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Sticky Knowledge: Science

	Reception	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Autumn 1	**Body:** To name the main parts of the body Key vocab: Arm. Leg, chest, jump, move, hand, finger, feet, walk, run, eyes, nose, face, ears, mouth, hair, eyebrows, teeth **Senses:** To name the 5 senses, which organ what they do Key vocab: Sight, taste, touch, hear, smell	**Animals and Humans: All about me Sticky / Key knowledge**: To name parts of the human body ((head, neck, arms, elbows, legs, knees, face, ears, eyes, mouth, teeth) To know the senses and their origin (i.e smell: nose). Key vocab: Eye, seeing, ear, hearing, mouth, tasting, nose, smelling, skin, feeling Sight, smell, exercise, healthy, design, baby, grow, bones **Scientist:** Zoologist Mike Linley	**Animals including Humans:** **Diet and Health Sticky / Key knowledge:** To know how humans stay healthy (exercise, healthy diet/nutrition & hygiene) To understand food chains & different sources of food. To know that animals (including humans) need food, water and air to survive. **Key vocab:** Food groups: protein, carbohydrate, fruit, vegetables, fats and sugars, diary. Exercise, hygiene, healthy, nutrition, portion, balanced diet, measuring, temperature. **Scientist:** health expert Alison Burns	**Rocks Sticky / Key knowledge:** To group rocks by appearance and properties To know how fossils are formed To know that soils are made from rocks and organic matter **Key Vocabulary** Metamorphic rock, igneous rock, sedimentary rock, soil types, weathering, acid rain, fossils, minerals **Scientist:** Zoologist Mike Linley Geologist Mark Bardsley	**Sound Sticky / Key knowledge:** Identify how sounds are made through vibration as if it travels through the ear. Link volume and pitch to the strength of the vibrations. To know distance effects sound To know whether materials are solid, liquid or gas **Key Vocabulary** Vibration, speed of sound, sounds proof, sound wave, frequency, decibel, eardrum pitch. **Scientist:** Peter Baker Mike Linely	**Animals including Humans: The human Lifecycle Sticky / Key knowledge:** **CHECK PRIOR LEARNING:** Describe human & animal lifecycles , what we need to stay healthy (exercise, balanced diet/nutrition) & survive (water, food, air) To be able to classify animals into mammals, amphibians, insects and birds. To know the differences in lifecycles of mammals, amphibians, insects and birds. To describe the life process of reproduction in plants and animals To know what happens in humans as they grow older **Key Vocabulary** Reproduce, puberty, adolescence, hormone, memory, childhood, gestation, fertilisation **Scientist:**	**Animals including Humans: blood transportation** **Sticky / Key knowledge:** **CHECK PRIOR LEARNING:** Know animals need the right nutrition and cannot make their own food Name parts of the body including skeleton and digestive systems To know the job of the hear, blood vessels and blood. To know the impact of diet, exercise and drugs on your body To know how water and nutrients are transported within animals **Key Vocabulary** Transfusion, plasma, pancreas, diabetes, transportation, spleen, alveoli, bacteria, Diabetes **Scientist:** Epidemiologist Professor Sunetra Gupta Biologist and health care professionals Professor Anna Hansell and Dr Ian Tolley
Autumn 2	**Materials:** Know some names of different materials To understand materials can change **Key vocab:** Change solid liquid pan metal melt freeze cold set mould dilute steam ice mist **Food:** Learn about how to stay healthy **Key vocab:** Diet exercise tooth healthy fuel	**Seasonal Changes Sticky / Key knowledge:** To know there are different seasons and name the weather types. **Scheme vocab:** Spring ,summer, autumn, winter Weather, temperature, thermometer, forecast **Scientist:** Meteorologist Chris Bell Climatologist Heather Bingham	**Everyday Materials/ Key knowledge**: To sort and compare the usefulness of everyday materials (ie wood, rock etc) To know solid shapes can change shape (squashing, twisting bending and stretching. **key vocab:** Durable, absorbent, stretchy, flexible, waterproof, strong, Force, repel, squash, invention, properties **Scientist:** Christopher Macintosh (changing properties) John McAdam's (changing materials) John Macadam (Tarmac) Charles MacIntosh (raincoat: mac)	**Forces and magnets Sticky / Key knowledge:** To know that some forces need contact between two objects To know magnets act at a distance To know that magnets attract and repel To identify magnetic materials To know magnets have two poles To understand how friction works **Key Vocabulary** Lodestone, horseshoe magnet, bar magnet, attract, repel, compass, magnetic needle, pendulum. **Scientist:** Earth specialist Dr San Rowe Heather Bingham Material scientist Dr Theo Hughes-Riley **Invention:** Maglev Train	**Animals including food: Human digestion Sticky / Key knowledge:** **CHECK PRIOR LEARNING :** Know how we keep healthy (exercise, balanced diet) Know we don't make our own food Know that skeletons and muscles support, protect and help us move To know how the digestive system works and how we use them To know the different types of teeth and how we use them To interpret a variety of food chains (producers, predator's and prey) **Key Vocabulary** salivary gland, oesophagus, intestines, food pyramid, nutrient, vitamin, digest, decomposer **Scientist:** Zoologist Mike Linley Dairy farmer Emily Norton	**Forces Sticky / Key knowledge:** **CHECK PRIOR LEARNING:** Some forces need contact between two objects (e.g friction) but magnets act at a distance to attract and repel and magnets have two poles. Name some magnetic materials To know how different forces act: What gravity is and its effect on objects To know air, water resistance and friction act between moving surfaces To know how pulley, levers and gear make a smaller force have a bigger impact. **Key Vocabulary** Sir Isaac Newton, gravity, resistance, lever, gear, pulley, mass, friction, lever, pulley, gear. **Scientist:** Astro-photographer Shaun Reynolds Marine Biologist Professor Rhian Waller	**Evolution and inheritance Sticky / Key knowledge:** **CHECK PRIOR LEARNING:** Compare and classify living things Know part the parts of plants and animal, their lifecycles, reproduction and food chains To know living things are classified, based on their characteristics To give reasons for classifying plants and animals To know that living things produce offspring which are not normally identical To know that plants and animals adapt to environments which leads to evolution To know fossils give us information about the past **Key Vocabulary** Evolution, inheritance, DNA, natural selection, ancestor, husbandry, generation, fossilisation **Scientist:** Evolutionist Charles Darwin DNA Dr Mandy Hartley Palaeontologist Mary Anning
Spring 1	**Space** To know some of the names of the planets **Key vocab:** Planet Jupiter solar system Uranus venus	**Animals including Humans** **Sticky / Key knowledge**:	**Animals including Humans: growth Sticky / Key knowledge**:	**Plant life cycles Sticky / Key knowledge:** **Check prior learning:** Name parts of a plant To name various plant lifecycles	**States of Matter Sticky / Key knowledge:** To know whether materials are solid, liquid or gas	**Changes in Materials Sticky / Key knowledge:** **Check prior learning (exploring materials Y1&2):**	**Animals including humans: the heart and health Sticky / Key knowledge:** **CHECK PRIOR LEARNING:**

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	Healthy and safety Know how to stay safe when using electricity **Key Vocab:** Energy electricity House flat semi detached terraced radiator	To know animals (Pets) need food, water, shelter (habitat) and lots of care to grow. To know all animals and plants are part of the food chain. To know animals are classified as reptiles, amphibians, fish , birds or mammals Key vocab: pet, mammal, offspring, care, bird, fish, reptile, amphibian **Scientist:** Zoologist Mike Linley	To know that animals (including humans) need food, water, shelter and air to survive. Learn the lifecycle of birth, growth, reproduction and death and some characteristics are inherited. **key vocab:** Birth, growth, reproduction, death, lifecycle, generation, child, adult. **Scientist:**	To describe the job of roots, stem, leaves and flowers To know that plants needs water to grow To know how water travels through plants To understand life cycle of a plant (pollination, seed dispersal) **Key Vocabulary** Transpiration, photosynthesis, carbon dioxide, pollination dispersal, xylem, phloem, glucose **Scientist:**	To know materials can change state if heated or cooled To understand the water cycle (evaporation and condensation) **Key Vocabulary** Water cycle, molecule, solute, solvent, evaporation, water vapour, condensation, distillation **Scientist:** Dairy farmer Emily Norton Meteorologist Chris Bell (water cycle)	To know different materials (wood, plastic, rock etc), their properties(translucent, rigid etc) and uses. (y1 curi) To know whether solid, liquid, gas, how change state (heat/cool, condensation, evaporation). (y4 curi) To compare and group materials based on their properties To know materials will dissolve to create a solution and how to recover a substance from a solution. To know how solids, liquids and gases can be separated (filter, sieve etc) To know that some changes of state are reversible. **Key Vocabulary** Separate, solution, solute, solvent, irreversible, compound, physical change, chemical change **Scientist:** Professor Mark Searcey (uni East Anglia) Diagnostician Jordan Hindes	Know part the parts of a human, their lifecycles, reproduction and food chains To know the job of the heart, blood vessels and blood. To know the impact of diet, exercise and drugs on your body To know how water and nutrients are transported within animals To know how the heart functions and blood is pumped round the body To know that a healthy diet prevents heart disease **Key Vocabulary** blood vessels, circulatory system, oxygenated, capillary, heart rate, addiction, nutrients, balanced diet,
Spring 2	**Animals** To know the name of different types of animals To explore different habitats **Key vocab:** Living puppy bee tree pet ocean habitat desert farm bird nest pig horse cow goat chicken **Insects** Know what an insect is and where they live **Key vocab:** Ladybird spider snail honey worm fly beetle insect ant	**Plants Sticky / Key knowledge**: To know the main parts of a plant and what they need to grow. Key vocab: Bud stem seed flower leaf root **Scientist:** Ecologist Augustus Pendleton Plant expert Piers Warren	**Living things and their habitats: habitats around the world Sticky / Key knowledge:** **CHECK PRIOR LEARNING :** Classify common animals and know what they need to wo (care, habitat, food) To understand and describe different habitats and how animals adapt to their environment **Key Vocabulary** Habitat, microhabitat, minibeast, survive, producer, consumer, source, food chain **Scientist:** Marine biologist Dr Rhian Waller	**Exploring the world of Plants Sticky / Key knowledge:** **CHECK PRIOR LEARNING :** **Check name parts of a plant, plant life cycles and what they need to grow** To describe the job of roots, stem, leaves and flowers To know that plants needs water to grow To know how water travels through plants To understand life cycle of a plant (pollination, seed dispersal) **Key Vocabulary** Germination, non-vascular, asexual reproduction, fungi, insectivorous, deforestation, biodiversity, fertilisation **Scientist:**	**Living things and their habitat: Nature and the environment Sticky / Key knowledge:** To recognise that living things can be grouped in a variety of ways To know the environments can change and pose danger to living things To know how to classify living things **Key Vocabulary** Ecology, interdependent, ecosystem, environment, pollute, chemical, habitat, emission **Scientist:** Naturalist Simon Harrap Anglian Water	**Properties of materials Sticky / Key knowledge:** **CHECK PRIOR LEARNING (Everyday materials y1&2):** Compare & classify everyday materials and their suitability for use Know how they can change shape Compare and group materials by properties (hard, soluble, transparency, conductivity, magnetic) Know how materials will dissolve to create a solution and how to recover a substance from a solution Know that solids, liquids and gases can be separated (filter, sieve etc) Know some changes are irreversible **Key Vocabulary** comparative test, elasticity, plasticity, crude oil, perforate, extraction, thermal conductivity, inexhaustible **Scientist:** Jason Owen (Hutton Institue) Researcher Chris Marriott Dr E D Hirsch	**Light Sticky / Key knowledge:** **CHECK PRIOR LEARNING:** Light reflects and light is dangerous To know that light appears to travel in straight lines To know we see things because light travels to our eyes **Key Vocabulary** Transparent, translucent, opaque, magnify, angle of incidence, angle of reflection, lens, refraction, **Scientist:** Astro photographer Shaun Reynolds Physics expert Jon Badgery
Summer 1	**Forces** Describe different forces **Key vocab:** Push pull press suck swing sink sea float **Seasons and weather** Know the name of different season Recognise types of weather Discuss ways to be safe in. different types of weather **Key vocab:** Rain ice rainforest cloud river snowflake melt cool cold spring summer warm sun autumn winter snow bark season	**Uses of everyday materials key/sticky knowledge:** To name different materials (wood, plastic etc) To know materials have different uses To know and describe some physical properties of materials and be able to group them by properties. Explore everyday materials which are absorbent and non-absorbent **Key vocab:** Transparent, opaque, flexible , rigid, absorbent, waterproof, strong, brittle, light, heavy, Additional vocab:	**Living things and their habitats Sticky / Key knowledge:** To know the difference between living and non-living things To know animals, live in a variety of habitats and understand how animals adapt to their environment. To understand simple food chains and different sources of food. **Key Vocabulary** Habitat desert woodland producer root vegetable living excrete micro habitat	**Animals including Humans:** **What makes us Sticky / Key knowledge:** **CONSOLIDATE PRIOR LEARNING :** Know what we need to grow and survive (shelter, food, care) and how we stay healthy (exercise, nutrition) To know that animals (including humans cannot make their own food) To know that skeletons and muscles support, protect and move To know how humans stay healthy **Key Vocabulary** Skeleton, tendon, involuntary muscles, voluntary muscles,	**Electricity Sticky / Key knowledge:** **Key Vocabulary** To know which appliances, use electricity and where it comes from To know how to construct a simple series circuit and name parts To know what conductors and insulators are To know a switch opens and closes a circuit **Key Vocabulary** Series circuit, circuit diagram, parallel circuit, conductor, insulator, loop, switch, resistance	**Earth and Space** **Sticky / Key knowledge:** **CHECK PRIOR LEARNING forces Y3:** To know that some forces need contact between two objects but magnets act at a distance To know magnets attract/repel To know what friction, gravity, air and water resistance are. To know what Gravity is and its effect on objects To know that air, water resistance and friction act between moving surfaces **Key Vocabulary**	**Electricity Sticky / Key knowledge:** **CHECK PRIOR LEARNING:** Recognise conductors and insulators Know parts and workings of a simple series circuit know what uses electricity (appliances) and how they get electricity to know that the voltage of cells has an impact on the brightness of lights or volume of a buzzer to create a diagram of a simple circuit **Key Vocabulary** static electricity, filament, voltage, insulator, conductor, fuse, component, variable resistor,

Sticky Knowledge: Science

		Flight, structure, oil **Scientist:**	**Scientist:** Marine biologist Dr Rhian Waller	Skull, rib cage, spine, limbs, pelvis, muscles, brain, **Scientist:** Zoologist Mike Linley Entomologist Jake Stone	**Scientist:** Helicopter engineer Phillip Mintey Dairy farmer (electricity usage) Emily Norton	Heliocentric, geocentric, solar system, astronomy, Big Bang Theory, gravitational force, orbit, hemisphere	**Scientist:** Aeroplane engineer Rhys Phillips Jon Badgery
Summer 2	**Plants** Know main parts of a plant and how to look after them to make them grow **Key vocab:** Plant seed nutrients soil water Stem sunlight compost weeds garden roots	**Exploring everyday materials key/sticky knowledge:** To name different materials and their uses(wood, plastic etc) To know materials have different uses To know and describe some physical properties of materials and be able to group them by properties (translucent, rigid etc) **Scheme vocab** Structure, opaque, transparent, flexible, rigid, absorbent, waterproof, strong, brittle, light, heavy, translucent, oil **Scientist:** John Badgery Wilbur and Orville Wright (flight)	**Plants: growth and care key/sticky knowledge:** **CONSOLIDATE PRIOR LEARNING :** **Check can name parts of a plant** To describe the life cycle of a plant To know what a plant needs to grow (water, food and light, and a suitable temperature **Key Vocabulary** Germinate, nutrient, produce, bulb, seed, fertilised, dormant, pollen **Scientist:**	**Light Sticky / Key knowledge:** To know we need light to see and that it reflects from surfaces Recognise sunlight can be dangerous To know shadows are formed when the light source is blocked and that shadows can change size To know that some forces need light to see and that it reflects from surfaces **Key Vocabulary** Transparent, opaque, reflection, fluorescent vu rays, periscope, shadow, sun protection. **Scientist:** Joe Howard	**Classifying living things Sticky / Key knowledge:** **Check prior learning:** To know animals are classified as reptiles, amphibians etc To know animals live in a variety of habitats To understand simple food chains To recognise that living things can be grouped in a variety of ways (vertebrate, cold To know how to classify living things **Key Vocabulary** Classify, vertebrate, invertebrate, cold blooded, warm blooded, sample, exoskeleton, creature, Mammal, insect, bird, fish, amphibian, reptile **Scientist:** Zoologist Mike Linley	**Studying living things** **Sticky / Key knowledge:** **CHECK PRIOR LEARNING: lifecycles** Describe the lifecycles of different plants and animals know reproductive processes in several plants and animals incl humans to know the differences in the lifecycles of mammals, amphibians, insects and birds. To describe the life process of reproduction in plants and animals To know what happens to humans as they grow older (puberty) **Key Vocabulary** Sir David Attenborough, Jane Goodall, naturalist, metamorphosis, endangered, documentary, asexual, reproduction **Scientist:** Explorer Sir David Attenborough Explorer Dame Jane Goodall	**Living things and their Habitats** **Sticky / Key knowledge:** **CHECK PRIOR LEARNING:** **Understand** Compare and classify living things Know parts the parts of plants and animal, their lifecycles, reproduction and food chains Classify based on characteristics (explain different classes of vertebrate, microorganisms and plants) Give reasons for classifying plants and animals To know how water and nutrients are transported within animals **Key Vocabulary** Classify, prokaryote, species, vertebrate, invertebrate, microorganism, fungi, kingdom, MRSGREN : Processes **Scientist:** Carl Linnaeus Lorna Dawson Zoologist Mike Linely Vet surgeon Chris Tomlinson