Bursley Academy

Science Curriculum Overview

Science	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS Ongoing Seasons	Changes as people and animals grow.	Materials	Seasonal change	Plants – growth Ducks and Frogs	Animals around the world	Sinking and Floating
Year 1	Seasonal changes	Animals including humans	Seasonal changes	Everyday materials	Seasonal changes	Plants
Year 2	Animals including humans - offspring grow into adults	Uses of everyday materials	Animals including humans - survival	Animals including humans - keeping healthy	Living things and their habitats – simple food chain	Plants – how plants survive and reproduce
Year 3	Rocks	Forces and magnets	Animals including Humans - nutrition	Animals including Humans - skeletons and muscles	Light	Plants
Year 4	States of Matter	Electricity	Animals Including humans – food chains	Animals Including humans – digestion & Teeth	Sound	Living Things & Their Habitats
Year 5	Properties and changing materials.	Earth & Space	Animals including Humans- birth to old age	Living things and their habitats – lifecycles & reproduction	Forces	Recap plants
Year 6	Living things and their habitats –classification	Light	Animals including Humans-circulatory system	Animals including Humans- impact of lifestyle	Evolution and inheritance	Electricity

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Crucial Knowledge	Autumn	Spring	Summer
EYFS	**Changes as people and animals grow.** People and animals grow and change. Fruit and vegetables are healthy food.	**Plants – growth** All plants change through a life cycle. A life cycle are the different stages of life. Plants need water, air, nutrients and sunlight	**Animals around the world** Animals need food, water, shelter, space and air to survive. Some animals live on land Some animals live in water
	Materials A material is what something is made of. There are lots of different materials, such as, wood, plastic, glass, metal, water and rock. Different materials have different purposes.	**Pondlife - Ducks and Frogs -** All animals change through a life cycle Animals need food, water, shelter, space and air to survive. Animals can be put into different groups. Ducks are birds. Frogs are amphibians.	**Sinking and Floating** Sinking is when things go to the bottom of the water Floating is when things stay on top of the water
	Seasonal changes Autumn is September, October, November. Leaves fall off the trees and change colour.	**Explore the world around us (4 seasons)** Winter is December, January and February In Winter it can be cold, icy, frosty and snowy. Spring months are March, April and May. In Spring, new life grows.	**Changes and Weather** Summer is June, July, August. It gets warmer in Summer.
Year 1	**Seasonal changes** • There are 12 months in a year – January, February, March, April, May, June, July, August, September, October, November, December. • There are four seasons in a year – Spring, Summer, Autumn, Winter. **<u>Autumn –</u>**	**Seasonal changes** **RECAP – Autumn Term CK** **<u>Winter –</u>** • The winter months are – December, January and February. • Winter has the shortest day. • Winter is the coldest season. • Winter has the most rain.	**Seasonal changes** **RECAP – Autumn & Spring Term CK** • There are 12 months in a year – January, February, March, April, May, June, July, August, September, October, November, December. • There are four seasons in a year – Spring, Summer, Autumn, Winter.

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	• The autumn months are – September, October and November. • In autumn, some leaves change colour and then fall off trees.	RECAP – • There are 12 months in a year – January, February, March, April, May, June, July, August, September, October, November, December. • There are four seasons in a year – Spring, Summer, Autumn, Winter. <u>Spring –</u> • The spring months are – March, April and May. • In spring, some new plants begin to grow. • In spring, some animals are born.	<u>Summer –</u> • The summer months are June, July and August. • Summer has the longest day. • Summer is the warmest season. • Summer has the least rain.
	Animals including humans • Plants and animals are living things. • Mammals have a backbone, feed their children with milk and grow hair. • A fish lives in the water and has fins, gills and scales. • A bird has wings and feathers – they can't all fly. • An amphibian is an animal which is born in the water but can live on the land. • A reptile is an animal that has scales, lays eggs on land and is cold-blooded. • A carnivore is an animal who only eats meat.	Everyday materials • A material is what something is made of. • Materials are described by how they look and feel. • There are lots of different materials such as: wood, plastic, glass, metal, water and rock. • Some materials are natural and come from plants and animals – wood comes from a tree, wool comes from sheep. • Some materials are made by people (human-made) such as plastic, glass and paper.	Plants • A plant has roots and grows in the ground. • Roots take water and nutrients from the soil to feed the plant. • Plants have leaves, stems/trunks and roots. • Some have flowers or seeds. • Stems/trunks are the part of the plant that hold it up and carry water to the rest of the plant. • Flowers are the part of the plant that blossoms and produces the seeds. • Deciduous trees lose its leaves in the Autumn and stays bare until Spring.

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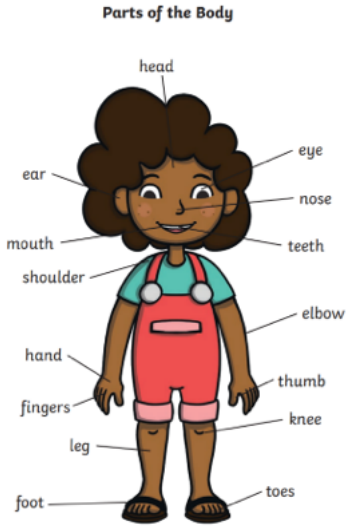
	• A herbivore is an animal that only eats plants. • An omnivore is an animal that eats both meat and plants. Humans  • We are humans. • Humans are mammals.		• An evergreen tree keeps its green leaves all year round, even in Winter.
Year 2	Animals including humans - offspring grow into adults • A human is an animal. • Animals and humans need water, food, air and shelter to survive.	Animals including humans - survival • Living things have the same life cycle - birth, growth, reproduction, and death. • Living things don't live forever.	Living things and their habitats – simple food chain • Animals obtain their food from other plants and animals. This is called a food chain. • In a food chain there is a producer, consumer and predator.

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	• Offspring is the young of an animal. • A life-cycle is a series of changes from a baby to an adult. • Animals and humans have babies/offspring which grow into adults. • Some animals lay eggs. Some are born live.	• The seven life processes are: movement, respiration (breathe), sensitivity, growth, reproduction, execration (get rid of waste) and nutrition. • All living things live in a habitat. • A habitat is a plant, person or animal's natural home – where it lives. • Habitats provide the basic needs for its inhabitants such as food, water, shelter.	• The producer produces the food (like a plant). • The consumer eats the food. • The predator eats the consumer.
	Uses of everyday materials • A material is what something is made of. • Some materials can change shape by squashing, bending, twisting and stretching. • Some materials are used for more than one thing (metal can be used for coins, cans, cars and table legs; wood can be used for matches, floors, and fences) • Certain materials are chosen to make objects because of what they can do. For example, windows are made of glass because it can be seen through (transparent). • • Different materials are used for the same thing (spoons can be made from plastic, wood, metal, but not normally from glass).	**Animals including humans - keeping healthy** • Exercise, diet and hygiene are important for humans to survive and grow properly. <u>To be healthy we need to:</u> • Eat a balanced diet to get the right amount of nutrients for our bodies. • Exercise to keep our hearts healthy and maintain a healthy weight. • Keep our bodies clean to prevent illness and so we don't smell. • Keeping our Teeth clean is an important part of keeping our bodies healthy	**Plants – how plants survive and reproduce** • A seed is what a new plant grows from. • A bulb is the part of a plant found under ground that stores food while the plant is resting from growing. • A plants needs air, light, water nutrients and warmth. • Without air, light, water, nutrients and warmth the plant will die. • The water carries the nutrients and minerals from the ground, into and around the plant.
Year 3	**Rocks** • Rocks have different appearances and different properties, such as hard, soft, rough, smooth, porous, non-porous etc.	**Animals including Humans - nutrition.** • Animals and humans need food, water and air to survive. • Diet is what you eat.	**Light** • It is dark when there is no light. • A reflection is when light bounces off an object – if it hits our eyes, we can see the object.

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	• There are 3 different types of naturally occurring rocks: igneous, sedimentary, and metamorphic. • Igneous rocks have been formed when magma or lava cools. • Sedimentary rocks are formed by layers of sediment (tiny pieces of rocks and animal skeletons) pressed down on top of each other. • Metamorphic rocks started as igneous or sedimentary but changed because of extreme heat or pressure. • Fossils are formed when things that have lived are trapped within rock. • Soil is made from rocks and organic matter (minerals, air, water, and organic matter).	• Plants create their own food but humans cannot – they have to eat. • They get their nutrition from what they eat. • The food groups are - Fruit & Vegetables, Starchy Carbohydrates, Dairy, Fats, Protein. • It is important to get the right amounts of each of these in order to develop and grow properly.	• Transparent is when you can see clearly through something e.g. a glass window. • Opaque is when you can't see through it, it does not let any light through. • Translucent is when you can see through something but not clearly. • A shadow is when an opaque object blocks the light it forms a shadow.
	Forces and magnets • A force is a push or pull. • A push moves an object away. • A pull moves an object towards. • Friction is the force made when 2 surfaces contact each other. • Friction slows objects down. • Different objects and surfaces create different amounts of friction. • The more friction there is, the slower an object will move on a surface. • Magnets have 2 poles (North and South). • Magnetic forces can act from a distance. • Magnets can attract or repel each other. • Opposite poles attract and similar poles repel.	Animals including Humans - skeletons and muscles • Humans and some animals have skeletons and muscles to support them. • Skeletons - support the body, protect the organs in the body and allow us to move. • Vertebrates (animals with a backbone) have an endoskeleton. • Invertebrates (animals without a backbone) have either an exoskeleton or a hydrostatic skeleton. • Joints are where 2 or more bones are fitted together. • Muscles are soft tissue that contract and relax to cause movement, they work in pairs to move the bones they are attached to.	Plants • The roots have 4 functions - 1) absorbing water and nutrients 2) anchoring the plant to the ground 3) store food and nutrients, 4) move water and minerals to the stem. • The 3 functions of the stem/trunk are to 1) Support and hold up the leaves, flowers and fruits. 2)Transport water and nutrients between the roots and the shoots/leaves 3) Stores nutrients. • The function of the leaves is to collect sunlight and make food by photosynthesis. • The function of the flowers is to produce seeds to produce more of the same plant. • Petals attract bees to pollinate the flowers. • Pollen is passed on from bees to create more flowers.

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	• Some materials are magnetic like iron, nickel and steel. • Some materials are not magnetic such as wood, rubber, plastic and some metals such as copper.		• Plants need light, water, space, CO2 and nutrients to grow and need different amounts of these requirements to grow. • Plants have a life cycle: the seed, germination, growth, reproduction, pollination, and seed spreading.
Year 4	States of Matter • Matter is anything that weighs and takes up space. • There are three states of matter. • The three states of matter are solid, liquid, gas • A solid is an object that is firm and stable. • A liquid is a substance that flows freely. • A gas has no fixed shape and will expand freely. • Water boils at 100 degrees Celsius (°C). • Water freezes at 0 degrees Celsius. (°C). • Changing state means to change from a solid to a liquid, a liquid to a gas. • Evaporation is where a liquid turns into a gas – water vapour. • Condensation where water vapour cools and becomes a liquid.	Animals Including humans – food chains • The process of how animals and humans obtain their food is called a food chain. • A producer is a living thing that creates its own food. • All food chains start with a producer (usually a plant). • Animals that eat a producer are called consumers. • Animals which eat other animals are called predators. • Animals that are hunted and eaten by other animals are called prey. • All food chains include a producer, a consumer, a prey and a predator. • Food webs are made up of lots of food chains within same habitat.	Sound • Sounds are created by vibrations. • Vibrations are movements backwards and forwards of particles. • Volume tells you how loud or quiet a sound is. • The louder the sound the bigger the vibrations are. • Pitch is how high or low a sound is. • Sound waves (vibrations) travel through solids, liquids and gases to our ear. • Our ear collects these vibrations and our brain interprets them as sounds. • The further away from a sound you are, the quieter it is as the vibrations have further to travel and are weaker when they reach your ear.
	Electricity • Electricity is the flow of an electrical current or charge through a material. It helps to power appliances. • Electricity needs to flow around a complete circuit in order to work. • A circuit is a pathway for electricity to flow around.	Animals Including humans – digestion & teeth • Digestion is the how the body breaks down food so it can be taken in and used. • Food goes in through the mouth, is chewed by the teeth and then travels through the body and comes out of the rectum. • Humans have two sets of teeth in a lifetime- baby (primary) teeth in a young person and adult (secondary) teeth in an adult.	Living Things & Their Habitats • Living things can be grouped and classified based on their characteristics. – RECAP Y1 (birds, mammals, amphibians, reptiles and fish) • Animals can be classified as either vertebrates or invertebrates. • Vertebrates are animals that have a backbone inside their body.

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	• A circuit includes a cell, wires, bulb, switch/buzzer. • A conductor is a material that electricity can pass through. • Metals make good conductors. • An insulator is a material that electricity cannot pass through.	• There are 4 types of teeth: incisors, canines, premolars, and molars.	• Invertebrates don't have a backbone. They either have a soft body, or a hard outer casing covering their body. • Vertebrates include: mammals, fish, birds, reptiles and amphibians. • Invertebrates include: insects, spiders, worms, slugs and snails. • Plants and animals rely on what their environment provides them, so any changes to this could be dangerous to the animals and plants living there.
Year 5	Forces • Mass is the amount of material in an object – usually weighed in KG and g • Mass is not the same as weight as weight changes due to gravity • Gravity is a pulling force which pulls objects towards the earth's core. • Earth's Gravity is what keeps you on the ground and what causes objects to fall. • Friction is a force that acts between an object and a surface when trying to move. • Air resistance is a type of friction that happens between air pushing another object (such as a parachute) • Water resistance is a type of friction caused by water pushing on an object. • Water resistance and air resistance can slow the effects of gravity by acting as an opposing force.	Animals including Humans- birth to old age • Humans are mammals • Reproduction is where living things make new living things • All living things reproduce and have offspring • All living things develop and get older • Gestation is the length of time it takes for an offspring to develop before it is born. • Humans go through changes in a lifecycle: foetus to a baby (infant), to a child, teenager (adolescent), early adult, middle adult, late adult (elderly) • Puberty is the physical developments and changes from a child to an adult. • In puberty changes will include: growing taller, hair growing over the body and in pubic areas, voice changes, skin changes, muscles grow, sweat glands produce more sweat	Properties of materials • Materials can be grouped based on their properties. • Properties are the characteristics used to describe a material. • Certain materials are used for specific jobs due to their properties. • Durable means something is hard-wearing / strong. • Transparency is where something is transparent (see-through). • Electrical conductivity is how well electrical current can travel through something. • Thermal conductivity is how well something can create heat. • Magnetism is how well something is attracted to a magnetic force. • Properties example: Glass is used for windows because it is hard, durable and transparent.

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	Earth & Space • The sun does not move. • The Earth moves around (orbits) the sun. • The Earth rotates (spins) on its axis. • The Earth does a full rotation once every 24 hours. • It takes 365 days and 6 hours (1 year) to orbit the sun. • The sun is a huge star that Earth and the other planets in our solar system orbit around. • The moon orbits the Earth. • The planets in the solar system are: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. • Daytime happens when the side of Earth is facing towards the Sun. • Night happens when the side of Earth is facing away from the Sun. •	**Living things and their habitats – lifecycles & reproduction** • Life cycles are the different stages that take place for a mammal, an amphibian, an insect and a bird to become an adult. • Butterflies go through metamorphosis to become an adult. • Amphibians such as frogs are laid in eggs, then once hatched go through changes before becoming an adult. • Birds are hatched from eggs; they are looked after by their parents until they can live independently. • Amphibians such as frogs are laid as eggs (frog spawn) then go through a series of changes before becoming an adult. • Birds are hatched from eggs • Mammal – embryo, young, adult	**Materials - Changes** • Sieving is where small and large materials can be separated by allowing the smaller ones to fall through the holes in the sieve. • Filtering is where the solid particles get caught in the filter, but the liquid moves through it. • Solubility is where something can be dissolved in water. • Evaporating is where the liquid changes into a gas leaving the solid part behind. • Some changes are reversible – meaning they can go back again such as ice and water. • Some changes are irreversible because they form a new material – for example burning wood produces a new substance ash.
Year 6	**Living things and their habitats –classification** • Classification is the sorting of things into different groups based on their characteristics. • Characteristics are special qualities or appearances that make an individual or group of things different to others. • You can classify living things (plants, animals, micro-organisms) by comparing similarities and differences. • A micro-organism is a living thing that is too small to be seen with your eye (eg. bacteria, viruses, some molds).	**Animals including Humans-circulatory system** • The circulatory system transports substances around the body. It includes the heart, veins, arteries, capillaries and blood. • The heart is an organ. It constantly pumps blood around the circulatory system. • The heart pumps blood to the lungs to get oxygen. It then pumps this oxygenated blood around the body. • Veins, arteries and capillaries are the three types of blood vessels.	**Evolution and inheritance** • When living things reproduce, they pass on characteristics to their offspring – Inheritance is when characteristics are passed on from one generation to the next. • Off spring are not identical to their parents – these are known as variations. • Variation in offspring over time can make animals more or less able to survive in particular environments • Evolution is a process of change that takes place over many generations, during which

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		• Water and nutrients (substances needed by the body to function) are transported around the body through the digestive and circulatory systems.	species of animals, plants, or insects slowly change some of their physical characteristics. This is because offspring are not identical to their parents. • Natural selection occurs when there is competition to survive. • Adaptation is when animals and plants have evolved so that they have changed to survive in their environments.
	Light • Light travels from light sources (something that makes light) in straight lines. • Light travels in a straight line, bounces off an object and continues in a straight line into the eye, enabling us to see. • A shadow is an area of darkness where light has been blocked. • Shadows are the same shapes as the objects that cast them. • When an object gets closer to a light source, the shadow becomes larger as the object blocks more light.	**Animals including Humans- impact of lifestyle** • Diet, exercise, drugs and lifestyle impact upon the body - Recap • A balanced diet consists of all food groups in the right proportion and is important for body health. • A healthy lifestyle (diet and exercise) has a positive effect on the body's functions. • A drug is a substance containing natural or man-made chemicals that have an effect on your body when it enters your system. • Some drugs, alcohol and smoking have a negative effect on the body's functions. • There are some drugs, that are used to cure, halt or prevent disease (medicine)	**Electricity** Start unit by explaining to the children how dangerous electricity can be and how to stay safe around electricity. • Electricity is the flow of an electrical current or a charge through a material. • A circuit is a pathway for electricity to flow around • Electricity needs to flow around a complete circuit in order for it to work. • A circuit includes a cell, wires, bulbs and can also include switches and buzzers. • The greater the number of cells or voltage, the brighter the bulb or louder the buzzer will be. • The shorter the circuit path the less electricity is used getting to the bulb so bulbs are brighter (shorter wires) • Bulbs and buzzers will be dimmer and quieter if there is more than one in a serial circuit as the voltage is shared among each item. • ⊣⊢ Circuit diagrams use a set of symbols to represent their component parts.

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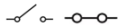
			• The symbol for a cell is  • The symbol for a bulb is…. • The symbol for a switch is  • The symbol for a buzzer is  • The symbol for a motor is