Science Progression at Colmers Farm Primary School **– Animals**

	EYFS	**Year 1** Animals, including humans	**Year 2** Animals, including humans	**Year 2** Living things and their habitats	**Year 3** Animals, including humans	**Year 4** Living things and their habitats	**Year 4** Animals, including humans	**Year 5** Living things their habitats / Animals	**Year 6** Evolution and inheritance	**Year 6** Animals, including humans	**Year 6** Living things and their habitats
Learning objectives	Can talk about animals they have observed. Develop an understanding of growth, decay and changes over time. Look closely at similarities, differences, patterns and change. Make observations of animals and explain why some things occur, and talk about changes. Show care and concern for living things and the environment.	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. Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets). Identify, name, draw and label basic parts of the human body and say which part of the body is associated with each sense.	Notice that animals have offspring which grow into adults. Find out about and describe the basic needs of animals for survival (water, food and air). Describe the importance for humans to exercise, eating the right amounts of different types of food, and hygiene	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 micro-habitats. Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.	Identify that animals 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 some animals have skeletons and muscles for support, protection and movement.	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.	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.	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some animals. Describe the changes as humans develop to age.	Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Identify how animals are adapted to suit their environment in different ways and that adaptation may lead to evolution.	Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function Describe the ways in which nutrients and water are transported within animals, including humans	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences. Give reasons for classifying animals based on specific characteristics.

	EYFS	**Year 1** Animals, including humans	**Year 2** Animals, including humans	**Year 2** Living things and their habitats	**Year 3** Animals, including humans	**Year 4** Living things and their habitats	**Year 4** Animals, including humans	**Year 5** Living things their habitats / Animals	**Year 6** Evolution and inheritance	**Year 6** Animals, including humans	**Year 6** Living things and their habitats
Essential substantive knowledge for future learning	Animals are living things that eat and grow. Animals share some characteristics with humans. Animals have different homes.	Animals can be grouped based on characteristics. Different animals eat different food. Fish live in water so have fins etc. Birds have wings etc. Mammals have hair etc. Reptiles have… Amphibians have…	Animals reproduce to make more of the same species. Animals need food, water and air to survive.	A food chain uses arrows to show the flow of energy. A food chain starts with a plant. Living things in a habitat depend on each other for food and shelter.	Animals get nutrients from food. Some animals have skeletons and muscles for support, protection and movement.	Animals can be grouped due to observable features. Animals can be identified based on observable features. Animals can be affected by changes in their environment.	Plants produce their own food so are called producers; animals consume food so are called consumers. Some animals eat other animals and are called predators. Some animals are eaten by other animals and are called prey.	Animals reproduce to make more of the same species.	Animals change over time and some species become extinct. Offspring receive genetic information from parents. The theory of natural selection states that animals that are better adapted will survive. Animals have features that make them adapted to their environment.		Animals are classified into broad groups based on their characteristics.
Essential vocabulary for future learning	Grow, change, breathe, live, home, feed, change, head, hands, legs, teeth, arms, shoulders, face, knees, eyes, ears, mouth, nose, toes	Fish, amphibian, reptile, bird, mammal, head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth, beak, wings, fins, gills, fur, feathers, scales, carnivore, herbivore, omnivore	Offspring, reproduction, growth, nutrition.	Habitat, micro-habitat, food chain, needs, living, dead, alive	Nutrition, skeleton, muscle	Classify, classification, vertebrate, invertebrate, environment, habitat, fish, amphibian, reptile, bird, mammal, human impact, litter, deforestation	Food chain, producer, predator, prey	Life cycle, reproduction, species, fertilise, life span	Offspring, adaptation, variation, evolution, extinction	Nutrient	Characteristic, classify, variation
Investigations	Observe changes in worms, rabbit, snails, chicks.									Does the time after exercise affect the pulse rate?	
Scientists/ influential people	Jazz Arundel (vet), Beau (Hanwell Zoo)				Steve Backshall			David Attenborough, Jane Goodall	Charles Darwin, Alfred Russell Wallace	Doctors, nurses, sports scientists, physiotherapists	Alastair Robinson, Carl Linnaeus

Science Progression at Colmers Farm Primary School – **Electricity**

	Year 4 Electricity	**Year 5** Properties and changes of materials	**Year 6** Electricity
National Curriculum Objectives	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.	Compare and group together everyday materials on the basis of their properties, including their conductivity. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.	Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. 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. Use recognised symbols when representing a simple circuit in a diagram.
Essential substantive knowledge for future learning	A circuit must have a source of power (cells). A circuit must be complete for electricity to flow. A switch is used to open and close a circuit. Metals conduct electricity. Plastic and wood do not conduct electricity.	Metals are used in circuits to conduct electricity. Plastic is used to insulate, e.g. wire covering.	Electricity flows through a circuit. The voltage in a circuit can be increased or decreased and this affects the brightness of a bulb and the loudness o f a buzzer.
Disciplinary Knowledge			How to plan a fair test make predictions take and record measurements and data. Understand about reliability of tests (need to repeat) Present findings in appropriate format e.g graph, table, diagram. Explain results. draw conclusions
Essential vocabulary for future	Circuit, cell, wire, bulb, switch, buzzer, battery, switch, conductor, insulator, voltage	Conductivity, conductor, insulator	Circuit, cell, wire, bulb, switch, buzzer, battery, component, conductor, insulator, voltage, symbol
Investigations	Which materials are conductors of electricity? Which materials are insulators of electricity?		How can the brightness of a bulb/loudness of a buzzer be changed?
Scientists/ influential people	Alessandro Volta	W. Lincoln Hawkins	Lewis Latimer, electricians

Science Progression at Colmers Farm Primary School – **Forces**

	EYFS	**Year 2** Uses of everyday materials	**Year 3** Forces and magnets	**Year 5** Forces	**Year 5** Earth in space
Learning objectives	Know about similarities and differences in relation to objects and materials.	Find out how the shapes of solid objectsmade from some materials can be changed by squashing, bending, twisting,and stretching.	Compare how things move on different surfaces. Notice that some forces need contact between two objects, but magnetic forces can act at a distance. Observe how magnets attract or repeleach other & attract some materials& not others. Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet,and identify some magnetic materials. Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, dependingon which poles are facing.	Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Identify the effects of air resistance, water resistance and friction that act between moving surfaces. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. Describe the movement of the Moon relative to the Earth.
Essential substantive knowledge for future learning	Some objects float while others sink.	Solids can change shape when they aresquashed, bent, twisted or stretched.	A force is a push or pull. Magnets have a north pole and a south pole. Magnets attract or repel each other and attract some materials and not others.	A force is a push or pull. A force has a direction which can be shown with arrows in a diagram. Gravity causes objects to be pulled towards very large objects such as the Earth. Air resistance, water resistance and friction slow down moving objects.	The moon orbits the earth due to the earth's gravity. The earth orbits the sun due to the sun's gravity. The larger the object, the greater the force of gravity it exerts.
Essential vocabulary for future learning	Float, sink	Solid, material, squashing, bending,twisting, stretching	Force, push, pull, magnet, magnetic, attract, repel, pole, gravity, friction, resistance	Force, gravity, push, pull, air resistance, water resistance, friction, upthrust, newtons, forcemeter, lever, pulley, gear, lever	Gravity, orbit, planet, star, satellite, solar system
Investigations	Which objects float and sink in a water tray?	Testing the elasticity of different pairs oftights.	Which materials are attracted to a magnet and which are not? How does the type of surface affect the movement of an object?	Does the mass of an object affect how much it is pulled towards the earth by gravity? Do objects weigh the same in water as in air?	
Scientists/ influenti alpeople			William Gilbert	Natalie Simpson, Isaac Newton	

Science Progression at Colmers Farm Primary School – **Humans**

	EYFS	**Year 1** Animals, including humans	**Year 2** Animals, including humans	**Year 3** Animals, including humans	**Year 4** Animals, including humans	**Year 5** Animals, including humans	**Year 6** Evolution and inheritance	**Year 6** Animals, including humans	**Year 6** Living things and their habitats
Learning objectives		Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	Notice that humans have offspring which grow into adults. Find out about and describe the basic needs of 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.	Identify that 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 have skeletons and muscles for support, protection and movement.	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.	Describe the changes as humans develop to old age.	Recognise that humans produce offspring of the same kind, but normally offspring vary and are not identical to their parents.	Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Describe the ways in which nutrients and water are transported within humans.	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences. Give reasons for classifying animals based on specific characteristics.
Essential substantive knowledge for future learning		The five senses are sight, smell, hearing, touch and taste. Eyes are for sight. Ears are for hearing. The tongue is for taste. The nose is for smell. Hands are for touch.	Humans are animals. Humans reproduce to make more of the same species. Babies grow up into adults. Humans need food, water and air to survive. Exercise, diet and hygiene affect health.	Humans have skeletons and muscles for support, protection and movement.	Digestion is the breakdown of food. Food travels from the mouth through the oesophagus, stomach and intestines.	Puberty is when changes take place in the transition from childhood to adulthood.	Humans produce offspring of the same kind. Human offspring receive a mixture of genetic information from both of their parents so they are not identical to either of their parents.	Diet, exercise and drugs affect human health.	Humans are classified as mammals as the female produces milk for its young, the female gives birth to live young, they are warm-blooded, they have skin and hair.
Essential vocabulary for future learning		Head, neck, arms, elbows, hands, legs, knees, feet, face, ears, eyes, nose, hair, mouth, teeth, tongue, sense, sight, hearing, taste, smell, touch	Offspring, reproduction, growth, baby, toddler, child, teenager, adult, exercise, nutrition, diet, hygiene, health, healthy, life cycle	Nutrition, skeleton, muscle, carbohydrates, proteins, fats, vitamins, minerals, fibre, water	Digestive system, mouth, oesophagus, stomach, intestine, tooth, incisor, canine, molar, premolar, wisdom	Puberty, foetus	Offspring, foetus, adolescent, toddler, reproduction, genes, genetic	Diet, exercise, drug, obesity	Classify, characteristics, mammal, warm-blooded

Investigations		Can we use our sense of touch to guess what is in the feely bag? Can we use our sense of hearing to guess what certain sounds are? Can we use our sense of taste to identify certain flavours? Cab we use our sense of smell to identify certain smells?			Which liquids cause the most decay to teeth?			Does the time after exercise affect the pulse rate?	
Scientists/ influential people				Andreas Vesalius	William Beaumont, dentists			Marie M Daly, doctors, nurses, sports scientists, physiotherapists	Frederick McKinleyJones

Science Progression at Colmers Farm Primary School – **Light**

	Year 1 Everyday materials	**Year 2** Plants	**Year 3** Light	**Year 3** Plants	**Year 5** Properties & changes of materials	**Year 5** Earth and space	**Year 6** Light
Learning objectives	Transparent materials are see-through. Opaque materials are not see-through.	Find out and describehow plants need lightto grow and stay healthy.	Recognise that they need light in order to see things and that dark is the absence oflight. Notice that light is reflected fromsurfaces. Recognise that lightfrom the sun can bedangerous and that there are ways to protect their eyes. Recognise that shadows are formed when the light from alight source is blockedby a solid object. Find patterns in theway that the size of shadows change.	Explore the requirements of plants for life and growth (light).	Compare and group together everyday materials on the basis of their properties, including **transparency.**	Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	Recognise that light appears to travel in straight lines. Use the idea that light travels in straight linesto explain that objects are seen, because theygive out or reflect lightinto the eye. Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to oureyes. Use the idea that light travels in straight linesto explain why shadows have the same shape as the objects that cast them.
Essential substantive knowledge for future learning		In order to grow and stay healthy, plants need light which comes from the sun. Plants in darkness do not receive light.	Light travels from a light source: sun, fire, TV/computer screen etc. If a light source is not shining on an object, it is in darkness. Light reflects when it bounces off a surface.Light does not travel through an opaque object. A shadow is formed when the light from a light source is blocked by an opaque object. The location of the light source affects the size of the shadow.	In order to live and grow, plants need light from a source of light, which is usually the sun; if plants do not get light, they will not survive.	Light travels through transparent materials so they do not block light.	Light travels from the sun to the Earth. Sunlight can be blocked by an object and this causes a shadow.	Light travels in straight lines. Light travels through space. Light reflects off surfaces. Light refracts when passing through raindrops to create a rainbow.

Essential vocabulary for future learning		Light, sunlight, dark	Shadow, light source,opaque, reflect	Light, sunlight		Shadow, light source, reflection, refraction	
Investigations		Will a plant grow if it does not receive light?	Does the distance of the object from the light source affect the length of the shadow?			Does the rotation of the earth cause shadows to change length?	Can the shape of a shadow be changed?
Scientists/ influential people						CopernicusGalileo	Yannick Keith Lize, Jennifer Trahan, Nirmala Ramanujam

Science Progression at Colmers Farm Primary School – **Materials**

	EYFS	**Year 1** Everyday materials	**Year 2** Uses of everyday materials	**Year 3** Rocks	**Year 3** Forces and magnets	**Year 4** States ofmatter	**Year 4** Electricity	**Year 4** Sound	**Year 5** Propertiesand changes of materials
Learning objectives	Notice detailed features of objectsin their environment. Talk about some ofthe natural and found objects theyhave observed. Know about similarities and differences in relation to objectsand materials.	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.	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.	Compare and group together different kinds of rocks on the basisof their appearance and simple physical properties.	Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.	Compare and group materials together, according to whether they aresolids, liquids or gases. Observe that somematerials change state when they are heated or cooled, and measure or research the temperature at which this happensin degrees Celsius (°C). Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporationwith temperature.	Recognise somecommon conductors and insulators, and associate metalswith being good conductors.	Recognise that vibrations from sounds travel through a mediumto the ear.	Compare and group together everyday materialson the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. Use knowledge ofsolids, liquids andgases to decide how mixtures might be separated, including throughfiltering, sieving and evaporating. Give reasons, based on evidencefrom comparative and fair tests, for the particular usesof everyday materials, including metals, wood and plastic. Demonstrate that dissolving, mixing and changes of state are reversiblechanges.

									Explain that some changes result in the formation of new materials, andthat this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.
Essential substantive knowledge for future learning	Some objects are natural while some are not natural.	Objects are made from a variety of materials. Wood is from trees. Metal and rock come from the ground. Plastic and glass are manufactured. A property is how a material feels or looks.	Solids can change shape when they are squashed, bent, twisted or stretched. A material's properties affect its uses.	Rock is a material. Different rocks have different properties.	Materials have theproperty of magnetism if they are attracted to a magnet.	The states of matter are solids, liquids and gases. Particles in a solid are close together.Particles in a gas are further apart. Changes in states of matter are reversible. Evaporation is the change from liquid to gas. Condensation is the change from gas to liquid. Whenwater vapour condenses to water, it can fall as precipitation. The water cycle is a continuous process.	Metals are used inelectrical circuits to conduct electricity. Plastic is an insulator so isused to cover wires in electrical circuits.	Sound travels through materials – solids, liquids and gases. Soft materi als muffle sound better.	Changes of state and dissolving are reversible changes.

Essential vocabulary for future learning	Natural, plastic, fabric, wood, metal, hard, soft, rough, smooth, float, sink	Material, property, plastic, metal, wood, glass, stone, fabric, grain, cold, hard/soft, stretchy/stiff, shiny/dull, rough/smooth, bendy/not bendy, flexible/rigid, waterproof/not waterproof, absorbent/not absorbent, opaque/ transparent	Solid, material, property, squashing, bending, twisting, stretching	Rock, property, marble, chalk, limestone, slate, granite, sandstone, permeable, non-permeable	Magnetic, non-magnetic, magnetism, attract, repel	State of matter, solid, liquid, gas, evaporation, condensation, precipitation, water cycle, degrees Celsius, reversible, irreversible, thermometer	Conduct, conductor, insulate, insulator	Sound wave, particles	Transparency, conductivity, evaporation
Investigations	Which objects float and sink in a water tray? Describe materials in the feely bag.	What is the best material for an umbrella?	Testing the elasticity of different pairs of tights.		Which materials are attracted to a magnet and which are not?	What liquid solution enables ice to melt the quickest?	Which materials conduct electricity?	Which material absorbs sound the best?	How can marbles, flour, and sugar be separated from water? What variables affect dissolving? Does mixing cause reversible or irreversible changes? Does heating cause reversible or irreversible changes
Scientists/ influential people		Charles Macintosh	John Dunlop, JohnMcAdam			Daniel Gabriel Fahrenheit			W. Lincoln Hawkins, Erin Johnson, Ruth Benerito, Madame CJ Walker, Spencer Silver, Leo Baekeland, Harry Brearly

Science Progression at Colmers Farm Primary School – **Planet Earth**

	EYFS	**Year 1** Seasonal changes	**Year 3** Rocks	**Year 5** Earth and space	**Year 6** Evolution and inheritance
Learning objectives	Comment and ask questions about aspects of their familiarworld such as the place wherethey live or the natural world. Talk about the features of theirown immediate environment and how environments might vary from one another. Show care and concern forliving things and the environment. Know about similarities and differences in relation to places.	Observe changes across thefour seasons. Observe and describe weather associated with the seasons andhow day length varies.	Compare and group together different kinds of rocks on thebasis of their appearance and simple physical properties. Describe in simple terms how fossils are formed when thingsthat have lived are trapped within rock. Recognise that soils are made from rocks and organic matter.	Describe the movement of theEarth, and other planets, relative to the Sun in the solarsystem. Describe the movement of theMoon relative to the Earth. Describe the Sun, Earth andMoon as approximately spherical bodies. Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	Recognise that living things have changed over time and that fossils provide informationabout living things that inhabited the Earth millions of years ago.
Essential substantive knowledge for future learning		There are four seasons with distinct features. The weather changes depending on the season. The seasons occur in a yearly cycle in order: spring, summer, autumn, winter…Hours of daylight are longer in summer and shorter in winter.	The Earth's crust is made of rocks. Fossils are formed when the remains of things that have lived are trapped in rocks.	The Earth is billions of years old. Different seasons occur due to the orbit of the earth around the sun.	Layers of mud or sand harden into rock, preserving the remains of a plant or animal. Sedimentary rock
Essential vocabulary for future learning		Season, spring, summer, autumn, winter, daylight, day, night, weather	Rock, property, fossil, organic, igneous, metamorphic, sedimentary, marble, chalk, limestone, slate, granite, sandstone, permeable, non-permeable	Gravity, orbit, revolve, spin, rotate, tilt, axis, planet, star, satellite, solar system, hemisphere, longitude	
Investigations		What differences can we see when we do our seasonal walks in autumn, winter, spring and summer?		Does the rotation of the earth cause shadows to change length?	Does the type of substance affect how well the features are preserved?
Scientists/ influential people				Tim Peake, Helen Sharman, Buzz Aldrin, Valentina Tereshkova, Arnaldo Tamayo Méndez, Guion Bluford, Mae Jemison, Pham Tuân, Rakesh Sharma, Mirosław Hermaszewski, Chrsitopher Columbus, Ferdinand Magellan, Francis Drake, Nicolaus Copernicus, Galileo Galilei	Maydianne Andrade, Lisa White, Mary Anning, Charles Darwin, Alfred Russell Wallace

Science Progression at Colmers Farm Primary School – **Plants**

	EYFS	**Year 1** Plants	**Year 2** Living things and their habitats	**Year 2** Plants	**Year 3** Plants	**Year 4** Living things and their habitats	**Year 5** Living things and their habitats	**Year 6** Evolution and inheritance	**Year 6** Living things and their habitats
Learning objectives	Comment and ask questions about aspects oftheir familiar world such as the place where they live or the natural world. Talk about someof the plants they have observed. Develop an understanding of growth, decay and changes over time. Look closely at similarities, differences, patterns and change. Make observations ofplants and explain whysome things occur, and talkabout changes. Show care and concern for living things andthe environment.	Identify and name a variety of common wildand garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common flowering plants,including trees.	Explore and compare the differences between things that are living, dead, and thingsthat 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 in theirhabitats, including micro-habitats. Describe how animals obtain their food from plants and otheranimals, using the idea of a simple food chain, and identify and name different sources of food.	Observe and describe how seeds and bulbsgrow into mature plants. Find out and describe how plants need water, light anda suitable temperature to grow and stay healthy.	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 togrow) and how they vary from plant to plant. Investigate the way in which water is transported within plants. Explore the part that flowers playin the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	Recognise that living things canbe grouped in avariety 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 plants.	Describe the life process of reproduction in some plants.	Identify how plants are adapted to suit their environment indifferent ways and that adaptation maylead to evolution.	Describe how plants are classified into broad groups according to common observable characteristics and based on similarities and differences. Give reasons for classifying plants based on specific characteristics.

Essential substantive knowledge for future learning	Plants are alive. Plants grow. Plants die. Plants need care to survive.	Some plants flower and some do not. The roots are in the ground. The stem connects the roots to the leaves/flower. The flower has petals. Evergreen trees keep their leaves throughout the year. Deciduous trees lose their leaves.	Plants live in habitats that provide for their needs. Animals obtain food from plants or other animals. Food chains start with a plant. Name a variety of plants and their habitats.	Seeds grow into plants. Plants need water and light. Plants need a suitable temperature.	Pollen fertilises an egg to make a seed; seeds are formed and then dispersed.	Plants can be grouped due to observable features. Plants can be identified based on observable features. Plants can be affected by changes in their environment.	Plants disperse seeds in a variety of ways (wind, animal, water, explosion).	Plants have features (such as leaves) that make them adapted to their environment. Living things evolve due to natural selection.	Plants are classified into broad groups based on their characteristics.
Essential vocabulary for future learning	Leaf, flower, petal, root, grow, seed	Leaf, flower, petal, root, fruit, bulb, seed, trunk, branch, stem, structure	Habitat, micro-habitat, food chain, needs, living, dead, alive	Seed, germinate, germination, growth, reproduction, stem, leaf, flower, root	Seed, pollination, seed formation, seed dispersal, germination, growth, life cycle, nutrients	Classify, classification, environment, flowering plant, non-flowering plant, human impact, litter, deforestation	Life cycle, reproduction, fertilisation, pollination, seed dispersal, stigma, stamen, filament, anther, ovule, ovary sepal, asexual	Characteristic, feature, adaptation, evolution, inheritance, natural selection	Characteristic, classify, variation
Investigations	Grow a plantfrom broad bean/runner bean	Plant sunflower, bedding plants observation, naming plants walk.	Create a mini-garden in a transparent tank. Create different habitats.	Plant cress and beans. What does a plant need to stay healthy? Control: light, water, air, soil.	Celery ink.	Create a woodlice habitat.	Dissect lily. Grow marigolds from seeds.		
Scientists/ influential people	Mr Bloom (gardener)	Botanists at Kew Gardens. Gardeners.		Jane Colden (botanist), TimSmit Eden Project).	Janaki Ammal (botanist), Monique Simmonds (botanist)		David Bellamy		Alastair Robinson (taxonomist),Carl Linnaeus

Science Progression at Colmers Farm Primary School – **Sound**

	Year 4 Sound	**Year 6** Electricity
Learning objectives	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 thatproduced it. Find patterns between the volume of a sound and the strength of the vibrations thatproduced it. Recognise that sounds get fainter as the distance from the sound source increases.	Associate the volume of a buzzer with the number and voltage of cells used in the circuit. Compare and give reasons for variations in how components function, including the loudness of buzzers.
Essential substantive knowledge for future learning	Sound travels from a source. Sound travels through materials. Sounds are made from vibrations. The stronger the vibrations, the louder the sound. The closer the source of sound the louder the sound.	
Essential vocabulary for future learning	Volume, source, vibration, pitch, molecules, frequency, sound waves, ear drum, auditory canal, auditory nerve, cochlea, outer ear	
Investigations	Which material absorbs sound the best?	Does the number of cells affect the volume of the buzzer?
Scientists/ influential people	Alexander Graham Bell, Granville Woods	