal/non-metal, enquiry question, investigation, findings ,circuit diagram, ,cell, battery, short circuit, resistance, scatter diagram, investigation, causal relationship, Circuit diagram & symbol, terminal, voltage, current, voltage, current, resistance</td><td>3</td><td>Draw a circuit diagram with a summary of the brightness, volume and speed of components within it. Use feedback to improve their design. Annotate circuit diagrams with explanations of how components work and the role of resistance in this</td></tr>
<tr><td></td><td>4</td><td>Investigate and develop a dimmer switch. Identify materials and tools for their design</td></tr>
<tr><td></td><td>5</td><td>Create a working electrical prototype and identify possible improvements. Effectively use appropriate materials, tools and equipment. Explain clearly how components work, including resistance. Explain clearly the effect that different voltages have on components in a circuit</td></tr>
<tr><td></td><td>6</td><td>Demonstrate how their electric art works and link their circuits to their diagrams. Link findings from previous electrical investigations to their circuits. Outline how their design meets all success criteria. · Demonstrate electrical knowledge and skills through presentation</td></tr>
<tr><td colspan="2">Biq Question Link</td><td colspan="2">Vision and Values Link</td></tr>
<tr><td colspan="2">Is there a light lit for evacuees and refugees?</td><td colspan="2">Aspire through art.</td></tr>
</table>

Big Question Link: Evacuee or Refugee?
Unit grid: Science: Theatre Lighting Tech
Year A/Year B
Autumn /Spring /Summer

<table>
<tr><td>Prior Learning Links</td><td>Key NC Objectives</td><td colspan="2">Session overviews</td><td>Unit Outcomes</td></tr>
<tr><td>Y3&4
Shining the light</td><td rowspan="5">Content i. recognise that light appears to travel in straight lines ii. use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye iii. explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes iv. use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them
Working scientifically i. planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary ii. taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate iii. recording results using scientific diagrams and labels, tables, scatter graphs, bar and line graphs iv. using test results to make predictions to set up further comparative and fair tests v. 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 vi. identifying scientific evidence that has been used to support or refute ideas or arguments</td><td>1</td><td>Plan & carry out an investigation into shadow size & shape, and the angle of the light source. Create diagrams that show how shadows change when the angle of the light source changes. Be able to explain why shadows may have ‘shades’ in them and suggest further investigations</td><td rowspan="7">Theatrical interview</td></tr>
<tr><td>Key Vocabulary</td><td>2</td><td>Investigate and explain through instructions how colour and texture are created in shadows. Modify a shadow ‘puppet’ to create specified colour and texture effects. Suggest a further investigation into the impact of coloured lights in combination with coloured acetate shadows</td></tr>
<tr><td>Light, source, dark, shadow, block, absorb, direct/direction, transparent, opaque, translucent, straight
Colour, reflect, cone, eye, straight, colour, spectrum, rainbow, Reflective materials, reflection, angle of incidence/reflection, light, beam, straight, scatter, distort, Convex, concave, plane, ray, bent, focal point, refraction, names of light sources, dark, reflective, mirror, shadow, block, absorb, opaque, rainbow, colours</td><td>3</td><td>Explain how the colour we see is the result of specific ‘parts’ of light being reflected. Split white light into a rainbow spectrum using bubbles and water. Investigate the effect of coloured light on the colour of objects.</td></tr>
<tr><td></td><td>4</td><td>Investigate the effectiveness of various reflective surfaces. Draw and note angles of incidence and reflection. Know that the angle of incidence is equal to the angle of reflection when predicting beam journeys and drawing scientific diagrams</td></tr>
<tr><td></td><td>5</td><td>Investigate convex, concave and plane mirrors, noting the effects. Identify or create diagrams to show the effect of convex, concave and plane mirrors. Know that when light is slowed down it bends</td></tr>
<tr><td></td><td>6</td><td>Complete a series of challenges that apply their knowledge and understanding of the nature of light. Demonstrate a ‘working scientifically’ approach to problem solving. Review information on light, offering opinion and ideas as well as asking scientific questions</td></tr>
<tr><td colspan="2">Biq Question Link</td><td colspan="2">Vision and Values Link</td><td rowspan="2"></td></tr>
<tr><td colspan="2">Is there a light lit for evacuees and refugees?</td><td colspan="2">Stay safe when handling light sources.</td></tr>
</table>

Big Question Link: How far can you go?
Unit grid: Science: Space
Year A/Year B
Autumn /Spring /Summer

<table>
<tr><td>Prior Learning Links</td><td rowspan="4">Key NC Objectives</td><td colspan="2">Session overviews</td><td>Unit Outcomes</td></tr>
<tr><td>Y3&4
This planet rocks</td><td>1</td><td>Know that Galileo’s heliocentric view of the solar system was radical for its time. Research the key facts/evidence about scientific statements about space. Match or suggest enquiry questions for a series of statements about the Earth, Sun & Moon. Match or suggest possible scientific approaches to investigating enquiry questions</td><td rowspan="7">Poster presenting findings</td></tr>
<tr><td>Key vocabulary</td><td>2</td><td>Use fruit to create a model of the solar system, calculating scales and ratios for the solar system. Research, collate & create graphs for data about the planets. Paint the planets from known images and the nature of the planets. Compare & draw conclusions from online images of our night sky at different times of year</td></tr>
<tr><td rowspan="4">Heliocentric, geocentric, spherical, solar system, astrology, enquiry, evidence, star, moon, planet, sun, Earth, Galileo, Copernicus, Spherical, scale, enquiry, evidence, star, moon, planet, planet names, Earth, sun, orbit, sundial, shadow, axis, day, night, time-zone, Greenwich Meantime, eclipse, light, reflection, telescope, satellite, tide, mass, gravity, phase, lunar, Evidence, direct/indirect light, axis, equinox, solstice, sun, season, hemisphere, longitude, latitude, Enquiry, proof, theory, hypothesis, argument, idea, fact</td><td>3</td><td>Explore time zones and relate this to the movement of the Earth. Use logic and knowledge to solve scientific problems. Plan and carry out shadow investigations that help support the idea that the Earth moves on its axis, noting variables</td></tr>
<tr><td rowspan="3">Content i. describe the movement of the Earth, and other planets, relative to the Sun in the solar system ii. describe the movement of the Moon relative to the Earth iii. describe the Sun, Earth and Moon as approximately spherical bodies iv. use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky

Working scientifically i. planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary ii. taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate iii. recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs iv. using test results to make predictions to set up further comparative and fair tests v. 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 vi. identifying scientific evidence that has been used to support or refute ideas or arguments</td><td>4</td><td>Match lunar phases to relative positions of the Moon, Sun and Earth. Suggest and carry out a simulation to demonstrate the moon’s changing appearance. Label key features of the moon. Research the relationship between the moon and the Earth’s tides</td></tr>
<tr><td>5</td><td>Explore time zones and relate these to the movement of the Earth, solving time problems. Use data to make seasonal observations. Analyse data to explain seasonal changes to day length, and link to the Earth’s tilt & solar orbit</td></tr>
<tr><td>6</td><td>Create an A2 poster that presents findings and arguments for a heliocentric solar system. Collate findings and identify scientific evidence that back them up. Argue why Galileo’s findings should be accepted, based on scientific evidence</td></tr>
<tr><td colspan="2">Biq Question Link</td><td colspan="2">Vision and Values Link</td><td rowspan="2"></td></tr>
<tr><td colspan="2">Can you go to space?</td><td colspan="2">Aspire to go as far as you can.</td></tr>
</table>

Big Question Link: How far can you go?
Unit grid: Science: Forceland
Year A/Year B
Autumn /Spring /Summer

<table>
<tr><td>Prior Learning Links</td><td rowspan="4">Key NC Objectives</td><td colspan="2">Session overviews</td><td>Unit Outcomes</td></tr>
<tr><td>Y3&4
Magnetic fun and games</td><td>1</td><td>Identify and label gravity and resistance forces, identifying balanced and unbalanced forces. Plan and carry out an investigation into the forces at play in a bungee jump. Select or compose guidance for H&S on a bungee jump, based on investigation findings</td><td rowspan="8">H&S guidance
Scientific diagrams</td></tr>
<tr><td>Key vocabulary</td><td>2</td><td>Investigate the effect of ground friction on the force needed to move a rolling car, taking accurate measurements and recording data effectively. Recommend a ground covering that creates the right level of friction for the safe (but fun) movement of a rolling car on a ride. Draw a diagram showing how forces act on a rolling car</td></tr>
<tr><td>Support, fall, Earth, gravity, balancing force, resistance force, weight, Newtons, elasticity, variables accuracy, friction, air resistance, causal relationship, Variables, fall, Earth, moving surfaces, speed,
gravity, water resistance, up thrust, precision, mechanisms, levers, pulleys, transfers, force
gears,</td><td>3</td><td>Set up and carry out a guided parachute investigation exploring shape, size and string length. Calculate the area of the parachute and its scaled up speed. Recommend parachute material, size and string length in the form of a diagram & record sheet</td></tr>
<tr><td colspan="2">Content i. explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object ii. identify the effects of air resistance, water resistance and friction, that act between moving surfaces iii. recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect

Working scientifically i. planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary ii. taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate iii. recording results using scientific diagrams and labels iv. using test results to make predictions to set up further comparative and fair tests v. 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 vi. identifying scientific evidence that has been used to support or refute ideas or arguments</td><td>4</td><td>Investigate and suggest which shape of boat is best to beat the water resistance of a canyon ride river. Investigate the impact of salt and fresh water on water resistance. Draw diagrams showing the effect of water and air resistance</td></tr>
<tr><td></td><td>5</td><td>Complete a lever investigation, noting how the position of the fulcrum impacts on its effectiveness. Complete a pulley investigation noting the correlation between effort required & the number of pulleys. Draw diagrams showing the forces, loads, weights and efforts for levers and pulleys</td></tr>
<tr><td></td><td>6</td><td>Investigate how gears work, identify gear ratios and select possible outcomes from given gear ratios. Investigate how gears work, calculate some gear ratios and suggest possible outcomes from given gear ratios</td></tr>
<tr><td colspan="2">Biq Question Link</td><td colspan="2">Vision and Values Link</td></tr>
<tr><td colspan="2">What stops you from floating away?</td><td colspan="2">Aspire to go as far as you can.</td></tr>
</table>

Big Question Link: What would you vote for?
Unit grid: Science: Special effects materials
Year A/Year B
Autumn /Spring /Summer

<table>
<tr><td>Prior Learning Links</td><td>Key NC Objectives</td><td colspan="2">Session overviews</td><td>Unit Outcomes</td></tr>
<tr><td>Y1&2
Exploring changes
Y3&4
What's the Matter</td><td rowspan="7">Content i. compare and group together everyday materials on the basis of their properties, including their solubility and response to magnets ii. know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution iii. use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating iv. demonstrate that dissolving, mixing and changes of state are reversible changes v. 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 Working scientifically i. planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary ii. taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate iii. recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs iv. using test results to make predictions to set up further comparative and fair tests v. 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 vi. identifying scientific evidence that has been used to support or refute ideas or arguments</td><td>1</td><td>Plan and carry out investigations into the mixing and heating/cooling of solids & liquids. Use sieving, filtration, evaporation and changes in temp. to reverse changes. Record and outline methods and findings, including graphs, in the form of a technician's brief</td><td rowspan="7">Poster about different materials</td></tr>
<tr><td>Key vocabulary</td><td>2</td><td>Plan and carry out several investigations into solubility of different sugar forms exploring different solvents and temperatures with support. Independently plan and carry out several investigations into solubility of different sugar forms exploring different solvents and temperatures. Measure volume and temperatures accurately, taking multiple readings to ensure accuracy. Record findings in tables, graphs and diagrams</td></tr>
<tr><td>Enquiry, solid, liquid, gas, dissolve, soluble, solute, solution, insoluble, heterogeneous/homogeneous mixture, colloid, suspension, reversible, irreversible, changes of state, evaporation, sieving, filtering, heating/cooling, Variables, precision, line graph, bar chart, accuracy, reaction, reactant, non-reversible, precision, rust, oxidation, experimental</td><td>3</td><td>Make observations of non-reversible chemical reactions. Suggest explanations for and by-products of non-reversible chemical reactions. Plan and carry out investigations into how changes in variables affect reactions</td></tr>
<tr><td></td><td>4</td><td>Plan and carry out investigations into conditions needed for rusting. Observe rusting over time, recording findings and suggesting optimum conditions for rusting. Calculate a 'rate of burning' for a candle</td></tr>
<tr><td></td><td>5</td><td>Make sample prosthetic wounds using materials that have been changed in some way. Make fake blood through selecting and mixing materials. Record and outline findings orally and visually</td></tr>
<tr><td></td><td>6</td><td>Create their own 'new' gooey material. Know about some famous materials inventors. Research and record information about new materials and their possible uses</td></tr>
<tr><td colspan="2">Biq Question Link</td><td colspan="2">Vision and Values Link</td></tr>
<tr><td colspan="2">What new material would you vote for?</td><td colspan="2">Have the wisdom to decide what is a good invention.</td></tr>
</table>

Big Question Link: What would you vote for?
Unit grid: Science: Sensational science
Year A/Year B
Autumn /Spring /Summer

<table>
<tr><td>Prior Learning Links</td><td>Key NC Objectives</td><td colspan="2">Session overviews</td><td>Unit Outcomes</td></tr>
<tr><td>All prior learning

Key vocabulary

Mixture, solution, inert, reversible, irreversible, acid, alkaline, oxidation, carbon dioxide, copper oxide, tarnished, physical reaction, chemical reaction, Heliocentric, geocentric, spherical, solar system, astronomy, enquiry, evidence, star, moon, planet, sun, Earth, planet names, orbit, axis, day, night, eclipse, telescope, satellite, tide, mass, gravity, phase, lunar evidence, season, proof, theory, hypothesis, argument, idea, fact, Force, gravity, friction, air pressure, inertia, Newton, push, pull, Classification, kingdom, phylum, class, order, family, genus, species, Linnaeus, opinion, characteristics, Adaptation, environmental factor, evolution, extinction, survival of the fittest, Debate, evidence, dispute, reliable, unreliable, experimentation, theory, argument, theorisation</td><td rowspan="7">Content i. know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution ii. use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating iii. demonstrate that dissolving, mixing and changes of state are reversible changes iv. 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 v. describe the movement of the Earth, and other planets, relative to the Sun in the solar system vi. describe the movement of the Moon relative to the Earth vii. describe the Sun, Earth and Moon as approximately spherical bodies viii. use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky ix. describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals x. give reasons for classifying plants and animals based on specific characteristics xi. explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object xii. identify the effects of air resistance, water resistance and friction, that act between moving surfaces xii. recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect xiii. recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago xiv. recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents xv. identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution Working scientifically i. planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary ii. taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate iii. recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs iv. using test results to make predictions to set up further comparative and fair tests v. 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 vi. identifying scientific evidence that has been used to support or refute ideas or arguments</td><td>1</td><td>Plan and carry out investigations to observe the reaction of given solids in given liquids or mixture. Make and record observations, suggesting reasons for their observations. Set up further investigations</td><td rowspan="7">Educational science demo
Scientific stance</td></tr>
<tr><td></td><td>2</td><td>Create a timeline of knowledge development for some key areas of astronomy. Complete research on specific space discoveries. Note that scientific knowledge continues to evolve and that scientists don't always agree</td></tr>
<tr><td></td><td>3</td><td>Identify the forces behind a range of phenomena. Carry out investigations into the ways in which forces create unexpected effects. Present findings in the form of an educational science demonstration.</td></tr>
<tr><td></td><td>4</td><td>Explore some scientifically challenging living things to classify. Research living things that have been re-classified as scientific knowledge about them has developed</td></tr>
<tr><td></td><td>5</td><td>Research creatures and plants that demonstrate extreme evolution, identifying key adaptations. Identify the influence of inheritance and environmental factors on humans living in extreme environments. Define the term extinction and note whether it is a useful term</td></tr>
<tr><td></td><td>6</td><td>Research and analyse the range of evidence for disputed concepts within the scientific community. Take and summarise a scientific stance on a current unresolved scientific issue based on evidence available.</td></tr>
<tr><td colspan="2">Biq Question Link</td><td colspan="2">Vision and Values Link</td></tr>
<tr><td colspan="2">What science topic would you vote for?</td><td colspan="2">Always make sure you are safe when carrying out enquires.</td></tr>
</table>