





Science at St Matthias

Intent: At St Matthias, we want all of our children to become confident and capable scientists who are able to investigate the world around them and clearly communicate their findings in a range of ways. Our aim is to foster a sense of curiosity about the world while providing children with both the scientific skills and knowledge needed to ask and answer questions which emerge from this curiosity. We want our children to see themselves as scientists, both in the present and within their futures and we aim to provide them with aspirations to work in the field of science

Year 1: Science skills, knowledge and understanding

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Everyday Material 	Animals, including humans 	Seasonal Changes 		Plants 	
Big Question	Why did the third little pig make his house out of bricks?	How are animals different?	Why is it cold in winter?		What would a plant put on its wish list?	
Skills	<p>Questioning: Ask simple questions and recognising that they can be answered in different ways</p> <p>Investigating: Observe closely, using simple equipment to perform simple tests.</p> <p>Communicating: Identify and classify</p> <p>Recording: Gather and record data to help in answering questions.</p> <p>Reflecting: Discuss observations and use observations and ideas to suggest answers to questions</p>					



<p>Knowledge</p>	<p>-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 -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.</p>	<p>-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 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.</p>	<p>-Observe changes across the four seasons. - Observe and describe weather associated with the seasons and how day length varies.</p>	<p>-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.</p>
<p>Key vocabulary</p>	<p>wood, plastic, glass, metal, water, and rock hard/soft; stretchy/stiff; shiny/dull; rough/ smooth; bendy/not bendy; waterproof/not waterproof; absorbent/ not absorbent; opaque/transparent</p>	<p>carnivore, omnivore, herbivore, reptile, mammal, fish, bird, amphibian, body, head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth</p>	<p>Spring, Summer, Autumn, Winter, light, dark, sun, rain, fog, sun, hail, snow, sleet, cloud, climate, season, weather, Earth, months, day, night</p>	<p>trees, plants, flowers, deciduous, evergreen, flowering, leaves, blossom, petals, fruit, roots, bulb, seed, trunk, branch, stem</p>

Assessment questions	<ul style="list-style-type: none"> - I can distinguish between an object and the material from which it is made. -I can identify and name a variety of everyday materials. -I can describe the simple physical properties of everyday materials. -I can compare and group together a variety of everyday materials. 	<ul style="list-style-type: none"> -I can identify and name a variety of different types of common animals. -I can identify and name a variety of common animals based on what they eat. -I can describe and compare the structure of a variety of animals. -I can identify, name, draw and label the basic parts of the human body. -I can identify which part of the body is associated with each sense. 	<ul style="list-style-type: none"> -I can observe changes across the four seasons. -I can observe and describe weather associated with the seasons and how day length varies. - I can talk about the weather. 	<ul style="list-style-type: none"> -I can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. -I can identify and describe the basic structure of a variety of common flowering plants, including trees. * I can use the local environment to explore and answer questions about plants growing in their habitats.
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Year 2: Science skills, knowledge and understanding

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Overview	Uses of everyday materials	Animals, including humans	Living things and their habitats		Plants	








				
Big Question	Which material would make the best wellies?	How do animals survive?	Who lives where?	What would a plant put on its wish list?
Skills	<ul style="list-style-type: none"> - Questioning: Ask simple questions and recognising that they can be answered in different ways - Investigating: Observe closely, using simple equipment to perform simple tests. <ul style="list-style-type: none"> - Communicating: Identify and classify - Recording: Gather and record data to help in answering questions. - Reflecting: Discuss observations and use observations and ideas to suggest answers to questions 			
Knowledge	<ul style="list-style-type: none"> - Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. - Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. 	<ul style="list-style-type: none"> -Notice that animals, including humans, have offspring which grow into adults. -Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). -Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. 	<ul style="list-style-type: none"> -Explore and compare the differences between things that are living, dead, and things that have never been alive. -Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. -Identify and name a variety of plants and animals in their habitats, including microhabitats -Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different 	<ul style="list-style-type: none"> -Observe and describe how seeds and bulbs grow into mature plants. -Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. -Pupils should use the local environment throughout the year to observe how different plants grow. -Pupils should be introduced to the requirements of plants for germination, growth and survival, as well as to the processes of reproduction and growth in plants.

			sources of food.	
Key vocabulary	opaque, twist, bend, transparent, translucent, reflective, squash, rigid, non-reflective	offspring, adult, mammal, human, survival, exercise, healthy, heart, balance, diet, protein, fats, carbohydrates	living, dead, never been alive, move, grow, offspring, habitats, pond, meadow, woodland, microhabitat, suitable, food chain, shelter	seeds, bulb, fully grown, water, light, damp, wet, dry, hot, warm, cool, cold, grow, growth, health, shoot, seedling, wither, die, dry, soil, earth
Assessment questions	<ul style="list-style-type: none"> * I can identify a range of everyday materials. * I can identify and compare the suitability of a variety of everyday materials for particular uses. * I can find out how the shapes of objects can be changed by squashing, bending, twisting and stretching. 	<ul style="list-style-type: none"> * I can notice that animals, including have offspring which grow into adults. * I can find out about and describe the basic needs of living things. * I can describe the importance of exercise for humans. * I can describe the importance of eating the right amounts of different types of food. * I can understand the importance of hygiene. 	<ul style="list-style-type: none"> *I can compare and explore the difference between things that are living, dead and things that have never been. * I can identify and name a variety of plants and animals in their habitats, including micro-habitats. * I can describe how different habitats provide living things with the things that they need to survive. * I use simple food chains and identify and name different sources. 	<ul style="list-style-type: none"> *I can observe the growth of plants. * I can describe how seeds and bulbs grow into mature plants. * I can find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

[Year 3: Science skills, knowledge and understanding](#)






	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
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Overview	Animals, including humans 	Light 	Forces 	Plants 	Rocks 
Big Question	Why are our bodies special?	Why can we see in the dark?	Do all forces involve contact?	How does your garden grow?	Where is best to build a house?
Skills	<ul style="list-style-type: none"> - Questioning: Ask relevant questions and use different types of scientific enquiry to answer them. - Investigating: Set up simple, practical enquiries, comparative and fair tests; using equipment to measure accurately. - Communicating: Make well-explained predictions and create explanations using models and diagrams. - Recording: Gather and record data in a variety of ways; present and interpret results using scientific language. - Reflecting: Justify choice of methods to evaluate investigations and draw conclusions; suggesting ideas for improvements. 				
Knowledge	<p>-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.</p> <p>-Identify that humans and some other animals have skeletons and muscles for support, protection and</p>	<p>-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</p> <p>-Recognise that light from the sun can be dangerous and that there are ways to protect their eyes</p> <p>-Recognise that shadows are formed when the light from a light source</p>	<p>-Compare how things move on different surfaces.</p> <p>-Notice that some forces need contact between two objects, but magnetic forces can act at a distance.</p> <p>-Observe how magnets attract or repel each other and attract some materials and not others.</p> <p>-Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and</p>	<p>- Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</p> <p>- 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</p> <p>-Investigate the way in which water is transported</p>	<p>-Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</p> <p>Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p> <p>-Recognise that soils are made from rocks and organic matter.</p>

	movement.	is blocked by an opaque object -Find patterns in the way that the size of shadows change	identify some magnetic materials. -Describe magnets as having two poles. -Predict whether two magnets will attract or repel each other, depending on which poles are facing	within plants -Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	
Key vocabulary	nutrients, nutrition, balanced, carbohydrate, protein, vegetables, fruit, fat, dairy, vitamin, minerals, energy, skeleton, protect, muscles, support, movements, organs, bones	light, source, object, straight line, eye, reflection, refraction, convex, concave, shadow, angle, opaque, translucent, transparent, direction	force, contact, non-contact, push, pull, attract, repel, pole, north, south, surface, friction, magnetic, non-magnets, magnetic field, distance	function, parts, flowering, non-flowering,, requirements, nutrients, transported, seed dispersal, pollination, life cycle, photosynthesis	rocks, hard, soft, rough, smooth, texture, soil, absorb, fossil, crystals, layers, permeable, non-permeable, clay, chalk, slate, properties

Assessment questions	<ul style="list-style-type: none"> * I can identify the right types and amounts of nutrition that animals need. * I know that animals cannot make their own food. * I can identify the purpose of skeletons and muscles for some animals. 	<ul style="list-style-type: none"> * I can know that light is needed to see things * I can recognise sunlight can be dangerous and that there are ways to protect eyes. * I can notice light is reflected from surfaces. * I can recognise how shadows are formed and find patterns in the size of shadows. 	<ul style="list-style-type: none"> * I can compare movement on surfaces. * I can observe properties of magnets, described as having two poles and predict whether two magnets will attract or repel. * I can compare and group together materials on basis of magnetism and predict whether two magnets will attract or repel. 	<ul style="list-style-type: none"> * I can identify and describe the functions of different parts of flowering plants. I can investigate water transport in plants. * I can explore the requirements of plants for life and growth and how these vary. * I can explore the role of flowers in the life cycle of flowering plants. 	<ul style="list-style-type: none"> * I can compare and group different types of rock. * I can describe in simple terms how fossils are formed. * I can recognise that soil is made from rocks and organic matter.
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Year 4: Science skills, knowledge and understanding






	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Overview	Animals, including humans 	Living things, including their habitats 	Electricity 		Sound 	States of Matter 

Big Question	Do we just need our teeth to eat?	How can we tell the difference between living things?	What do we need in order to create power?	Why do objects make different sounds?	Why do materials change state?
Skills	<ul style="list-style-type: none"> - Questioning: Ask relevant questions and use different types of scientific enquiry to answer them. - Investigating: Set up simple, practical enquiries, comparative and fair tests; using equipment to measure accurately. <ul style="list-style-type: none"> - Communicating: Make well-explained predictions and create explanations using models and diagrams. - Recording: Gather and record data in a variety of ways; present and interpret results using scientific language. - Reflecting: Justify choice of methods to evaluate investigations and draw conclusions; suggesting ideas for improvements. 				

<p>Knowledge</p>	<ul style="list-style-type: none"> -Describe the simple functions of the basic parts of the digestive system in humans -Identify the different types of teeth in humans and their simple functions -Construct and interpret a variety of food chains. -Identifying producers, predators and prey. 	<ul style="list-style-type: none"> -Recognise that living things can be grouped in a variety of ways, -Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. -Recognise that environments can change and that this can sometimes pose dangers to living things. 	<ul style="list-style-type: none"> -Identify common appliances that run on electricity. -Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. -Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. -Recognise some common conductors and insulators, and associate metals with being good conductors. 	<ul style="list-style-type: none"> -Identify how sounds are made, associating some of them with something vibrating. -Recognise that vibrations from sounds travel through a medium to the ear. -Find patterns between the pitch of a sound and features of the object that produced it. -Find patterns between the volume of a sound and the strength of the vibrations that produced it. -Recognise that sounds get fainter as the distance from the sound source increases. 	<ul style="list-style-type: none"> -Compare and group materials together, according to whether they are solids, liquids or gases. -Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). -Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.
<p>Key vocabulary</p>	<p>digestive system, saliva, intestine, rectum, saliva, nutrients, incisor, canine, molar, food chain, producer, prey,</p>	<p>Classify, classification key, environment, habitat, human impact, hibernate, migrate</p>	<p>component, device, appliance, mains, conductor, insulator, connection, circuit, current, symbol, wire, switch, cell, battery, buzzer, ammeter, volt metre</p>	<p>source , travel, vibration, pitch, volume, vacuum, sound installation, louder, fainter, higher, lower, ear, hear</p>	<p>states of matter, solid, liquid, gas, evaporate, condensation, state change, water cycle, temperate, degrees celsius,</p>

	predator.				
Assessment questions	<ul style="list-style-type: none"> * I can describe the functions of the basic parts of the human digestive system. * I can identify different human teeth and their functions. * I can construct and interpret food chains (producers, predators, prey). 	<ul style="list-style-type: none"> * I can group living things, using/constructing classification keys. * I can describe how habitats provide for the basic needs of living things. * I can recognise environmental threat 	<ul style="list-style-type: none"> * I can identify electrical appliances. * I can construct simple circuits, identifying the function of cells, wires, bulbs, switches and buzzers. * I can recognise common conductors and insulators. 	<ul style="list-style-type: none"> * I know vibrations create sound. * I can explain how vibrations travel from a sound source through a medium to the ear. * I can identify how pitch and volume are created and how they can be changed. 	<ul style="list-style-type: none"> * I can compare and group materials together. * I can observe materials changing state. * I can accurately use a thermometer and record temperature in °C. * I can explain the role of evaporation and condensation in the water cycle.

Year 5: Science skills, knowledge and understanding






	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Overview	<p>Forces</p> 	<p>Living things and their habitats</p> 	<p>Properties and changes of materials</p> 	<p>Animals, including humans</p> 	<p>Earth and Space</p> 	

Big Question	How could forces keep us safe?	Do all species start as an egg?	How do materials change?	How will we change as we grow older?	What would it be like to live in space?
Skills	<ul style="list-style-type: none"> - Questioning: Can answer questions that have been raised from scientific enquiries. - Investigating: Plan different types of enquiries, recognising and controlling variables. Carry out comparative and fair tests and using equipment to measure accurately, - Communicating: Can make predictions based on test results and use scientific language to communicate findings. - Recording: Present findings in a variety of different ways, using diagrams, classification keys, tables and graphs.. - Reflecting: Justify arguments based on scientific evidence, explain the degree of reliability in results, and draw conclusions from enquiries. 				
Knowledge	<p>-Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>-Identify the effects of air resistance, water resistance and friction that act between moving surfaces.</p> <p>-Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater</p>	<p>-Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p>-Describe the life process of reproduction in some plants and animals.</p>	<p>-Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.</p> <p>-Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</p> <p>-Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and</p>	<p>-Describe the changes as humans develop to old age.</p>	<p>-Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</p> <p>-Describe the movement of the Moon relative to the Earth.</p> <p>-Describe the Sun, Earth and Moon as approximately spherical bodies.</p> <p>-Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p>

	effect.		<p>evaporating.</p> <p>-Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</p> <p>-Demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>-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.</p>		
Key vocabulary	force, air resistance, gravity, Earth, friction, surfaces, simple machines, mechanisms, cogs, gears, levers, pulleys	Life cycle, reproduce, live young, fertilise, metamorphosis, asexual, plantlet, runners, cuttings, bulbs, similarities, differences	materials, properties, thermal, insulator, conductor, electrical, mixture, change of state, dissolve, solution, soluble, insoluble, sieve, filter, reversible, irreversible	life cycle, life stages, reproduction, frail, elderly, develop, menstruation, puberty, hormones	Planet, solar system, Earth, Sun, Moon, movement, spherical, orbit, rotate, stars, atmosphere, gravity, universe,
Assessment questions	<p>* I can explain the effects of gravity.</p> <p>*I can identify the</p>	I can describe differences in the life cycles of a mammal, an	* I can compare and group together everyday materials based on their properties.	* I can describe the changes as humans develop to old age	* I can describe the movement of the planets, as approximately spherical bodies, relative to the

	<p>effects of air resistance, water resistance and friction.</p> <p>* I can recognise some mechanisms, including levers, pulleys and gears.</p>	<p>amphibian, an insect and a bird.</p> <p>* I can describe reproduction in some plants and animals.</p> <p>* I can study naturalists and animal behaviourists and raise questions about their local environment throughout the year.</p>	<p>* I know that some materials will dissolve in liquid to form a solution.</p> <p>* I can decide how mixtures might be separated, including through filtering, sieving and evaporating.</p> <p>* I can demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>* I can explain that some changes result in the formation of new materials and that this is not usually reversible.</p>	<p>(including changes during puberty).</p>	<p>Sun in the solar system.</p> <p>* I can describe the movement of the Moon relative to the Earth.</p> <p>* I can explain day and night and the apparent movement of the sun across the sky.</p>
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Year 6: Science skills, knowledge and understanding

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Overview	<p>Living things in their habitats</p> 	<p>Evolution and Inheritance</p> 	<p>Light</p> 		<p>Animals, including humans</p> 	<p>Electricity</p> 

Big Question	How can animals be grouped?	Why aren't there any dinosaurs in Hackney?	Why can't I see around corners?	How does my body transport blood?	How can I fix a circuit?
Skills	<ul style="list-style-type: none"> - Questioning: Can answer questions that have been raised from scientific enquiries. - Investigating: Plan different types of enquiries, recognising and controlling variables. Carry out comparative and fair tests and using equipment to measure accurately, - Communicating: Can make predictions based on test results and use scientific language to communicate findings. - Recording: Present findings in a variety of different ways, using diagrams, classification keys, tables and graphs.. - Reflecting: Justify arguments based on scientific evidence, explain the degree of reliability in results, and draw conclusions from enquiries. 				

<p>Knowledge</p>	<p>-Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals.</p> <p>-Give reasons for classifying plants and animals based on specific characteristics.</p>	<p>-Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p> <p>-Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p> <p>-Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>	<p>-Recognise that light appears to travel in straight lines.</p> <p>-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.</p> <p>-Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.</p> <p>-Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>	<p>-Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</p> <p>-Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</p> <p>-Describe the ways in which nutrients and water are transported within animals, including humans.</p>	<p>-Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>-Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.</p> <p>-Use recognised symbols when representing a simple circuit in a diagram.</p>
<p>Key vocabulary</p>	<p>vertebrate, invertebrate, characteristics, categorise, classifying insects, cold-blooded, microorganisms, flowering, non-flowering,</p>	<p>offspring, characteristics, suited, adapted, adaptation, fossil, evolution, inheritance, inherited, species, variation, change</p>	<p>light, source, object, straight line, eye, reflection, refraction, convex, concave, shadow, angle, opaque, translucent, transparent, direction</p>	<p>pulse, heart rate, pulse, organs, function, blood, vessels, nutrients, water, oxygen, carbon dioxide, inhale, exhale, circulatory system, vein, artery, atrium, ventricle, vena cava, aorta,</p>	<p>circuit, complete circuit, diagram, symbols, cell, battery, bulb, buzzer, switch, motor, voltage, switch, wire, connection, voltmeter, ammeter</p>

<p>Assessment questions</p>	<ul style="list-style-type: none"> * I can describe how living things are classified due to similarities and differences. * I am able to provide reasons for classifying plants and animals. 	<ul style="list-style-type: none"> * I can recognise that living things change over time. * I can observe that fossils provide information. * I know that living things produce offspring that are similar but often vary. * I can identify how animals and plants adapt to their environment– which leads to evolution. 	<ul style="list-style-type: none"> * I can understand that light travels in straight lines. * I know that objects are seen because they give out light or reflect into the eye. * I can explain that shadows have the same shape because light travels in a straight line. 	<ul style="list-style-type: none"> * I can identify and name main parts of the circulatory system. * I can describe the functions of the heart, blood vessels and blood. * I can describe the ways water and nutrients are transported in animals. 	<ul style="list-style-type: none"> * I can relate the brightness of the lamp/volume of the buzzer to the cell voltage. * I can compare reasons for variation in brightness, volume, for a component. * I can recognise symbols in a simple circuit diagram.
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