

Thomas Johnson Lower School – Curriculum Plan

Subject: Science – Everyday materials			Year Group: 1			Term: Autumn		
								
Vocabulary			Knowledge What children will know			Understanding What children will understand		
Define the word and include etymology if useful			Learning	Teaching	Assessment	Learning	Teaching	Assessment
			Remembering	Telling	Testing	Practising	Coaching	Observing
Hard - solid, firm, and rigid; not easily broken, bent, or pierced. Soft - easy to mould, cut, compress, or fold; not hard or firm to the touch. Stretchy - able to stretch or be stretched easily. Stiff - not easily bent or changed in shape; rigid. Dull - lacking brightness, vividness, or sheen. Shiny - reflecting light, typically because very clean or polished. Rough - having an uneven or irregular surface; not smooth or level. Smooth - having an even and regular surface; free from perceptible projections, lumps, or indentations. Bendy - capable of bending; soft and flexible. Waterproof - impervious to water. Absorbent – able to soak up liquid easily. Opaque - not able to be seen through; not transparent. Transparent - allowing light to pass through so that objects behind can be distinctly seen.			Distinguish between an object and the material from which it is made Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock Know that different materials have a variety of uses.			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. Understand that different materials can be recycled and reused for different purposes.		
						Perform simple tests to explore questions – for example What is the best material for an umbrella? For lining a dog basket? For curtains? For a bookshelf? For a gymnast’s leotard? Working Scientifically Ask simple questions and recognise that they can be answered in different ways. Gather and record data to help in answering questions. Sort and classify different materials.		

Thomas Johnson Lower School – Curriculum Plan

Subject: Science – Seasonal changes			Year Group: 1			Term: Spring					
											
Vocabulary			Knowledge What children will know			Understanding What children will understand			Skills What children will be able to do		
Define the word and include etymology if useful			Learning	Teaching	Assessment	Learning	Teaching	Assessment	Learning	Teaching	Assessment
			Remembering	Telling	Testing	Practising	Coaching	Observing	Reflecting	Facilitating	Evaluating
Sun - The star in the centre of the Solar System around which the Earth orbits. The Sun produces natural light and heat and is essential for all life on Earth. Year – the time it takes for a planet to make one revolution of the Sun – for earth this takes 365 ¼ days. Day – time it takes for a planet to rotate on its own axis – for earth this takes 24 hours. Season - A period of the year (spring, summer, autumn or winter) that is marked by particular weather patterns and daylight hours. Hibernation - The long sleep taken by some animals during the winter when food is scarce. Deciduous - A plant that loses its leaves seasonally, usually before winter or a dry season. Evergreen – A plant or tree that keeps its leaves throughout the year. Weather - the state of the atmosphere at a particular place and time as regards heat, cloudiness, dryness, sunshine, wind, rain, etc.			Know there are four seasons 1. Autumn 2. Winter 3. Spring 4. Summer Know that different seasons brings different weather patterns. Know that there are changes in nature during the different seasons. Know that you dress different in different seasons. Know the length of daylight and darkness varies during the year.			Understand the changing seasons are a result of the tilt of the Earth, which causes the northern and southern hemispheres to be angled towards or away from the Sun at different times of the year and not, as children often believe, as a result of the Earth being closer to the Sun in summer, or because that the Sun is hotter at that time. In fact, the Earth is closest to the Sun in January. Understand it is not safe to look at the Sun even when wearing dark glasses.			<i>Make tables and charts</i> about the weather. <i>Observe and talk</i> about changes in weather and the seasons. <u>Working Scientifically</u> Ask simple questions and recognise that they can be answered in different ways. Gather and record data to help in answering questions. Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies.		

Thomas Johnson Lower School – Curriculum Plan

Subject: Science – Plant parts			Year Group: 1			Term: Spring		
								
Vocabulary			Knowledge What children will know			Understanding What children will understand		
Define the word and include etymology if useful			Learning	Teaching	Assessment	Learning	Teaching	Assessment
			Remembering	Telling	Testing	Practising	Coaching	Observing
Leaves - The part of the plant in which photosynthesis takes place. Flowers The organ of a plant responsible for reproduction. The main structures of a flower are the petals, stamens, carpels and sepals. Fruit - the sweet and fleshy product of a tree or other plant that contains seed and can be eaten as food. Roots - The part of the plant that anchors it in the ground, and absorbs water and nutrients Seed - the unit of reproduction of a flowering plant, capable of developing into another such plant. Trunk - the main woody stem of a tree as distinct from its branches and roots Branches - a part of a tree which grows out from the trunk or from a bough. Stem - the main above-ground structure of a plant. The stem's main functions are to keep the plant upright, support its main organs, orient the plant towards light, and transport water and minerals from the roots to the leaves and flowers. The stem also acts as a store for water and minerals. Deciduous - a tree that sheds its leaves annually Evergreen - a plant that retains green leaves throughout the year.			Know the different parts of a plant • Roots • Stem • Leaves • Flowers • Fruits • Seeds Know the purpose of each part of the plant.			Understand and compare how different plants change over time – for example leaves falling off trees, and buds opening.		
						Observe closely, perhaps using magnifying glasses, and compare and contrast familiar plants. Draw diagrams showing the parts of different plants including trees. Keep records of how plants have changed over time. Working Scientifically Use their observations and ideas to suggest answers to questions Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common flowering plants, including trees		

Thomas Johnson Lower School – Curriculum Plan

Subject: Science – Animal parts			Year Group: 1			Term: Summer			
									
Vocabulary	Knowledge What children will know			Understanding What children will understand			Skills What children will be able to do		
Define the word and include etymology if useful	Learning	Teaching	Assessment	Learning	Teaching	Assessment	Learning	Teaching	Assessment
	Remembering	Telling	Testing	Practising	Coaching	Observing	Reflecting	Facilitating	Evaluating
Carnivore - an organism that eats mostly meat. From the Latin <i>carn</i> which means flesh. Herbivore - an animal that feeds on plants. From the Latin <i>herba</i> – which means plant. Omnivore - an animal or person that eats a variety of food of both plant and animal origin. Mammal – a warm-blooded vertebrate animal that has hair or fur typically gives birth to live young and includes females that secrete milk for the nourishment of their young. <i>From the Latin – mamma – which means breast.</i> Amphibian – cold- blooded animal, they are born in water and breath with gills. As the larva grows into an adult form they develop the ability to breathe air and they are able to live on land as well as in water. Insect – animals that have 3 major body parts (head, thorax and abdomen), 3 pairs of legs and typically 1 or two pairs of wings. <i>From the Latin in which means into and secare which means to cut.</i> Bird – warm-blooded, egg laying animal with feathers, wings and a beak and typically able to fly.	Know a variety of different animal species • Fish • Amphibians • Reptiles • Birds • Mammals Know carnivores eat meat, herbivores eat plants and omnivores eat plants and meat. Know the different human parts of the human body. • Eyes • Nose • Ears • Tongue • Skin Know that animals can be classified in different ways. Know animals have different habitats.			Understand how to take care of animals taken from a local habitat and the need to return them safely after study. Understand how different animals have different body structures. Understand the rich diversity of animals and the importance of conservation.			Use their observations to compare and contrast animals at first hand or through videos and photographs, describing how they identify and group them. Group animals according to what they eat. Working Scientifically Perform simple tests Observe closely, using simple equipment Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals Identify and name a variety of common animals that are carnivores, herbivores and omnivores 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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Subject: Science – Animal survival			Year Group: 2			Term: Autumn		
								
Vocabulary			Knowledge What children will know			Understanding What children will understand		
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Exercise - activity requiring physical effort, carried out to sustain or improve health and fitness. Offspring the young born of living organisms, produced either by a single organism or, in the case of sexual reproduction Adult a fully developed animal. Nutrition the process of providing or obtaining the food necessary for health and growth.			Know that animals, including humans, have offspring that grow into adults, just like their parents. Know that animals, including humans, have basic needs for survival, which include water, food, and air. Know that animals, including humans, need water to drink and stay hydrated, and that it is essential for their bodies to function properly. Know that animals, including humans, need food for energy and to grow, and that different types of food provide different nutrients for their bodies. Know that animals, including humans, need air to breathe, and that oxygen is necessary for their bodies to work. Know that humans need to eat the right amounts of different types of food, including fruits, vegetables, grains, proteins, and dairy, to get all the nutrients they need.			Understand that exercise is important for humans to keep their bodies strong, healthy, and fit. Understand the importance of hygiene, such as washing hands regularly, brushing teeth, and keeping their bodies clean, to stay healthy and prevent the spread of germs. Understand that maintaining a healthy lifestyle, including proper nutrition, exercise, and hygiene, is essential for their well-being and overall health.		
						Working Scientifically Ask simple questions and recognising that they can be answered in different ways Gather and record data to help in answering questions. Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) Make connections between their own behaviours and choices and their impact on their health and well-being, as well as the importance of taking care of their bodies.		

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Subject: Science – Living things and their habitats			Year Group: 2			Term: Autumn		
								
Vocabulary			Knowledge What children will know			Understanding What children will understand		
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			Remembering	Telling	Testing	Practising	Coaching	Observing

Thomas Johnson Lower School – Curriculum Plan

Subject: Science – Use of everyday materials			Year Group: 2			Term: Spring			
									
Vocabulary	Knowledge What children will know			Understanding What children will understand			Skills What children will be able to do		
Define the word and include etymology if useful	Learning	Teaching	Assessment	Learning	Teaching	Assessment	Learning	Teaching	Assessment
	Remembering	Telling	Testing	Practising	Coaching	Observing	Reflecting	Facilitating	Evaluating
Material - the matter from which a thing is or can be made. From the Latin Materia which means matter. Squashing - crush or squeeze (something) with force so that it becomes flat, soft, or out of shape. Bending - shape or force (something straight) into a curve or angle. Twisting - form into a bent, curling, or distorted shape. Stretching - be made or be capable of being made longer or wider without tearing or breaking. Sustainability – taking care of our planet wisely and making choices that help both people and the environment for a long, long time.	Know a variety of everyday materials • Wood • Metal • Plastic • Glass • Brick • Rock • Paper • Cardboard Know materials have different properties: • Hardness • Flexibility • Transparency • Durability Know some solid objects can change shape as a result of different actions. Know the best uses of some 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 Understand how recycling can help the environment. Understand the concept of sustainability.			Compare the uses of everyday materials in and around school and compare these with materials found in other places (at home, the journey to school, on visits, in stories); observing closely identifying and classifying the uses of different materials. Working Scientifically - Perform simple tests - Observe closely, using simple Equipment Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. Find out about some people who have developed useful new materials for example John Dunlop, Charles MacIntosh or John McAdam. Sort materials into man made and natural materials.		

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Subject: Science – Plant survival			Year Group: 2			Term: Summer		
								
Vocabulary			Knowledge What children will know			Understanding What children will understand		
Define the word and include etymology if useful			Learning	Teaching	Assessment	Learning	Teaching	Assessment
			Remembering	Telling	Testing	Practising	Coaching	Observing
Seed - the unit of reproduction of a flowering plant, capable of developing into another such plant. Bulb - a rounded underground storage organ present in some plants, notably those of the lily family, consisting of a short stem surrounded by fleshy scale leaves or leaf bases, lying dormant over winter. Plant - a living organism typified by growing in a permanent site, that absorbs water and inorganic matter through its roots and uses photosynthesis through its leaves. Temperature - the degree or intensity of heat Environment - the surroundings or conditions in which a person, plant or animal lives or operates. Germination - the phase of plant growth when the seed begins to sprout.			Know plants grow from seeds and bulbs. Know that plants need water to survive and grow. Know that water is absorbed by the roots and transported to different parts of the plant. Know that leaves capture sunlight and turn it into energy in a process called photosynthesis. Know plants need a suitable temperature for optimal growth. Know that plants produce oxygen and remove carbon dioxide from the air.			Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. Understand the conditions required for germination, growth and survival in some different plants. Understand that plants reproduce through pollination. Understand how to care for plants.		
						Observe, and record with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb. Observe similar plants at different stages of growth. Set up a comparative test to show plants need light and water to stay healthy. Working Scientifically Identify and classify Use their observations and ideas to suggest answers to questions. Observe and describe how seeds and bulbs grow into mature plants. Identify the parts of a plant.		

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Subject: Science – Light			Year Group: 3			Term: Autumn		
								
Vocabulary			Knowledge What children will know			Understanding What children will understand		
Define the word and include etymology if useful			Learning	Teaching	Assessment	Learning	Teaching	Assessment
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Reflect - When light from an object is reflected by a surface, it changes direction. It bounces off the surface at the same angle as it hits it. From the Latin reflex – which means bent back. Light source - Light comes from different sources called light sources; our main natural light source is the sun. Other sources include fire, stars and man-made light sources such as lightbulbs and torches Shadows a dark shape that is formed when an object blocks a source of light. Opaque - not able to be seen through; not transparent. Transparent - allowing light to pass through so that objects behind can be distinctly seen from Latin <i>transparere</i>, from <i>trans</i>- ‘through’ + <i>parere</i> ‘appear’. Translucent - allowing light, but not detailed shapes, to pass through; semitransparent. Latin <i>translucent</i>- ‘shining through’, from the verb <i>translucere</i>, from <i>trans</i>- ‘through’ + <i>lucere</i> ‘to shine’.			Know that light is essential for vision and that darkness is the absence of light. Know that sunlight can be harmful to their eyes and understand ways to protect their eyes from the sun. Know that shadows can appear larger or smaller depending on the distance between the light source, object, and surface. Know that light plays a crucial role in our daily lives, enabling us to see, providing warmth, and helping us perceive colours and shapes			Understand that light can bounce off surfaces, which is known as reflection. Understand that shadows are created when an opaque object blocks the light from a light source. Understand that the shape of a shadow corresponds to the shape of the object blocking the light. Understand that light travels in straight lines and can be blocked by opaque objects but can pass through transparent objects.		
						Find patterns in the way that the size of shadows changes and the ways the shadows change as the light source moves or the distance between the light source and the object changes. Working Scientifically 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. Be able to recognise and describe patterns in how the size of shadows changes based on the position and distance of the light source and object. Be able to identify different sources of light in their environment, such as the sun, lamps, or flashlights.		

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Subject: Science – Rocks			Year Group: 3			Term: Autumn		
								
Vocabulary			Knowledge What children will know			Understanding What children will understand		
Define the word and include etymology if useful			Learning	Teaching	Assessment	Learning	Teaching	Assessment
			Remembering	Telling	Testing	Practising	Coaching	Observing
Rocks - the solid mineral material forming part of the surface of the earth and other similar planets, exposed on the surface or underlying the soil. Soil - the upper layer of earth in which plants grow, a black or dark brown material typically consisting of a mixture of organic remains, clay, and rock particles. Fossils - the remains or impression of a prehistoric plant or animal embedded in rock and preserved in petrified form. A Latin word meaning dug up. Grains - Rocks are solid at room temperature. They are made of grains that fit together. Each grain in a piece of rock is made from a mineral, which is a chemical compound. The grains in a rock can have different colours, shapes and sizes. Crystals - a special kind of solid material where the molecules fit together in a repeating pattern. This pattern causes the material to form all sorts of unique shapes. From Greek <i>krustallos</i> meaning 'ice or a mineral resembling it. Absorbent – how well a substance can soak up water. From the Latin verb Absorbere – which means swallow up.			Know how to compare and group rocks based on their appearance and simple physical properties like colour, texture, and hardness. Know that soils are made up of a combination of weathered rocks, minerals, organic matter (such as decomposed plants and animals), water, and air. Know that soil plays a crucial role in ecosystems by supporting various organisms and providing a habitat for insects, worms, and other small creatures. Know that Earth's surface is constantly changing due to geological processes like weathering, erosion, and deposition.			Understand that fossils are formed when the remains of plants and animals are trapped and preserved within layers of rock over long periods of time. Understand that soils are essential for plant growth and provide nutrients, support, and water for plants. Understand the importance of soil conservation and how human activities can affect soil quality, such as erosion through deforestation or improper land management.		
						Be able to describe, in simple terms, the process of fossil formation and how fossils provide evidence of past life on Earth. Be able to identify and describe different types of soil, such as sandy, loamy, or clayey, based on their texture and composition. Be able to recognize the connection between rocks, soil, and the formation of landforms like mountains, valleys, and canyons. Working Scientifically 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.		

Thomas Johnson Lower School – Curriculum Plan

Subject: Science – Animals including humans			Year Group: 3			Term: Spring		
								
Vocabulary			Knowledge What children will know			Understanding What children will understand		
Define the word and include etymology if useful			Learning	Teaching	Assessment	Learning	Teaching	Assessment
			Remembering	Telling	Testing	Practising	Coaching	Observing
Animals - living organism that feeds or organic matter, typically having specialised sense organs and nervous system and being able to respond rapidly to stimuli. Nutrition - the process of providing or obtaining the food necessary for health and growth. Fruit - the sweet and fleshy product of a tree or other plant that contains seed and can be eaten as food. Vegetables a plant or part of a plant used as food, such as a cabbage, potato, turnip, or bean Dairy containing or made from milk. Protein - Protein builds, maintains, and replaces the tissues in your body. Your <u>muscles</u>, your <u>organs</u>, and your <u>immune system</u> are made up mostly of protein. Fat natural oily substance occurring in animal bodies, especially when deposited as a layer under the skin or around certain organs.			Know that animals, including humans, require specific types and quantities of nutrition to meet their energy and growth needs, and they obtain nutrition from the food they eat. Know that humans and some other animals have a skeletal system made up of bones that provides support, shape, and protection for the body. Know that the skeletal system and muscles work together to provide structural support, enable movement, and protect vital organs. Know that a balanced diet, regular exercise, and good hygiene practices contribute to a healthy lifestyle.			Understand that muscles are responsible for movement and allow animals, including humans, to walk, run, jump, and perform various activities. Understand that physical activity and exercise are important for maintaining strong bones and muscles and overall health.		
						Be able to identify the different food groups (e.g., fruits, vegetables, grains, proteins, dairy) and understand their importance in providing essential nutrients for the body. Be able to identify and name some major bones in the human body, such as the skull, ribs, spine, and leg bones. Be able to describe simple movements and actions performed by muscles, such as bending, stretching, and lifting. Working Scientifically Set up simple practical enquiries, comparative and fair tests Gather, record, classify and present data in a variety of ways to help in answering questions Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables		

Thomas Johnson Lower School – Curriculum Plan

Subject: Science – Forces and magnets			Year Group: 3			Term: Spring		
								
Vocabulary			Knowledge What children will know			Understanding What children will understand		
Define the word and include etymology if useful			Learning	Teaching	Assessment	Learning	Teaching	Assessment
			Remembering	Telling	Testing	Practising	Coaching	Observing
Attract - to pull to or draw toward oneself or itself Repel - to push away or force back. Magnet A magnet is an object that is made of materials that create a magnetic field. Magnets have at least one north pole and one south pole Force - A force is a push or pull that causes a change in speed, direction or shape. All forces come in pairs, no force exists by itself.			Know that different surfaces affect how objects move, and some surfaces provide more or less friction. Know that some everyday materials are attracted to magnets, while others are not, and be able to group materials based on their magnetic properties. Know that magnets can be used to pick up certain objects or hold things together. Know that magnets can be used in compasses to help determine directions.			Understand that certain forces require physical contact between two objects, while magnetic forces can act from a distance. Understand that magnets have a magnetic field that influences objects within its range. Understand that magnets have two poles, a north pole and a south pole, which have opposite magnetic properties.		
						Be able to observe and recognise how magnets attract or repel each other and can attract specific materials. Be able to predict whether two magnets will attract or repel each other based on the orientation of their poles. Be able to explain simple applications of magnets in everyday life, such as using them for holding notes on a refrigerator. Working Scientifically Set up simple practical enquiries, comparative and fair tests Gather, record, classify and present data in a variety of ways to help in answering questions Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables		

Thomas Johnson Lower School – Curriculum Plan

Subject: Science – Plants			Year Group: 3			Term: Summer		
								
Vocabulary			Knowledge What children will know			Understanding What children will understand		
Define the word and include etymology if useful			Learning	Teaching	Assessment	Learning	Teaching	Assessment
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Seed - the unit of reproduction of a flowering plant, capable of developing into another such plant. Bulb - a rounded underground storage organ present in some plants, notably those of the lily family, consisting of a short stem surrounded by fleshy scale leaves or leaf bases, lying dormant over winter. Plant - a living organism typified by growing in a permanent site, that absorbs water and inorganic matter through its roots and uses photosynthesis through its leaves. Temperature - the degree or intensity of heat Environment - the surroundings or conditions in which a person, plant or animal lives or operates. Nutrition - the process of providing or obtaining the food necessary for health and growth.			Know the functions of different parts of flowering plants, including roots, stem/trunk, leaves, and flowers. Know the life cycle of flowering plants, including the role of flowers in pollination, seed formation, and seed dispersal. Know the different ways in which seeds are dispersed, such as wind, water, animals, or self-dispersal. Know the significance of flowers in attracting pollinators and producing seeds for the survival and reproduction of plants.			Understand that plants require air, light, water, nutrients from the soil, and space to grow and thrive, and these requirements can vary among different plant species. Understand the process of pollination, including the transfer of pollen from the male parts of a flower to the female parts. Understand the importance of pollinators, such as bees and butterflies, in the reproduction of flowering plants.		
						Be able to investigate and describe how water is transported within plants, from the roots to other parts of the plant. Be able to explain how seeds are formed and describe the conditions necessary for successful seed germination. Be able to identify and describe the different types of pollinators and their interactions with flowers. Working Scientifically Ask relevant questions and using 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, including thermometers and data loggers		

Thomas Johnson Lower School - Curriculum Plan

Subject: Science – Sound			Year Group: 4			Term: Autumn		
								
Vocabulary			Knowledge What children will know			Understanding What children will understand		
Define the word and include etymology if useful			Learning	Teaching	Assessment	Learning	Teaching	Assessment
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Vibration - Vibration or oscillation means quick-moving back and forth (or up and down) about a point of equilibrium. Pitch - The pitch of a sound is how high or low the sound is. (A squeaky sound is a high-pitched sound; A deep sound is a low-pitched sound) Volume - quantity or power of sound; the degree of loudness			Know that sounds are created by objects that vibrate. Know that sound waves travel through a medium, such as air or water. Know that the pitch of a sound is determined by the frequency of vibrations. Know that the volume of a sound is determined by the amplitude of vibrations. Know that sounds become quieter as you move further away from the source.			Understand that sound travels through a medium, such as air or water, to reach our ears. Understand that sounds become fainter as the distance from the sound source increases. Understand the concept of sound traveling through a medium, such as air, and how it reaches our ears. Understand that the volume (loudness) of a sound is related to the strength of the vibrations that created it.		
						Be able to identify patterns between the pitch (high or low) of a sound and the characteristics of the object that produced it. Be able to recognize patterns between the volume of a sound and the characteristics of the vibrating object. Be able to distinguish between sounds of different pitch and volume. Be able to explain how the characteristics of an object affect the properties of the sound it produces. Working Scientifically 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.		

Thomas Johnson Lower School – Curriculum Plan

Subject: Science – Electricity			Year Group: 4			Term: Autumn					
											
Vocabulary			Knowledge What children will know			Understanding What children will understand			Skills What children will be able to do		
Define the word and include etymology if useful			Learning	Teaching	Assessment	Learning	Teaching	Assessment	Learning	Teaching	Assessment
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Components – objects that can be added to an electrical circuit. E.g. bulb, battery, switch, buzzer, motor. Cells - An electrical cell is a device used to generate electricity, or to make chemical reactions by applying electricity. Battery - A battery is one or more cells, connected. Brightness - the quality or state of giving out or reflecting light. Volume – quantity or power of sound; degree of loudness. Switch - a device for making and breaking the connection in an electric circuit. Buzzer - an electrical device that makes a buzzing noise and is used for signalling. Bulb – an object that emits light. Motor - a machine that supplies motive power for a vehicle or for another device with moving parts.			Know that appliances like lamps, televisions, and refrigerators use electricity to work. Know that an electrical circuit consists of components such as cells/batteries, wires, bulbs, switches, and buzzers. Know that in a simple series circuit, the lamp will only light up if it is part of a complete loop that includes a battery and a closed switch. Know that a switch in an electrical circuit can open or close the circuit, controlling the flow of electricity. Know that certain materials, like metals, are good conductors that allow electricity to flow easily through them. Know that insulators are materials that do not allow electricity to flow easily and are used to prevent electrical accidents.			Understand the basic components of a simple series electrical circuit, including cells/batteries, wires, bulbs, switches, and buzzers. Understand the function of a switch in an electrical circuit and how it controls the flow of electricity. Understand the concept of a complete circuit and its role in allowing electricity to flow.			Be able to construct a simple series circuit using the given components. Be able to identify and name the parts of a simple series circuit, including cells, wires, bulbs, switches, and buzzers. Recognise common conductors, such as metals, and understand that they allow electricity to flow easily. Working Scientifically 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.		

Thomas Johnson Lower School – Curriculum Plan

Subject: Science – Animals including humans			Year Group: 4			Term: Spring			
									
Vocabulary	Knowledge What children will know			Understanding What children will understand		Skills What children will be able to do			
Define the word and include etymology if useful	Learning	Teaching	Assessment	Learning	Teaching	Assessment	Learning	Teaching	Assessment
	Remembering	Telling	Testing	Practising	Coaching	Observing	Reflecting	Facilitating	Evaluating
Food chain - a series of organisms each dependent on the next as a source of food. Producer - organisms who make (or produce) their own food Predator - A predator is an animal that hunts and eats other animals. Prey - is the animal that gets eaten by the predator. Carnivore - an organism that eats mostly meat. From the Latin <i>carn</i> which means flesh. Herbivore - an animal that feeds on plants. From the Latin <i>herba</i> – which means plant. Omnivore - an animal or person that eats a variety of food of both plant and animal origin.	Know that the digestive system in humans is responsible for breaking down food into smaller substances that can be absorbed by the body. Know that different types of teeth in humans serve specific functions, such as incisors for cutting, canines for tearing, premolars for crushing, and molars for grinding. Know that food chains illustrate the transfer of energy from one organism to another in an ecosystem. Know that producers, such as plants, are the beginning of the food chain as they convert sunlight into food through photosynthesis. Know that predators are animals that hunt and eat other animals, while prey are the animals that are hunted and eaten. Know that understanding food chains helps us recognise the interdependence and balance of organisms in nature.			Understand maintaining a balanced and healthy ecosystem is important for the survival and well-being of organisms, including humans. Understand changes in the population of one organism in a food chain can affect other organisms in the chain and impact the overall balance of an ecosystem.		Be able to construct food chains by identifying producers, predators, and prey in a given ecosystem. Be able to interpret food chains to understand the transfer of energy from one organism to another. Working Scientifically Gather, record, classify and present data in a variety of ways to help in answering questions Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables			

Thomas Johnson Lower School – Curriculum Plan

Subject: Science – States of Matter			Year Group: 4			Term: Spring			
									
Vocabulary	Knowledge What children will know			Understanding What children will understand			Skills What children will be able to do		
Define the word and include etymology if useful	Learning	Teaching	Assessment	Learning	Teaching	Assessment	Learning	Teaching	Assessment
	Remembering	Telling	Testing	Practising	Coaching	Observing	Reflecting	Facilitating	Evaluating
Solid - A solid can hold its shape (for example, water in solid form is ice). Liquid - A liquid like water forms a pool: it flows or runs but it can't be stretched or squeezed. Gas - A gas can flow, expand and be squeezed; if it is in an unsealed container it escapes (water in gas form is steam). Temperature – degree or intensity of heat. Evaporation - the process of turning from liquid into vapour. Condensation - the conversion of a vapour or gas to a liquid. Melt – when a solid is heated and changes into a liquid.	Know that materials can be classified into three states: solids, liquids, and gases. Know that some materials can change from one state to another when they are heated or cooled, and this is called a change of state. Know that the temperature at which a material changes state can be measured or researched using degrees Celsius (°C). Know that evaporation is the process by which a liquid turns into a gas, usually due to heat. Know that condensation is the process by which a gas turns into a liquid, usually due to cooling. Know that the water cycle involves the continuous movement of water through evaporation, condensation, and precipitation. Know that evaporation occurs more quickly at higher temperatures. Know that the rate of evaporation can be influenced by factors such as temperature and surface area. Know that water can evaporate from various sources, including oceans, lakes, and even wet surfaces.			Understanding the water cycle helps us appreciate how water is constantly recycled in nature. Understand that materials can be classified into three states: solids, liquids, and gases, based on their properties and behaviours. Understand that heating or cooling can cause some materials to change their state, and this change is called a change of state. Understand that evaporation and condensation are important processes in the water cycle, where water changes between its liquid and gaseous states.			Be able to compare and group different materials based on their states, distinguishing between solids, liquids, and gases. Be able to measure or research the temperature at which materials undergo a change of state using degrees Celsius (°C). Be able to explain the role of evaporation and condensation in the water cycle, and understand the relationship between temperature and the rate of evaporation. Working Scientifically Set up simple practical enquiries, comparative and fair tests Gather, record, classify and present data in a variety of ways to help in answering questions Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables		

Thomas Johnson Lower School – Curriculum Plan

Subject: Science – Living things and their habitats			Year Group: 4			Term: Summer			
									
Vocabulary	Knowledge What children will know			Understanding What children will understand			Skills What children will be able to do		
Define the word and include etymology if useful	Learning	Teaching	Assessment	Learning	Teaching	Assessment	Learning	Teaching	Assessment
	Remembering	Telling	Testing	Practising	Coaching	Observing	Reflecting	Facilitating	Evaluating
Plant – a living organism typified by growing in a permanent site, that absorbs water and inorganic matter through its roots and uses photosynthesis through its leaves. Animal – living organism that feeds on organic matter, typically having specialised sense organs and nervous system and being able to respond rapidly to stimuli. Invertebrate – animals that don't have a backbone. Vertebrate - an animal of a large group distinguished by the possession of a backbone or spinal column. Classify - arrange (a group of people or things) in classes or categories according to shared qualities or characteristics. <i>From the Latin classis – which means division.</i> Characteristics a feature or quality belonging typically to a person, place, or thing and serving to identify them. Mammal – a warm-blooded vertebrate animal that has hair or fur typically gives birth to live young and includes females that secrete milk for	Know that living things can be classified and grouped in various ways based on their similarities and differences. Know that environments are not static and can undergo changes, which can sometimes pose risks or dangers to living things. Know that different living things have specific adaptations that help them survive in their respective environments. Know that habitats provide the necessary resources and conditions for the survival of living things. Know that certain human activities can have both positive and negative impacts on the environment and living things. Know that different living things have specific life cycles and reproductive processes. Know that living things have basic needs such as food, water, shelter, and air for survival. Know that plants and animals interact with each other and with their environment in various ways. Know that diversity exists in the natural world, with a wide variety of living things found in different ecosystems.			Understand the concept of classification and how it helps in organizing and studying living things. Understand the significance of adaptation and how it enables living things to survive in different environments. Understand the interdependence of living things and their reliance on their environment. Understand the importance of maintaining a balanced and healthy ecosystem for the well-being of living things.			Be able to use classification keys effectively to identify and group different living things. Be able to describe and explain the basic needs of living things for their survival. Be able to recognise and identify potential dangers or changes in the environment that can affect living things. Be able to demonstrate care and responsibility towards the environment and living things, making choices that promote their well-being. Working Scientifically Ask relevant questions and using 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, including thermometers and data loggers		