

Tickhill Estfeld School
Science - Teaching Sequence 2022-23

Reception

**Activities / objectives may change / vary as the curriculum is adapted to suit the interests of the children and current issues / events*

Lesson	Autumn 1 - Autumn	Autumn 2 - Health / Safety
1		
2		
3		Health and well-being - being a safe pedestrian
4	Exploring autumn - Nocturnal animals	
5	Exploring autumn - Hibernating animals	
6	Exploring autumn - autumn hunt	
Lesson	Spring 1 - Our Wonderful World - Arctic	Spring 2 - Our Wonderful World - Ocean Explorers
1		What animals would we find under the sea?
2		What is the seaside like?
3		Healthy food linked to lighthouse keeper's lunch
4	Winter - changing seasons and exploring the changes	Dear Earth - climate change
5	Melting and freezing	Floating and sinking
6	Comparing places and environments - arctic vs UK	Seaside holidays in the past vs now
Lesson	Summer 1 - Amazing animals - chicks and farm animals	Summer 2 - Exploring secrets of the wild
1	Hatching chicks in the classroom	Minibeast hunt

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2	Observations of chicks and life cycle of a chicken	Sorting minibeasts by number of legs
3	What animals would you find down on the farm?	Life cycle of a minibeast
4	Animals and their young	Growing a plant investigation
5	Farming in the past and present	What does a plant need?
6	Changes in the weather spring	

Year 1

**Seasonal Changes covered through class discussions daily/weekly and where appropriate depending on the time of year.*

Lesson	Autumn 1 - Animals, including humans	Autumn 2 - Everyday Materials
1	Identify, name, draw and label the basic parts of the human body.	Distinguish between an object and the material from which it is made of.
2	Say which part of the body is associated with each sense. Senses experiment for children to explore using their sense of smell, taste, touch, hearing, sight.	
3	Senses exploration - Smell (continuous provision)	Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock.
4	Senses exploration - Hearing (continuous provision)	Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock.
5	Senses exploration - Touch (continuous provision)	Describe the simple physical properties of a variety of everyday materials. Science experiment testing if something is bendy, opaque, absorbent, waterproof.
6	Senses exploration - Sight (continuous provision)	Compare and group together a variety of everyday materials on the basis of their simple physical properties. Science experiment - can we make a waterproof helmet for Baby Bear? (Whatever next text)
7	Space Week - Neil Armstrong and the moon landing in 1960.	
	Spring 1 - Animals, including humans/ Seasonal Changes	Spring 2 -
1	Identify and name a variety of common animals, including fish, amphibians, reptiles, birds and mammals. Science experiment - What is blubber and how does it work?	

2	Describe and compare the structure of a variety of common animals. Look at characteristics of Arctic animals and how these animals have adapted to survive in the cold temperatures.	
3	Science experiment - perform a basic experiment with ice cubes. What can we do with ice?	
4	Science experiment - perform a basic experiment on an ice berg. What are icebergs and how do they melt. Link to rising sea levels due to climate change.	
5	Observe and describe weather associated with the season and how day length varies (Arctic and UK)	
6		
	Summer 1 - Animals, including humans/ Seasonal Changes	Summer 2 Plants / Seasonal Changes
1	Identify and name a variety of common animals, including mammals and birds (linked to Handa's Surprise story)	Identify and name a variety of common trees. Describe the basic structure of a tree.
2	Describe and compare the structure of a variety of common animals	Identify and name a variety of common trees including deciduous and evergreen trees.
3	Observe and describe weather associated with the seasons and how day length varies. (Africa and UK link back to the Arctic)	
4		Identify common wild flowers and garden plants.
5		Describe the basic structure of a flowering plant.
6	Identify and name a variety of common animals that are carnivores, omnivores and herbivores.	Observe changes across the four seasons. Observe and describe weather associated with the season and how day length varies
Year 2		
Lesson	Autumn 1 - Plants / Animals	Autumn 2
1	Use the local environment to observe how plants grow. Introduce pupils to the requirements of plants for germination, growth and survival, as well as the processes of reproduction and growth. <i>Spinning seeds investigation</i>	
2	Use the local environment to observe how plants grow. Introduce pupils to the requirements of plants for germination, growth and survival, as well as the processes of reproduction and growth. <i>Life cycle of an oak tree</i>	

3	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. Red Squirrels: how are they adapted for life in the trees	
4		
5		
6		
Lesson	Spring 1 - Materials	Spring 2 - Materials
1	Uses of everyday materials - identify and compare properties and uses of a variety of everyday materials. Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Guitar challenge - identify and label the materials the guitar is made from and the properties they have.	Science Sam investigation- Which ball will bounce the highest? Does the material balls are made from make a difference? Making predictions and comparing results.
2	Comparing the same object made from two different materials (eg pottery plate and paper plate). Identify the properties (flexible, waterproof, strong, brittle etc) and use a Venn diagram to classify them.	Explore the story of the inventor of a new material - John MacAdam (tarmac)
3	Would you like a coat made from glass/metal/jelly/paper? What would be good or bad about each material? Is it suitable for the job?	Use the book 'George Saves the World by Lunchtime' to discuss what happens to materials when we have finished with them?
4	The Story of Cinderella's Silly Shoes (Scholastic) Investigation - which material makes the best shoelaces?	Explore the work of architect Zaha Hadid - creative use of new materials.
5	Science Sam magnet investigation	Creative uses of materials
6	Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. Choose own way to record.	Non-chronological report in English 'Do Wolves Deserve to be the Baddies in Stories?' - how are wolves adapted to their habitat?
Lesson	Summer 1 - Living things and their Habitats / Plants	Summer 2 - Living things and their Habitats / Plants
1	Explore and compare the differences between things that are living, dead and have never been alive (MRS NERG)	Observe and describe how seeds and bulbs grow into mature plants. Life cycle of a pumpkin

Biology ■

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Physics ■



2	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. Hedgehog Project - is our school garden a good habitat for hedgehogs? The habitat, offspring, basic needs for survival and the threats they face.	Life cycle of a dandelion
3	↓	The importance of exercise, food, rest, relaxation and hygiene for health The Minions Guide to Keeping Small Humans Healthy
4	Identify and name a variety of plants and animals in their habitats, including microhabitats. The Story of Charles Darwin and the Great Plant Hunt. Conduct our own plant hunt in the school grounds and record in 'Darwin's Doodle Book'.	Investigate simple life cycles Painted Lady Butterfly Life Cycle - real life observation (Insect Lore) Notice that animals, including humans, have offspring which grow into adults Visit to Butterfly and Conservation Centre
5	Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy 'What do plants need to grow?' investigation. Cress head investigation.	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. Create simple food chains using the work of environmentalist Rachel Carsen.
6	Observe and describe how seeds and bulbs grow into mature plants What's inside a seed? Comparing seeds and bulbs.	The work of the RSPCA and the Five freedoms

Year 3

Lesson	Autumn 1 - Animals including humans	Autumn 2
1	To identify that humans get the nutrition they need from what they eat.	
2	To identify that a balanced diet is needed to stay healthy.	
3	To investigate which foods different animals eat.	
4	To carry out an investigation to find out what pets eat.	
5	To explore human and animal skeletons.	
6	To find out about how the skeleton supports and protects the body and to investigate how invertebrates are supported.	
	Spring 1 - Rocks, fossils and soils	Spring 2 - Light and shadow
1	To be able to identify naturally occurring rocks and explore their uses.	To recognise that we need light in order to see.

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2	To be able to group rocks according to their characteristics.	To learn about how light from the Sun can be dangerous and how we can protect ourselves.
3	To be able to plan, carry out and evaluate experiments to compare rocks.	To investigate what shadows are and why they are formed.
4	To identify rocks that are used for particular purposes.	To investigate how shadows behave.
5	To explore soil and how it is formed.	To investigate how the size of shadows change throughout the day.
6	To explore what fossils are and how they are formed.	To explore how light is reflected from surfaces.
Summer 1 - Forces and magnets		Summer 2 - Plants
1	To explore what forces are and notice that some forces need contact between two objects.	To identify and describe the functions of the roots of flowering plants.
2	To compare how things move on different surfaces.	To investigate the way in which water is transported within plants.
3	To explore how magnetic forces work.	To identify and describe the functions of leaves in flowering plants.
4	To be able to identify magnetic materials.	To explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.
5	To investigate uses for magnets	To explore some of the ways in which flowering plants disperse their seeds.
6		To understand the structure of seeds and their importance as a food source.
Year 4		
Lesson	Autumn 1 - Living things and their habitats	Autumn 2 - States of matter - solids, liquids and gases
1	To identify a variety of habitats and explore why organisms live in different habitats.	To compare and group materials together, according to whether they are solids, liquids or gases by sorting and describing materials into solids, liquids and gases.

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2	Describe how some animals are adapted to live in an Arctic habitat or a hot desert habitat.	Describe the properties of solids, liquids and gases and understand the difference between the particles in each of the three states.
3	To be able to group organisms according to their characteristics.	To investigate the properties of gases. To observe gases in action and ask questions, make observations / predictions
4	Describe the conditions in some micro-habitats. Identify invertebrates found in a local habitat using simple keys.	To explain some uses of gases. Investigate the properties of a gas - does gas have weight?
5	To be able to use a classification key to identify animals. To construct a branching key by using observable characteristics to formulate yes / no questions.	To observe that some materials change state when they are heated or cooled.
6	To explore the human impact on habitats and environments.	Investigate the melting and freezing temperature of different materials - measure or research the temperature at which this happens in degrees Celsius (°C)
Lesson	Spring 2 - States of matter - the water cycle	Spring 2 - Sound
1	Describe and understand key aspects of the water cycle in the context of explaining the water cycle. To identify the part played by evaporation and condensation in the water cycle by creating a model of the water cycle.	To identify how sounds are made, associating some of them with something vibrating, by identifying and explaining sound sources around school.
2	To explain the effect of temperature on the process of evaporation. To plan and carry out a comparative test using equipment accurately and presenting results clearly.	To identify how sounds are made, associating some of them with something vibrating. To find patterns between the volume of a sound and the strength of the vibrations that produced it.
3	Understand the three states of water and name the processes involved.	To recognise that vibrations from sounds travel through a medium to the ear, by exploring how high and low sounds are created. To find patterns between the pitch of a sound and features of the object that produced it, by exploring and creating musical instruments, and explaining how they change pitch
4		To recognise that sounds get fainter as the distance from the sound source increases, by exploring how sounds change over distance
5		To recognise that vibrations from sounds travel through a medium to the ear, by investigating the best material for absorbing sound
6		To recognise that vibrations from sounds travel through a medium to the ear in the context of Alexander Graham Bell's invention of the telephone. To report on findings, including oral and written presentations and displays in the context of Alexander Graham Bell's invention of the telephone.
Lesson	Summer 1 - Electricity	Summer 2 - Teeth and digestion

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1	To classify and present data, identifying common appliances that run on electricity.	To identify the different types of teeth in humans and their simple functions by learning about different types of teeth.
2	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.	identify the different types of teeth animals have and relate the types of teeth animals have to their diet (carnivore, omnivore and herbivore)
3	Recognise some common conductors and insulators, and associate metals with being good conductors. Using results to draw simple conclusions. Relate their understanding of conductors and insulators to the design of everyday objects.	To understand the causes of tooth decay and know how to prevent it.
		To set up simple practical enquiries, comparative and fair tests by setting up an enquiry or test to understand what causes tooth decay. To ask relevant questions and use different types of scientific enquiries to answer them by distinguishing between scientific and non-scientific questions and choosing between types of scientific enquiry.
4	Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.	Make systematic and careful observations by observing the changes that occur in their tooth decay enquiry. To use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
		To construct and interpret a variety of food chains, identifying producers, predators and prey by understanding food chains and the role of different plants and animals within them.
5	Identify and make different types of switches and understand how they are useful in different situations.	To describe the simple functions of the basic parts of the digestive system in humans in the context of identifying the parts of the digestive system.
6	To understand that electricity can be dangerous. To identify hazards in the home and the local environment and say how we can stay safe.	To describe the simple functions of the basic parts of the digestive system in humans by explaining the functions of the different parts of the digestive system.
Year 5		
Lesson	Autumn 1 - Reproduction and life cycles in plants and animals	Autumn 2 - Animals including humans
1	To describe the life process of reproduction in some plants and animals by exploring sexual reproduction in plants.	Describe the changes as humans develop to old age by drawing a timeline to indicate stages in the growth and development of humans.
2	To describe the life process of reproduction in some plants and animals by exploring sexual reproduction in plants.	Describe the changes as humans develop to old age in the context of the development of babies in their first year

3	To describe the life cycle of a mammal by exploring the life cycles of mammals in different habitats. To describe the life process of reproduction in some plants and animals by describing sexual reproduction in mammals	Describe the changes as humans develop to old age by comparing the changes that take place to boys and girls during puberty.
4	To describe the life process of reproduction in some plants and animals by exploring Jane Goodall's work with chimpanzees.	Describe the changes as humans develop to old age by understanding the changes that take place in old age.
5	To describe the differences in the life cycles of an amphibian and an insect by exploring complete and incomplete metamorphosis	Report findings from enquiries, including oral and written explanations of results in the context of the gestation period for animals.
6	To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird by describing and comparing different life cycles, including birds.	Record data and results of increasing complexity using bar and line graphs, and models in the context of comparing gestation periods and life expectancies of animals.
Lesson	Spring 1 - Earth and Space	Spring 2 - Forces
1	Describing the Sun, Earth and Moon as approximately spherical bodies by understanding how this knowledge has been attained. Identifying scientific evidence that has been used to support or refute ideas or arguments in the context of how ideas changed from a flat earth view.	To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object by identifying forces acting on objects. To identify the effects of air resistance, water resistance and friction by identifying forces acting on objects
2	Describing the movement of the Earth, and other planets, relative to the Sun in the solar system by learning the order of the planets and how they move in the solar system.	To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object by measuring the force of gravity pulling on objects
3	Describing the movement of the Earth, and other planets, relative to the Sun in the solar system by examining the geocentric and heliocentric theories. Identifying scientific evidence that has been used to support or refute ideas or arguments in the context of the shift from heliocentric models of the solar system to geocentric models.	To identify the effects of air resistance by investigating the best parachute to slow a person down.
4	Using the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky by examining why the sun appears to move and the arguments for the Earth's rotation. Identifying scientific evidence that has been used to support or refute ideas or arguments in the context of the evidence for the Earth's rotation.	To identify the effects of water resistance by creating and racing streamlined boats.
5	Using the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky by predicting night and day in different places on Earth.	To identify the effects of friction by investigating brakes.

	Reporting and presenting findings from enquiries, including conclusions, in oral and written forms such as displays and other presentations in the context of investigating night and day.	
6	Describing the movement of the Moon relative to the Earth by explaining how the Moon orbits the Earth.	To recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect by exploring and designing a simple mechanism.
Lesson	Summer 1 - Properties and changes of materials	
1	To compare and group together everyday materials on the basis of their properties, including their hardness, transparency and response to magnets by sorting and classifying materials according to their properties.	
2	To give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic by investigating thermal conductors and insulators. To compare and group together everyday materials on the basis of their thermal conductivity by investigating thermal conductors and insulators.	
3	To give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic by investigating the best electrical conductors. To compare and group together everyday materials on the basis of their electrical conductivity by investigating the best electrical conductors.	
4	To know that some materials will dissolve in liquid to form a solution by investigating dissolving. To compare and group together everyday materials on the basis of their solubility by investigating dissolving	
5	To use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating by separating different mixtures. To demonstrate that dissolving, mixing and changes of state are reversible changes by separating different mixtures. To describe how to recover a substance from a solution by separating different mixtures.	
6	To 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 by identifying and observing irreversible chemical changes.	

Year 6

Biology ■

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Lesson	Autumn 1 - Living things and their habitats	Autumn 2 - Evolution and inheritance
1	Sorting and categorising living things using discernible characteristics.	To understand how fossils can be used to give us information about living things that lived many years ago? Recap on Fossil formation and make judgements about the lifestyles of creatures based on their fossil remains.
2	Sorting and categorising living things using the Linnaean System with a focus on Carl Linnaeus	To understand that animals and plant adapt to their environment - look at specific examples - e.g. polar bear/ camel/ cactus
3	Further sorting and classifying of living things - focus on vertebrates	To understand that animals and plant adapt to their environment - Focus on Charles Darwin and natural selection
4	Introduce microorganisms by conducting a mould experiment	To explain how plants and animals are like their parents in many ways. Look at inherited features.
5	To understand that micro-organisms are living organisms that are often too small to be seen, and that they may be beneficial or harmful. Include focus on Edward Jenner, Louis Pasteur and Alexander Fleming	To explain how plants and animals are like their parents in many ways. Look at selective breeding of dogs.
6	Experimental work looking at the growth of yeast.	
	Spring 1 - Light	Spring 2 - Electricity
1	To know that light travels in straight lines from a light source. Focus on Thomas Edison and Richard Swan.	Construct a simple circuit, name its basic parts and record it as a picture
2	To understand how the eye detects light- structure of the eye and the mechanics of how we see things	Identify and use electrical components and standard symbols
3	Recognise that light appears to travel in straight lines Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. Create a shadow puppet theatre.	To know that the amount of electricity flowing in a circuit is related to the total resistance in the circuit - Experiment to investigate the effect of changing the number of cells or bulbs in a circuit.
4		To know that the amount of electricity flowing in a circuit is related to the total resistance in the circuit. Experiment to investigate the effect of changing the length of wire in a circuit.
5	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 - Experimental focus on reflection	Focus on the dangers of electricity and how electricity is transported.
6	To recognise that light appears to travel in straight lines by investigating refraction.	
	Summer 1 - Healthy Lifestyles	Summer 2 - Healthy Lifestyles Continued
1	To understand the term 'healthy' and to explain the importance of a healthy lifestyle - What makes a person healthy?	To identify scientific evidence that has

		been used to support or refute ideas or arguments in the context of changing attitudes to smoking.
2	To know that some foods are needed for activity and others for growth To know that foods contain nutrients and that a balance of these is needed for good health - Healthy diet and associated work	
3	To identify and name the main parts of the human circulatory system by recalling prior knowledge of systems in the human body and labelling a diagram.	
4	To identify the role of the lungs in the circulation system and carry out a fair test.	
5	To describe the ways in which nutrients and water are transported within animals, including humans in the context of the human body.	
6	To recognise the impact of drugs on the way their bodies function in the context of drugs and alcohol.	

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