Science Long Term Plan Overview LKS2

Cycle D 2022/2023	Autumn		Spring		Summer	
Theme Title	**The Ancients (Egypt)**		**Water**		**British History**	
	Forces and Magnets	**Circuits and Conductors**	**Rocks and Fossils**	**Water and The Water Cycle/ British Science Week**	**How Plants Grow**	**Habitats**
Key Vocabulary / Knowledge:	Forces: push, pull, friction, air resistance, water resistance, magnetic forces, gravity. Newton, poles, repel, attract, force meters.	Electricity, circuits, conductors, insulators, lamp, batteries, switch, cells, bulbs, series, current.	Organic matter, igneous, metamorphic, sedimentary, porous, fossils, soil types, loamy, sandy, peaty, acidic, properties.	Solids, liquids, gases, evaporation, condensation, water cycle, separating substances; pollution, filtration	Germination, pollination, photosynthesis, seed dispersal, classification, parts of plants, structures, characteristics, and environment.	Identification, classification, food chains, invertebrates and vertebrates, interdependence, keys, predators, prey, environments.
Overview / Enquiry	 **Comparative tests** How does the mass of an object affect how much force is needed to make it move? Which magnet is strongest? Which surface is best to stop you slipping?  **Identify & Classify** Which materials are magnetic?	 **Comparative tests** How does the thickness of a conducting material affect how bright the lamp is? Which metal is the best conductor of electricity?  **Identify & Classify** How would you group these electrical devices based on where the electricity comes from? 	 **Comparative tests** How does adding different amounts of sand to soil affect how quickly water drains through it? Which soil absorbs the most water?  **Identify & Classify** Can you use the identification key to find out the name of each of the rocks in your collection?	 **Comparative tests** How much water do we consume in the UK? How does this compare to other countries? What is the best way of 'cleaning' rain water?  **Identify & Classify** What are the different uses of water?  Is rainwater the same as tap water?	 **Comparative tests** How does the length of the carnation stem affect how long it takes for the food colouring to dye the petals? Which conditions help seeds germinate faster?  **Identify & Classify** How many ways can you group our seed collection? 	  **Identify & Classify** Can you sort desert animals according to whether they are mammals, birds, reptiles, arachnids or insects? Can you label and organise animals and plants into food chains?  **Observation over time** How does the variety of invertebrates on the school field change

	 **Observation over time** If we magnetise a pin, how long does it stay magnetised for?  **Pattern Seeking** Do magnetic materials always conduct electricity? Does the size and shape of a magnet affect how strong it is?  **Research** How have our ideas about forces changed over time? How does a compass work? **BIG Question – Assessment Opportunity** How can we move magnets? **TAPS planning ideas:** Cupcake parachutes Shoe grip Magnet tests Cars down ramps Balloon rockets Egg drop packages	**Observation over time** How long does a battery light a torch for?  **Pattern Seeking** Which room has the most electrical sockets in a house?  **Research** How has electricity changed the way we live? How does a light bulb work? **BIG Question – Assessment Opportunity** What can we do with electricity? **TAPS planning ideas:** Circuit products Conductors **Other ideas:** Which metal is the best conductor of electricity? Do bulbs get brighter if more cells are added	 **Observation over time** How does tumbling change a rock over time? What happens when water keeps dripping on a sandcastle?  **Pattern Seeking** Is there a pattern in where we find volcanos on planet Earth?  **Research** Who was Mary Anning and what did she discover? **BIG Question – Assessment Opportunity** What are rocks and soils like? **TAPS planning ideas:** Rock reports Eco Action **Other ideas:** Which soil absorbs the most water? Observing rocks, including those used in	Learners could leave containers outside in different areas to collect rainwater over a week or month. They could observe what collects in the different containers and compare these to clean water.  **Pattern Seeking** Which daily activity uses the most water?  **Research** How can we reduce our water usage? How has science helped us to have clean drinking water?	**Observation over time** What happens to celery when it is left in a glass of coloured water? How do flowers in a vase change over time?  **Pattern Seeking** What colour flowers do pollinating insects prefer?  **Research** What are all the different ways that seeds disperse? **BIG Question – Assessment Opportunity** Why do plants have flowers? **TAPS planning ideas:** Measuring plants Function of stem **Other ideas:** Which conditions help seeds germinate faster? comparing the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser discovering how seeds are formed by observing	over the year? (Revisit during the Summer term)  **Pattern Seeking**  **Research** Which animals that live in the desert are nocturnal/diurnal? How do some animals manage to live in the desert? **BIG Question – Assessment Opportunity** How have plants and animals adapted to living in the desert? **TAPS planning ideas:** **Other ideas:** .

	Other ideas: Which magnet is strongest? Which surface is best to stop you slipping? Exploring the strengths of different magnets and finding a fair way to compare them; Identifying how these properties make magnets useful in everyday items.		buildings and gravestones, and exploring how and why they might have changed over time Pupils might research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed. Pupils could explore different soils and identify similarities and differences between them and investigate what happens when rocks are rubbed together or what changes occur when they are in water.		the different stages of plant life cycles over a period of time Looking for patterns in the structure of fruits that relate to how the seeds are dispersed. They might observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.	
Objectives	Pupils should be taught to: - compare how things move on different surfaces notice that some forces need contact between 2 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	Pupils should be taught to: - 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	Pupils should be taught to: - 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	Pupils should be taught to: Pupils should observe water as a solid, a liquid and a gas and should note the changes to water when it is heated or cooled. Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units. Gathering, recording, classifying and presenting data in a	Pupils should be taught to: - identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers - explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant - investigate the way in which water is	Pupils should be taught to: - recognise that living things can be grouped in a variety of ways - explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment - recognise that environments can change and that this can sometimes pose dangers to living things. Compare the types of animals and plants that live in the

	the basis of whether they are attracted to a magnet, and identify some magnetic materials describe magnets as having 2 poles predict whether 2 magnets will attract or repel each other, depending on which poles are facing	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		variety of ways to help in answering questions Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	transported within plants - explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal	habitat. (notice that animals from habitats such as under stones will have features such as antennae) Construct and interpret a variety of food chains, identifying producers, predators and prey.

Cycle A 2023/2024	**Autumn**		**Spring**		**Summer**	
Theme Title	**Lights, Camera, Action**		**Poles Apart**		**The Olympics (France / Paris)**	
	Light and Shadows	**Sound**	**States of Matter**	**Habitats**	**Animals Including Humans (Yr 3)**	**Animals Including Humans (Yr 4)**
Key Vocabulary / Knowledge:	Light, dark, natural and artificial sources, shadow, transparent, translucent, opaque, reflections, refraction, sight, vision, key parts of an eye.	Sounds, vibration, amplification, waves, pitch, volume, sound travelling through materials, how the ear works.	Solids, liquids, gases, thermometers, temperature, heat, cool, evaporation, condensation, water cycle, degrees Celsius.	Interdependence, adaptation, classification, environment, climate change, food chains, keys, grouping plants and animals.	Parts of the body, skeleton, muscles, movement, food groups, vitamins, minerals, growth, hygiene, bacteria, life cycle.	Digestive system: mouth, tongue, teeth, oesophagus, stomach and intestine. Nutrients, teeth, decay, health, molars, canines.
Overview / Enquiry	**Comparative tests** How does the distance between the shadow puppet and the screen affect the size of the shadow? Which pair of sunglasses will be best at protecting our eyes?	**Comparative tests** How does the volume of a drum change as you move further away from it? How does the length of a guitar string/tuning fork affect the pitch of the sound?	**Comparative tests** How does the mass of a block of ice affect how long it takes to melt? How does the surface area of water affect how long it takes to evaporate?	**Comparative tests** Does the amount of light affect how many woodlice move around? How does the average temperature of the pond water changes in each season?	**Comparative tests** How does the angle that your elbow/knee is bent affect the circumference of your upper arm/thigh? How does the skull	**Comparative tests** In our class, are omnivores taller than vegetarians? **Identify & Classify**

	 **Identify & Classify** How would you organise these light sources into natural and artificial sources?  **Observation over time** When is our classroom darkest? Is the Sun the same brightness all day?  **Pattern Seeking** Are you more likely to have bad eyesight and to wear glasses if you are older?  **Research** How does the Sun make light? **BIG Question – Assessment Opportunity** What is a shadow?	Are two ears better than one?  **Identify & Classify** Which material is best to use for muffling sound in ear defenders?  **Observation over time** When is our classroom the quietest?  **Pattern Seeking** Is there a link between how loud it is in school and the time of day? If there is a pattern, is it the same in every area of the school?  **Research** Do all animals have the same hearing range? **BIG Question – Assessment Opportunity** How can we make different sounds?	Does seawater evaporate faster than fresh water?  **Identify & Classify** Can you group these materials and objects into solids, liquids, and gases? How would you sort these objects/materials based on their temperature?  **Observation over time** Which material is best for keeping our hot chocolate warm? How does the level of water in a glass change when left on the windowsill?  **Pattern Seeking** Is there a pattern in how long it takes different sized ice lollies to melt? How does evaporation rate change as you add more salt to your water?	 **Identify & Classify** Can we use the classification keys to identify all the animals that we caught pond dipping?  **Observation over time** How does the variety of invertebrates on the school field change over the year?  **Pattern Seeking** How has the use of insecticides affected bee population?  **Research** Why are people cutting down the rainforests and what effect does that have? **BIG Question – Assessment Opportunity** Are living things in danger?	circumference of a girl compares with that of a boy?  **Identify & Classify** How do the skeletons of different animals compare?  **Observation over time** How does our skeleton change over time? (From birth to death)  **Pattern Seeking** Do male humans have larger skulls that female humans?  **Research** Why do different types of vitamins keep us healthy and which foods can we find them in? **BIG Question – Assessment Opportunity**	hat are the names for all the organs involved in the digestive system? How can we organise teeth into groups?  **Observation over time** How does an eggshell change when it is left in cola?  **Pattern Seeking** Are foods that are high in energy always high in sugar?  **Research** How do dentists fix broken teeth? **BIG Question – Assessment Opportunity** What do our bodies do with the food we eat? **TAPS planning ideas:** Teeth (eggs) in water **Other ideas:** Comparing the teeth of carnivores and

	TAPS planning ideas: Making shadows **Other ideas:** Which pair of sunglasses will be best at protecting our eyes? Looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.	**TAPS planning ideas:** Investigating pitch String telephones **Other ideas:** Which material is best to use for muffling sound in ear defenders? Are two ears better than one? Finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. Make earmuffs from a variety of different materials to investigate which provides the best insulation against sound. They could make and play their own instruments by using what they have found out about pitch and volume.	**Research** What are hurricanes, and why do they happen? **BIG Question – Assessment Opportunity** Where do ice cubes go when they disappear? Why does it rain and hail? **TAPS planning ideas:** Cornflour slime Drying materials Measure temp Dunking biscuits **Other ideas:** Does seawater evaporate quicker than fresh water Exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice-cream for a party). They could research the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid.	**TAPS planning ideas:** Local survey **Other ideas:** How does the average temperature of the pond water change in each season? Using and making simple guides or keys to explore and identify local plants and animals Making a guide to local living things Raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched.	Why do animals have skeletons? What is a healthy diet and why is it important? **TAPS planning ideas:** Investigating skeletons **Other ideas:** How does the skull circumference of a girl compare with that of a boy? Identifying and grouping animals with and without skeletons and observing and comparing their movement; Exploring ideas about what would happen if humans did not have skeletons. They might research different food groups and how they keep us healthy, and design meals based on what they find out.	herbivores and suggesting reasons for differences

			They might observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of temperature on washing drying or snowmen melting.			
Objectives	Pupils should be taught to: - 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 a solid object - find patterns in the way that the size of shadows change	**Pupils should be** **Pupils should be taught to:** • identify how sounds are made, associating some of them with something vibrating; • recognise that vibrations from sounds travel through a medium to the ear; • find patterns between the pitch of a sound and features of the object that produced it; • find patterns between the volume of a sound and the strength of the vibrations that produced it; • recognise that sounds get fainter as the distance from the sound source increases	**Pupils should be taught to:** • 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.	**Pupils should be taught to:** - recognise that living things can be grouped in a variety of ways - explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment - recognise that environments can change and that this can sometimes pose dangers to living things	**taught to:** • 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	**Pupils should be taught to:** • 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

Cycle B 2024/2025	Autumn		Spring		Summer	
Theme Title	**Life on Earth**		**Material Ages (Stone Age)**		**Invaders (Saxons and Vikings)**	
	Forces and Magnets	**Habitats**	**Rocks and Fossils**	**British Science Week**	**How Plants Grow**	**Circuits and Conductors**
Key Vocabulary / Knowledge:	Forces: push, pull, friction, air resistance, water resistance, magnetic forces, gravity. Newton, poles, repel, attract, force meters.	Identification, classification, food chains, invertebrates and vertebrates, interdependence, keys, hibernation predators, prey, environments.	Organic matter, igneous, metamorphic, sedimentary, porous, fossils, soil types, loamy, sandy, peaty, acidic, properties.		Germination, pollination, photosynthesis, seed dispersal, classification, parts of plants, structures, characteristics, and environment.	Electricity, circuits, conductors, insulators, lamp, batteries, switch, cells, bulbs, series, current.
Overview / Enquiry	 **Comparative tests** How does the mass of an object affect how much force is needed to make it move? Which magnet is strongest? Which surface is best to stop you slipping?  **Identify & Classify** Which materials are magnetic?  **Observation over time**	  **Identify & Classify** Can you sort animals found locally according to whether they are mammals, birds, reptiles, arachnids or insects? Sort local plants according to flowering/ non flowering groups. Can you label and organise animals and plants into food chains?  **Observation over time** How does the variety	 **Comparative tests** How does adding different amounts of sand to soil affect how quickly water drains through it? Which soil absorbs the most water?  **Identify & Classify** Can you use the identification key to find out the name of each of the rocks in your collection? 	*Science week topic dependent*	 **Comparative tests** How does the length of the carnation stem affect how long it takes for the food colouring to dye the petals? Which conditions help seeds germinate faster?  **Identify & Classify** How many ways can you group our seed collection?  **Observation over time**	**Comparative tests** How does the thickness of a conducting material affect how bright the lamp is? Which metal is the best conductor of electricity?  **Identify & Classify** How would you group these electrical devices based on where the electricity comes from?  **Observation over time** How long does a battery light a torch for? 

	If we magnetise a pin, how long does it stay magnetised for?  **Pattern Seeking** Do magnetic materials always conduct electricity? Does the size and shape of a magnet affect how strong it is?  **Research** How have our ideas about forces changed over time? How does a compass work? **BIG Question – Assessment Opportunity** How can we move magnets? **TAPS planning ideas:** Cupcake parachutes Shoe grip Magnet tests Cars down ramps Balloon rockets Egg drop packages **Other ideas:** Which magnet is strongest?	of invertebrates on the school field change over the year? (Revisit during the Summer term)  **Pattern Seeking**  **Research** Which animals hibernate for the winter? How do some animals manage to live through harsh climates? **BIG Question – Assessment Opportunity** How have plants and animals adapted to living in the different environments? **TAPS planning ideas:** **Other ideas:** .	**Observation over time** How does tumbling change a rock over time? What happens when water keeps dripping on a sandcastle?  **Pattern Seeking** Is there a pattern in where we find volcanos on planet Earth?  **Research** Who was Mary Anning and what did she discover? **BIG Question – Assessment Opportunity** What are rocks and soils like? **TAPS planning ideas:** Rock reports Eco Action **Other ideas:** Which soil absorbs the most water? Observing rocks, including those used in buildings and gravestones, and		What happens to celery when it is left in a glass of coloured water? How do flowers in a vase change over time? Revisit invertebrates now on the school field.  **Pattern Seeking** What colour flowers do pollinating insects prefer?  **Research** What are all the different ways that seeds disperse? **BIG Question – Assessment Opportunity** Why do plants have flowers? **TAPS planning ideas:** Measuring plants Function of stem **Other ideas:** Which conditions help seeds germinate faster? comparing the effect of different factors on plant growth, for example, the amount of	**Pattern Seeking** Which room has the most electrical sockets in a house?  **Research** How has electricity changed the way we live? How does a light bulb work? **BIG Question – Assessment Opportunity** What can we do with electricity? **TAPS planning ideas:** Circuit products Conductors **Other ideas:** Which metal is the best conductor of electricity? Do bulbs get brighter if more cells are added

	Which surface is best to stop you slipping? Exploring the strengths of different magnets and finding a fair way to compare them; Identifying how these properties make magnets useful in everyday items.		exploring how and why they might have changed over time Pupils might research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed. Pupils could explore different soils and identify similarities and differences between them and investigate what happens when rocks are rubbed together or what changes occur when they are in water.		light, the amount of fertiliser discovering how seeds are formed by observing the different stages of plant life cycles over a period of time Looking for patterns in the structure of fruits that relate to how the seeds are dispersed. They might observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.	
Objectives	Pupils should be taught to: - compare how things move on different surfaces notice that some forces need contact between 2 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	Pupils should be taught to: - recognise that living things can be grouped in a variety of ways - explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment - recognise that environments can change and that this can sometimes pose dangers to living things. Compare the types of animals and plants that live in the habitat. (notice that	Pupils should be taught to: - 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		Pupils should be taught to: - identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers - explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant - investigate the way in which water is transported within plants	Pupils should be taught to: - 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

	magnet, and identify some magnetic materials describe magnets as having 2 poles predict whether 2 magnets will attract or repel each other, depending on which poles are facing	animals from habitats such as under stones will have features such as antennae) Construct and interpret a variety of food chains, identifying producers, predators and prey.			- explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal	- 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

Cycle C 2025/2026	**Autumn**		**Spring**		**Summer**	
Theme Title	**War and Remembrance**		**The Americas (Rainforests)**		**Health through Time / The Romans**	
Science Study Title	**Light and Shadows**	**Sound**	**States of Matter**	**Habitats**	**Animals Including Humans (Yr 3)**	**Animals Including Humans (Yr 4**
Key Vocabulary / Knowledge:	Light, dark, natural and artificial sources, shadow, transparent, translucent, opaque, reflections, refraction, sight, vision, key parts of an eye.	Sounds, vibration, amplification, waves, pitch, volume, sound travelling through materials, how the ear works.	Solids, liquids, gases, thermometers, temperature, heat, cool, evaporation, condensation, water cycle, degrees Celsius.	Interdependence, adaptation, classification, environment, climate change, food chains, keys, grouping plants and animals.	Parts of the body, skeleton, muscles, movement, food groups, vitamins, minerals, growth, hygiene, bacteria, life cycle.	Digestive system: mouth, tongue, teeth, oesophagus, stomach and intestine. Nutrients, teeth, decay, health, molars, canines.
Overview / Enquiry	**Comparative tests** How does the distance between the shadow puppet and the screen affect the size of the shadow? Which pair of sunglasses will be best at protecting our eyes?	**Comparative tests** How does the volume of a drum change as you move further away from it? How does the length of a guitar string/tuning fork affect the pitch of the sound? Are two ears better than one?	**Comparative tests** How does the mass of a block of ice affect how long it takes to melt? How does the surface area of water affect how long it takes to evaporate? Does seawater evaporate faster than fresh water?	**Identify & Classify** Can we use the classification keys to identify all the animals that we caught pond dipping?	**Comparative tests** How does the angle that your elbow/knee is bent affect the circumference of your upper arm/thigh? How does the skull circumference of a girl compares with that of a boy?	**Comparative tests** In our class, are omnivores taller than vegetarians? **Identify & Classify**

	 **Identify & Classify** How would you organise these light sources into natural and artificial sources?  **Observation over time** When is our classroom darkest? Is the Sun the same brightness all day?  **Pattern Seeking** Are you more likely to have bad eyesight and to wear glasses if you are older?  **Research** How does the Sun make light? **BIG Question – Assessment Opportunity** What is a shadow? **TAPS planning ideas:**	 **Identify & Classify** Which material is best to use for muffling sound in ear defenders?  **Observation over time** When is our classroom the quietest?  **Pattern Seeking** Is there a link between how loud it is in school and the time of day? If there is a pattern, is it the same in every area of the school?  **Research** Do all animals have the same hearing range? **BIG Question – Assessment Opportunity** How can we make different sounds?	 **Identify & Classify** Can you group these materials and objects into solids, liquids, and gases? How would you sort these objects/materials based on their temperature?  **Observation over time** Which material is best for keeping our hot chocolate warm? How does the level of water in a glass change when left on the windowsill?  **Pattern Seeking** Is there a pattern in how long it takes different sized ice lollies to melt? How does evaporation rate change as you add more salt to your water? 	 **Observation over time** How does the variety of invertebrates on the school field change over the year?  **Pattern Seeking** How has the use of insecticides affected bee population?  **Research** Why are people cutting down the rainforests and what effect does that have? **BIG Question – Assessment Opportunity** Are living things in danger? **TAPS planning ideas:** Local survey **Other ideas:** How does the average temperature of the pond water change in each season?	 **Identify & Classify** How do the skeletons of different animals compare?  **Observation over time** How does our skeleton change over time? (From birth to death)  **Pattern Seeking** Do male humans have larger skulls that female humans?  **Research** Why do different types of vitamins keep us healthy and which foods can we find them in? **BIG Question – Assessment Opportunity** Why do animals have skeletons?	hat are the names for all the organs involved in the digestive system? How can we organise teeth into groups?  **Observation over time** How does an eggshell change when it is left in cola?  **Pattern Seeking** Are foods that are high in energy always high in sugar?  **Research** How do dentists fix broken teeth? **BIG Question – Assessment Opportunity** What do our bodies do with the food we eat? **TAPS planning ideas:** Teeth (eggs) in water **Other ideas:** Comparing the teeth of carnivores and

	Making shadows **Other ideas:** Which pair of sunglasses will be best at protecting our eyes? Looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.	**TAPS planning ideas:** Investigating pitch String telephones **Other ideas:** Which material is best to use for muffling sound in ear defenders? Are two ears better than one? Finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. Make earmuffs from a variety of different materials to investigate which provides the best insulation against sound. They could make and play their own instruments by using what they have found out about pitch and volume.	**Research** What are hurricanes, and why do they happen? **BIG Question – Assessment Opportunity** Where do ice cubes go when they disappear? Why does it rain and hail? **TAPS planning ideas:** Cornflour slime Drying materials Measure temp Dunking biscuits **Other ideas:** Does seawater evaporate quicker than fresh water Exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice-cream for a party). They could research the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid. They might observe and record evaporation	Using and making simple guides or keys to explore and identify local plants and animals Making a guide to local living things Raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched.	What is a healthy diet and why is it important? **TAPS planning ideas:** Investigating skeletons **Other ideas:** How does the skull circumference of a girl compare with that of a boy? Identifying and grouping animals with and without skeletons and observing and comparing their movement; Exploring ideas about what would happen if humans did not have skeletons. They might research different food groups and how they keep us healthy, and design meals based on what they find out.	herbivores and suggesting reasons for differences

			over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of temperature on washing drying or snowmen melting.			
Objectives	**Pupils should be taught to:** - 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 a solid object - find patterns in the way that the size of shadows change	**Pupils should be taught to:** • identify how sounds are made, associating some of them with something vibrating; • recognise that vibrations from sounds travel through a medium to the ear; • find patterns between the pitch of a sound and features of the object that produced it; • find patterns between the volume of a sound and the strength of the vibrations that produced it; • recognise that sounds get fainter as the distance from the sound source increases	**Pupils should be taught to:** • 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	**Pupils should be taught to:** - recognise that living things can be grouped in a variety of ways - explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment - recognise that environments can change and that this can sometimes pose dangers to living things	**Pupils should be taught to:** • identify those 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	**Pupils should be taught to:** • 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