The T-RF- Science Curriculum Coverage EYFS F1

	Biology		Chemistry	Physics	
	Animals, including humans	**Plants**	**Everyday Materials**	**Seasonal changes- ongoing**	**Forces and magnets**
EYFS: Understanding the World-The Natural World	Development Matters: Understand the key features of the lifecycle of an animal. Begin to understand the need to respect and care for the natural environment and all living things.	Development Matters: Understand the key features of the lifecycle of a plant. Plant seeds and care for growing plants.	Development Matters: Talk about the differences between materials and the changes they notice. Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties.	Development Matters: Talk about what they see using a wide vocabulary.	Development matters: Explore how things work. Explore and talk about the different forces they can feel.
How to support this	Help children to care for animals and take part in first-hand scientific explorations of animal lifecycles, such as caterpillars and chick eggs. Plan and introduce new vocabulary related to the exploration. Encourage children to use it their discussions as they care for living things.	Plants seeds and bulbs so children observe growth and decay over time. Observe an apple core going brown and mouldy over time. Encourage children to refer to books, wall displays and online resources. This will support their investigations and extend their knowledge and ways of thinking.	Provide children with opportunities to change materials from one state to another. Eg. Cooking/melting. Explore how different materials sink and float. Explore how you can shine light through some materials but not others-investigate shadows.	Encourage to talk about what they see	Provide mechanical equipment for children to play with and investigate. Eg. Wind-up toys, pulleys. Draw children's attention to forces. Eg. How the water pushes up when then try to push a plastic boat under it. How they can stretch elastic, snap a twig, but not bend a metal rod. Magnetic attraction and repulsion.
Sticky knowledge	I know the 4 stages of a butterfly lifecycle I know what an animal needs to live	I know the basic parts of a plant (leaves, flower) I know a plant needs water to grow. I know that a plant grows from a seed.	I know how to describe the differences between materials I know what floating means I know what sinking means I know a material that floats and one that sinks	I know that the trees look different throughout the year	I know how mechanical equipment works. I know that different forces cause different affects.

The T-RF- Science Curriculum Coverage EYFS F2

	Biology		Chemistry	Physics	
	Animals, including humans	**Plants**	**Everyday Materials**	**Seasonal changes- ongoing**	**Forces and magnets**
EYFS: Understanding the World- The Natural World	**Development Matters**: Explore the natural world around them *Other: Can use words like nocturnal, camouflage and predator to describe animals and their habitats* *Understands the 5 stages of a frog's lifecycle*	**Development Matters:** Explore the natural world around them	**Development Matters:** Explore the natural world around them *Other: Make predictions about the materials we use*	**Development Matters:** Describe what they see hear and feel whilst outside. Understand the effect of changing seasons on the natural world around them. *Other: Can describe their environment and the weather*	**Development Matters:** Explore the natural world around them
How to support this	After close observation draw pictures of animals Name and describe some animals that children are likely to see outside Take the children outside to observe the natural world and encourage them to observe how animals behave differently as the seasons change.	Provide children with frequent opportunities for outdoor play and exploration. Create opportunities to discuss how we care for the natural world around us. Offer opportunities to sing songs and join in with rhymes and poems about the natural world After close observation draw pictures of plants Name and describe some plants children are likely to see outside	Observe and interact with natural processes such as ice melting	Encourage focus observation of the natural world. Listen to children describing and commenting on things they have seen whilst outside. Encourage positive interaction with the outside world. Guide children's understanding by drawing their attention to the weather and seasonal features. Provide opportunities for children to note and record the weather. Select texts to share with the children about the changing seasons. Throughout the year take the children outside to observe the natural world and encourage them to observe seasonal changes.	Observe and interact with natural processes such as sound causing a vibration, light travelling through transparent material, an object casting a shadow, a magnet attracting an object and a boat floating on water

Sticky knowledge	I know and can name animals I see outside. I know some features of animals (fur, claws) I know that some animals hibernate and some animals are nocturnal I know what is meant by habitat, predator and camouflage	I know the main parts of a plant and I can draw and label them I know the names of common plants we see outside (daisy, sunflower, bluebell)	I know why something freezes or melts	I know the names the 4 seasons I know the names of some months and can say a month for each season I know in Winter some trees have no leaves. I know in Spring the leaves on trees start to grow back. I know in summer trees have lots of leaves. I know in Autumn the leaves may fall off the trees.	I know that a magnet sticks to most metal I know when a shadow will appear I know what it means to float or sink

The T-RF- Science Curriculum Coverage EYFS - Vocabulary

Biology		Chemistry	Physics
Animals, including humans Head, eyes, nose, mouth, ears, hands, fingers, feet, toes, arms, legs, animal, human, fish, birds, habitat, predator, camouflage, lifecycle	**Plants** Plants, tree, leaf, flower, petal, trunk, fruit, branch, roots, leaves, bulb, seed, stem, blossom, buds, sunflower, bluebell, daisy, dandelion	**Everyday Materials** Material, metal, wood, rock, plastic, hard, glass, soft, paper, fabric. Smooth, shiny, rough, ice, melt, freeze	**Seasonal changes-Ongoing** Night, day, Autumn, Summer, Spring, Winter, moon, sun, melting, freezing, shadows, floating, sinking, magnet
Glossary- Habitat-the home of an animal or plant Predator- wild animal which hunts or preys on other animals for food Camouflage- when animals blend in with their surroundings so they are not seen by other living things	Glossary- Root-the part of the plant that is normally underground, the part that absorbs water Stem-the main part that supports the leaves and flowers Bulb- a bulb is the name given to the underground bud or stem of a seed plant at resting stage	Glossary- Material- the substance used to make something Prediction-what you think will happen based on what you already know	Glossary- Magnet- strongly attract objects that contain iron, steel, nickel, or cobalt (certain types of metal)

The T-RF- Science Curriculum Coverage Year 1

Biology			Chemistry	Physics
Animals, including humans		**Plants**	**Everyday Materials**	**Seasonal changes-**
National curriculum	*NC: Pupils should be taught to :* • 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 the basic parts of the human body and say which part of the body is associated with each sense	*NC: Pupils should be taught to :* • 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.	*NC: Pupils should be taught to :* • 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	*NC: Pupils should be taught to :* • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.

Year1	**<u>Animals</u>** • **I know the names of some common animals in my locality and also in other places.** • **I know that there are different animal groups- mammals, fish, amphibians, reptiles and birds are different kinds of animals** • **I know that a carnivore means meat eater and can name some common carnivores** • **I know that herbivore means plant eater and can name some common herbivores** • **I know Omnivores means plant and animal eater and can name some common Omnivores.** • **I know the structures of some common animals.** • **I know that some animals have similar structures** • **<u>Humans</u>** • **I know the names, locations and of wider body parts.** • **I know the body part associated with each sense.**	• **I know the names of some common garden and wild plants, including trees.** • **I know the difference between a deciduous and evergreen tree.** • **I know leaves can be of many different shapes.** • **I know a deciduous tree sheds its leaves annually.** • **I know an evergreen tree keeps its leaves all year round.** • **I know that most plants are made up of roots, stem, leaves, buds and petals.** • **I know that a tree is made up of a trunk, roots, branches, leaves and/or buds** • **I know that plants produce fruits containing seed or bulbs.** • **I know a tree has many roots and these carry food and water from the ground through the trunk and branches to the leaves of the tree.** • **I know the trunk is the main body of the tree. The trunk is covered with bark, which protects it from damage.**	• **I know the materials wood, plastic, metal, water, glass, brick, fabric, paper, foil, elastic and rock.** • **I can describe the properties of different materials.** • **I know what an object is and that a material is what it is made from** • **I know that different materials have different properties and this makes them useful for different things** • **I know the best material for making a waterproof raincoat.**	• **I know In the UK we have four seasons: spring, summer, autumn and winter. Summer is the hottest season and winter the coldest.** • **I know that the weather in the winter is more likely to be cold, snow, fog or ice and the weather in summer is more likely to be sunny and warm** • **I know that it can be rainy all year round** • **I know that in Spring, new plants begin to grow and many animals give birth to their young** • **I know that in Autumn, the natural world gets ready for winter; animals prepare for hibernation; some trees lose their leaves and produce seeds/nuts and plants begin to die** • **I know that summer the days are longer and in winter they are shorter** • **In summer the longest day of the year is in summer and the shortest day of the year is in winter.**

The T-RF- Science Curriculum Coverage Year 1 - Vocabulary

	Biology	Chemistry	Physics

Vocabulary	**Animals, including humans** Mammals; Fish; Reptiles; Bird; Amphibians; Carnivore; Herbivore; Omnivore Common structure of animals and humans including: Previous vocabulary- face, ears, hair, eyes, nose, teeth, arms, hands, fingers, legs, feet, body New vocabulary- cheek, chin, neck, arms, shoulders, hips, elbows, wrists, knees, ankles, paws, fins, wings, toes, tail, skin, scales, fur, feathers, beak Sense: Smell, touch, hear, taste, see/ sight	**Plants** Petals; Stem; Leaves; Bulb; Flower (blossom); Fruit; Seeds; Trunk; branches; Root; Twigs deciduous; evergreen Wild flowers: Dandelions, Nettles and Buttercups, Ivy, Blossom, Snow drops Garden plants: Tulips, Roses, Daffodils, Pansies, Lavender, Evergreen trees: Holly, Cedar, Pine tree Deciduous trees: Horse chestnut, Oak, Beech, Maple	**Everyday Materials** Materials: Wood; Metal; Plastic; Glass; Paper; Water; Rock; Brick; Fabric; Elastic; Foil; Rubber; Wool; clay Properties: hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque/transparent	**Seasonal changes-** **Ongoing** Winter; Spring; Summer; Autumn; Change Weather; Day / Night; Temperature; Wind; Hail; Sleet; Rain; Cloud; Snow; Sun; Season; Sunrise; day- light; Moon; Night; Dark / sunrise / sunset; Weather; Wet; Dry; Wind; Temperature; Hot; Cold; Thermometer; Degrees Celsius; Deciduous, evergreen tree
Glossary	• Mammals – Mammals are warm blooded, have fur or hair and give birth to live young. Humans are mammals. • Fish - A fish is a scaly skinned creature with a spine that swims in water and breathes using gills. • Amphibians - All amphibians begin their life in water with gills and tails. Examples are frogs and newts. • Birds - Birds have feathers and wings. They lay eggs and are warm-blooded animals. • Reptiles- Reptiles are animals that are cold-blooded. Most lay eggs and their skin is covered with hard, dry scales. Carnivore - A carnivore is a meat-eating animal. • Omnivore - An omnivore eats plants and meat. • Herbivore - An herbivore eats plants.	• Deciduous- Lose their leaves annually. • Evergreen- Keep their leaves all year round. • Wild- plants grow wherever their seeds fall. • Garden- These are usually planted and looked after by people. • Bark- the protective outer covering of the trunk, branches, and roots of trees. • Roots- take up water and nutrients from the soil. • Species- a group of similar living things	• Absorbent- is able to soak up liquid easily. • Opaque- does not allow light through. • Transparent- allowing light to pass through objects. • Waterproof- does not allow water to pass through.	• Hail- frozen rain • Snow- tiny crystals of ice • Snowflake- a flake of snow • Sleet- rain containing some ice • Sunrise- the time in the morning when the sun appears or full daylight arrives • Sunset- the time in the evening when the sun disappears • Season- each of the four divisions of the year marked by a weather pattern.

The T-RF- Science Curriculum Coverage Year 2

	Biology			Chemistry
	Living things and their habitats	**Animals, including humans**	**Plants**	**Everyday Materials**
	NC Pupils should be taught to: • 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 sources of food	*NC: Pupils should be taught to:* • 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	*NC: Pupils should be taught to:* • 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	*NC: Pupils should be taught to:* • 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
Year 2	• ***I know all living things breath, eat, grow, move, reproduce and have senses.*** • ***I know all non-living things will not do this.*** • ***I know things that have never been alive such as metal or plastic.*** • ***I know that the place where living things live is called a habitat.*** • ***I know micro-habitat is a small area for insects.*** • ***I know some habitats are large, like the ocean, and some are very small, such as under a log.*** • ***I know some habitats in our local area include the river and woodlands. Other habits include the coast and the forest.*** • ***I know that living things are suited to their habitats and that an animal's habitat provides what it needs.*** • ***I know a habitat is a place where living things, such as animals and plants, can find all of the things they need to survive. This includes food, water, air, space to move and grow and some shelter.*** • ***I know that examples of microhabitats include under stones, in grass, under fallen leaves and in the soil.*** • ***I know minibeasts that can be found there include worms, snails, ants, centipedes, millipedes, and butterflies and they help to keep the microhabitat healthy.*** • ***I know minibeasts are able to survive in their habitats because they can find the things they need to survive there, such as food and water. For example, caterpillars can survive on leaves as they give them food.***	• ***I know that animals, including humans, grow, produce offspring that grow into adults, this is called a life-cycle.*** • ***I know some of the words used to describe growth in humans and animals such as: baby, toddler, calf, kitten, puppy.*** • ***I know some animals give birth to live young.*** • ***I know some animals lay eggs which their young hatch from.*** • ***I know that animals need water, food and air for survival.*** • ***I know all animals need three basic things to stay alive: air, water and food.*** • ***I know that, to be healthy, humans must exercise, eat a balanced diet and have good hygiene.*** • ***I know what a balanced diet is.*** • ***I know that my heart beats more quickly when I exercise.*** • ***I know being active and exercising keeps our body and mind healthy.*** • ***I know hygiene is important for staying healthy.***	• ***I know daffodil bulbs need to be planted in Autumn.*** • ***I know the changes that happen to Daffodil bulbs as they grow.*** • ***I know that plants need nutrients, light, water and the correct temperature to grow and stay healthy.*** • ***I know that plants have seeds and bulbs to reproduce.*** • ***I know that when a Broad bean seed germinates, roots come first and then shoots appear.*** • ***I know the life cycle of a Broad bean.*** • ***I know that plants change as they grow.***	• ***I know that some materials are suitable for making specific items such as glass for windows; wooden/plastic rulers or metal/ plastic spoons.*** • ***I know that some materials are not suitable for specific items such as glass for a chair and paper for saucepans*** • ***I know that different materials are used for the same thing e.g a spoon*** • ***I know that the shape of some materials can be changed when they are stretched, twisted, bent and squashed.*** • ***I know some materials are used for more than one thing eg metal can be used for coins, cans.*** • **I know Charles Macintosh was a Scottish inventor and chemist who invented waterproof fabrics in 1818. The Mackintosh raincoat was introduced in 1824.**

The T-RF- Science Curriculum Coverage Year 2 - Vocabulary

	Biology			Chemistry
Vocabulary	**Living things and their habitats** Living; dead; never been alive; habitat; micro habitat; suited; depend; food chain Field; hedgerow; pond; woodland; seashore; ocean; rainforest; arctic; desert; air; food; water; shelter; heat; warmth; Sun **Recap** amphibians; carnivore; herbivore omnivore	**Animals, including humans** Reproduce, life-cycle; offspring, grow, adults (all animal types) • Survival, water, food, air, shelter, hygiene • Exercise, fit, healthy, food, fruit, vegetables, meat, fish, eggs, nuts, pulses, dairy, balanced diet, heart beat	**Plants** Seed, bulbs, germinate, grow, healthy, water, light, temperature, soil, nutrients, shoot, fruit (Children will also be taught the names of common native species of trees and plants.) **<u>Recap</u>** Leaves, flowers, blossom, petals, fruit, roots, trunk, branches, stem names of plants in their local environment for example holly, daffodil, tulip etc. and plants we grow to eat such as lettuce, tomatoes, cucumber, radish, herb etc.	**Everyday Materials** Materials; Translucent; squashing; Bending; twisting; Wood; Metal; Plastic; Glass; Object; properties; Paper; Water; Rock; Brick; Fabric; Elastic; Foil; Rubber; Wool; clay; Hard/soft; Bendy/not bendy; Rough/bumpy/smooth; Stretchy/ squashy; Brittle/stiff/rigid; Shiny/ dull; Waterproof/not waterproof; Absorbent/not absorbent; Opaque/transparent
Glossary	• Animals and plants depend on each other to survive. This is called a food chain.	• Reproduce- to have babies or offspring • Offspring- the young version of a living thing in relation to its parents. • Survival - to continue to stay alive. • Balanced diet- things you should eat • Hygiene- how to keep your body clean		• Wood: hard, stiff, strong, opaque, can be carved into any shape, comes from trees • Fabric: soft, flexible, hard-wearing, can be stretchy, warm, absorbent • Paper: lightweight, flexible, comes from trees • Plastic: waterproof, strong, can be made to be flexible or stiff, smooth or rough, manmade • Metal: strong, hard, easy to wash • Glass: waterproof, transparent, hard, smooth • Rubber: hard-wearing, elastic, flexible, strong • Bend an object by grabbing both ends of the object and bringing the ends inwards together. • Squash an object by pushing both hands together. • Twist an object by turning your hands in opposite directions. • Stretch an object by pulling your hands slowly and gently apart.

The T-RF- Science Curriculum Coverage Year 3/4 Cycle A

Biology		Chemistry	Physics	
All living things and their habitats	**Animals, including humans**	**Rocks**	**Forces and Magnets**	**Sound**
NC – • To recognise that living things can be grouped in a variety of ways. • To explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. • To recognise that environments can change and that this can sometimes pose dangers to living things.	*NC -* • *To 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.* • *To identify that humans and some other animals have skeletons and muscles for support, protection and movement.*	*NC –* • *To compare and group together different kinds of rocks on the basis of their appearance and simple physical properties* • *To describe in simple terms how fossils are formed when things that have lived are trapped within rock* • *To recognise that soils are made from rocks and organic matter*	*NC –* • *To compare how things move on different surfaces.* • *To notice that some forces need contact between two objects, but magnetic forces can act at a distance.* • *To observe how magnets attract or repel each other and attract some materials and not others.* • *To 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.* • *To describe magnets as having 2 poles.* • *predict whether 2 magnets will attract or repel each other, depending on which poles are facing.*	*NC –* • *To identify how sounds are made, associating some of them with something vibrating.* • *To recognise that vibrations from sounds travel through a medium to the ear.* • *To find patterns between the pitch of a sound and features of the object that produced it.* • *To find patterns between the volume of a sound and the strength of the vibrations that produced it.* • *To recognise that sounds get fainter as the distance from the sound source increases.*
I know living things can be grouped into vertebrates and invertebrates ***I know the main characteristics of mammals, fish, birds, reptiles and amphibians*** ***I know that a classification key is used to group animals*** ***I know that when environments change, this can endanger living things eg warmer temperatures result in ice melting etc*** ***I know that some species have become extinct because of changes to their habitat***	***I know what nutrition means*** ***I know that animals, including humans, need the right amount and type of nutrition to be healthy*** ***I know the importance of a balanced diet and can describe this*** ***I know that animals get nutrition from what they eat*** ***I know that animals have a skeletons and muscles for support, protection and movement*** ***I know the name and function of some of the main human bones*** ***I know that muscles contract and relax***	***I know that sedimentary rocks are formed from soil and smaller rocks building up at the bottom of lakes and rivers and being compressed.*** ***I know that metamorphic rocks are formed when other rocks change by, for example, being heated or squeezed.*** ***I know that soils and sand is formed in two ways: when rocks are weathered or eroded or from organic matter*** ***I know that different types of rock have different properties*** ***I know that some rocks have grains or crystals*** ***I know that fossils are sedimentary rocks that contain the remains of living things***	***I know that forces are pushes and pulls that act in opposite directions*** ***I know that these forces change the motion of an abject. For example, a force can make an object start to move or speed up, slow it down or even make it stop.*** ***I know that friction is a force created by the surface an object is moving across and some surfaces create more friction than others*** ***I know that magnets create force on an object without having to touch it*** ***I know that not all materials are magnetic and can name some that are.*** ***I know that magnets have two poles- North and South - the same poles repel one another and opposite attract***	***I know that a sound must come from a source*** ***I know that to make a sound an object must vibrate*** ***I know that sound must travel through a medium -solid/liquid/gas - to reach the ear*** ***I know that this causes the air to vibrate, creating sound waves*** ***I know that sound waves travel and, when they reach the air, the ear drum vibrates creating the sound we hear*** ***I know that the pitch of a sound means whether it is high or low*** ***I know that the volume of a sound depends on the strength of the vibrations which produced it***

		I know the work of Mary Anning.		***I know that sounds get fainter as the distance from the sound increases***

The T-RF- Science Curriculum Coverage Year 3/4 Cycle A Vocabulary

Biology		Chemistry	Physics	
All living things and their habitats	**Animals, including humans**	**Rocks**	**Forces and Magnets**	**Sound**
Classification ; Classification Key ; Environment ; Habitat ; Flowering/non-flowering ; Fish ; Amphibians ; Reptiles ; Birds Mammals ; Predator/prey ; Carnivore Herbivore ; Omnivore	Nutrition ; Muscles ; Nutrients ; Movement; Spine ; Skull ; Vertebrate/invertebrate ; Skeleton ; Ribs ; Bones; Balanced/healthy diet ; Support; Protection	*Fossils ; Soils ; Sedimentary ; Stone ; Magna ; Metamorphic ; Porous ; Permeable/Impermeable ; Volcano ; Formation ; Pressure*	*Contact forces ; Non-contact Force ; Friction ; Surfaces ; Materials ; Direct Contact ; Magnetic ; Poles ; Repel ; Attract*	*Sound ; Vibrate/vibration ; Sound Source ; Pitch ; Volume ; Insulation ; Travel ; Medium ; Waves*
There are many different sorts of habitats around the world from forests to grasslands and from mountain slopes to deserts. ***Animals cannot survive in all habitats – they adapt to survive in the habitat they are in.*** ***Plants and animals rely on their environment to give them everything they need. When habitats change, it can endanger the plants and animals that live there. Habitats may change due to natural causes (e.g. earthquakes, storms and droughts) or human-made causes (e.g. deforestation, pollution and urbanisation).*** ***A food chain is a series of organisms, each dependent on the nexr as a source of food.*** ***Producers are organisms that produce their own food using photosynthesis e.g. plants and algae. The are at the bottom of the food chain.*** ***Predators are animals at the top of the food chain. They eat other smaller animals to survive.*** ***There are lots of different ways for classifying and grouping living things and this is often done by their physical features, for example whether they have a backbone or wings.*** ***The vast majority of animals on the planet are invertebrates. Invertebrates are insects, spiders,***	***The spine is made up of 33 bones and the smallest bone is found in our ear.*** ***Muscles make up 40% of our total body weight and the smallest muscle is found in our ears.*** ***When we are born we have about 300 bones in our body by the time we are adults we have 206 because some bones have fused together.*** ***When broken our bones will repair themselves.*** ***Doctors use casts or splits to make sure they grow back straight.*** ***The longest bone in the human body is the thigh bone called the femur.*** ***Bone marrow makes up 4% of a human body mass. It produces red blood cells which carry oxygen all around the body.***	***There are three types of naturally occurring rock: igneous (e.g. granite), sedimentary (e.g. chalk) and metamorphic (e.g. marble)*** ***Sediment deposited over time, often as layers at the bottom of lakes and oceans, forms sedimentary rocks.*** ***Extreme pressure and heat over time forms metamorphic rocks. Examples are marble and slate.*** ***When magma cools and solidifies it forms igneous rock. Examples are granite and pumice.*** ***Soil is the uppermost layer of the Earth. It is a mixture of minerals, air, water and organic matter.*** ***Fossils form when dead organisms are covered with sediment which may fill the mould left by the organism. Over many years this turns to rock***	***The Earth is a very big magnet. Its North and South poles are highly magnetic. The needle in a compass is a magnet. A compass always points north-south on Earth.*** ***A magnet always has north and south poles. Like poles repel, opposite poles attract.*** ***Cutting a magnet in half makes two magnets, each with two poles.*** ***Magnets only attract certain types of metals; objects containing iron, nickel or cobalt metals are magnetic. Other materials such as glass, plastic and wood aren't attracted.*** ***Gravity is the pulling force acting between the Earth and a falling object, for example when you drop something. Gravity pulls objects to the ground.*** ***Any kind of force is really just a push or a pull. Forces change the motion of an object. They will either make it start to move, speed up, slow down or stop***	***Sound is measured in decibels named in honour of Alexander Graham Bell, who is credited with the invention of the telephone.*** ***Sound travels with a speed of 767 miles per hour but it cannot travel through a vacuum and travels slower than light and can't be heard in space*** ***Sound comes from vibrations. These vibrations create sound waves which move through mediums such as air and water before reaching our ears.*** ***Our ear drums vibrate in a similar way to the original source of the vibration, allowing us to hear many different sounds.*** ***When traveling through water, sound moves four times faster than when it travels through air.*** ***Sound is used by many animals to detect danger, warning them of possible attacks before they happen***

worms, slugs and snails. Vertebrates are mammals, fish, birds, reptiles and amphibians.				

The T-RF- Science Curriculum Coverage Year 3/4 Cycle B

Biology		Chemistry	Physics	
Animals including humans	**Plants**	**States of Matter**	**Electricity**	**Light**
• *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*	• *To 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 to grow) and how they vary from plant to plant.* • *investigate the way in which water is transported within plants.* • *Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal*	• *To compare and group materials together, according to whether they are solids, liquids or gases.* • *To 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).* • *To identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.*	• *To identify common appliances that run on electricity.* • To construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires bulbs, switches and buzzes • *To 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.* • *To recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.* • *To recognise some common conductors and insulators, and associate metals with being good conductors.*	• *To recognise that they need light in order to see things and that dark is the absence of light.* • *To notice that light is reflected from surfaces* • *To recognise that light from the sun can be dangerous and that there are ways to protect their eyes.* • *recognise that shadows are formed when the light from a light source is blocked by an opaque object.* • *To find patterns in the way that the size of shadows change.*
I know humans process the food they eat in their digestive system **I know the name and function of the oesophagus, stomach, intestines and bowel.** **I know the names and functions of the Incisors, canines, premolars and molars** **I know who the produces, predators and prey are in a food chain**	***I know the function of the roots, stem/trunk, leaves and flowers*** ***I know that plants make their own food*** ***I know that water is absorbed by the roots and transported through the stem*** ***I know that different plants need different amounts of water, light, room to grow etc***	***I know that what a substance is like depends on how the particles move and are arranged*** ***I know that the particles in a solid are very close together and they vibrate*** ***I know that the particles in a liquid are quite close together and can move around one another***	***I know the names of some common appliances that run on electricity*** ***I know that an electrical circuit is a complete loop that allows an electrical current to run through it*** ***I know what a power cell, wire, bulb, switch and buzzer is in a circuit***	***I know we need light to be able to see things and darkness is the absence of light*** ***I know that light comes from a light source*** ***I know that light can be reflected from some surfaces*** ***I know that it is dangerous to look directly at the sun, even with sunglasses on***

I can explain a food chain	***I know that seeds do not need light to germinate*** ***I know that flowers are important in the lifecycle of a plant*** ***I know that pollen is made in flowers*** ***I know that seeds are formed when a flower is pollinated*** ***I know what seed dispersal means***	***I know that the particles in a gas are far apart and move in all directions*** ***I know that the state of matter of a substance can change if it is heated or cooled. I know that this is a reversible change*** ***I know that when water is heated, the particles gain more energy and move further apart until they become a gas called steam. This is called evaporation*** ***I know that when steam cools, it condenses to become water*** ***I know the freezing and boiling point of water***	***I know that a switch breaks or reconnects a circuit. When a circuit is broken, the current cannot flow*** ***I know that metal is a good conductor that allows electricity to flow through*** ***I know that a material that does not conduct electricity is called an insulator***	***I know that shadows are formed when light is blocked by an opaque object*** ***I know that the size of a shadow is caused by its distance from the light source.***

The T-RF- Science Curriculum Coverage Year 3/4 Cycle B

Vocabulary

Biology		Chemistry	Physics	
Animals including humans	**Plants**	**States of Matter**	**Electricity**	**Light**
Digestive system ; Oesophagus ; stomach intestines ; bowel Teeth ; Canines Incisor; Molar ; Rip ; Tear Chew ; Grind ; Cut	*Life Cycle ; Soil ; Root ; Stem/Trunk* *Leaf/Leaves ; Water ; Transported* *Flower ; Pollination ; Seed Formation* *Seed dispersal ; Nutrition/nutrients* *Function*	*Materials ; Heated ; Melting point ; Ice/water/steam* *Oxygen ; Boiling point ; Melt ; Freeze ; Water cycle* *Evaporate ; Evaporation ; Condense ; Condensation* *Transpiration ; Precipitation ; Solids ; Liquids ; Gases*	*Electricity ; Electrical Circuit* *Series Circuit ; Complete* *Cells ; Wires ; Bulbs ; Switches* *Buzzers ; Battery ; Conductors* *Insulators ; Simple Circuit*	*Light ; Dark ; Reflect/Reflective* *Opaque ; Transparent ; Translucent* *Light Source ; Shadow ; Solid Object*
The oesophagus is the food highway that takes your food from your mouth down into your stomach so that digestion can begin. The stomach is filled with powerful acids that break down the food into smaller pieces. It also lets us know when we are hungry.	Trees are more than just part of our natural landscape. They provide shelter and food for wildlife. Trees absorb carbon dioxide and produce breathable air. A large tree can consume 100 gallons of water out of the ground in one day. The oldest known living tree is 4,800 years old.	Materials have three states - gas, liquid and solid. Water becomes a gas called water vapour at 100 degrees Celsius (212 degrees Fahrenheit) Water becomes a solid called ice at 0 degrees Celsius (32 degrees Fahrenheit)	Electricity can be generated from power stations, the wind, the sun, water and even animal poo! Thomas Edison was a very famous inventor who helped us make the most of electricity from bulbs to fuses. He opened the first power plant in 1882.	Black and dark objects absorb light and heat whilst white or light objects reflect it. Some objects like glass are transparent which means that light can shine through them. Our main source of light on Earth comes from the Sun. A ray of light travels very fast.

The liver creates different enzymes to help process food nutrients that are collected in the small intestine. The gallbladder is a storage unit for all of the bile and enzymes created by the liver. It stores them until they are needed for digestion. The main job for the small intestine is to absorb nutrients and minerals from food. In fact, 90% of food absorption takes place here, making it our main digestion location. The outside of our teeth are covered with enamel and the inside have blood vessels and nerves. The front teeth are called incisors, the four sharp teeth are called canines, the teeth at the back are called molars.	Trees are able to communicate and defend themselves against attacking insects. Several centuries ago in Holland, tulips were more valuable than gold. Some plants such as orchids do not need soil to grow-they get all of their nutrients from the air. Broccoli is actually a flower.	Gases are all around us in our atmosphere. Our atmosphere is made up of 78% Nitrogren, 21% Oxygen and many other trace gases such as Argon, Carbon Dioxide and Helium. Liquids, solids and gases are made up of molecules – these are like tiny building blocks that cannot be seen by the naked eye. Gas molecules are separated and move freely, liquid molecules are closer together but can move and solid molecules are tightly packed together and cannot move.	Electricity is a type of energy that can build up in one place to flow to another. A power station is a place where electricity is created and sent to our homes. Electricity travels at the speed of light, which is more than 186,000 miles per hour When an electric charge builds up on the surface of an object it makes static electricity. This is why we sometimes have a small electric shock.	Darkness is made by blocking light from the sun or some other source of light, which makes shadows. The Sun and other stars, fires, torches and lamps all make their own light and so are examples of sources of light. A mirror is not a source of light, it merely reflects light. Similarly, the Moon is not a source of light because it reflects the light from the Sun. Some animals are nocturnal. They are awake at night and can see very well in the dark. Our eyes aren't designed to see at night.

The T-RF- Science Curriculum Coverage Year 5/6 Cycle A

Biology			Physics	
Living things and their habitats	**Animals including humans**	**Evolution and inheritance**	**Light**	**. Electricity**
NC- • *To describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals* • *To give reasons for classifying plants and animals based on specific characteristics.*	*NC –* • *To identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood* • *To recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function* • *To describe the ways in which nutrients and water are transported within animals, including humans.*	*NC –* • *To recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago* • *To recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents* • *To identify how animals and plants are adapted to suit their*	*NC –* • *To recognise that light appears to travel in straight lines* • *To 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* • *To 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*	*NC –* • *To associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit* • *To 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*

		environment in different ways and that adaptation may lead to evolution. •	• *To use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.*	• *To use recognised symbols when representing a simple circuit in a diagram.*
I know the key characteristics of specific vertebrates and invertebrates ***I know that a classification key considers the key similarities and differences between animals in order to sort them*** ***I know that animals have specific adaptations which make them suited to their habitat*** ***I know that species can be grouped into classes*** ***I know what a micro-organism is***	***I know that the circulatory system is made of the heart, lungs and blood vessels*** ***I know that arteries carry oxygenated blood from the heart to the rest of the body*** ***I know that veins carry deoxygenated blood from the blood to the heart*** ***I know that some choices, such as smoking and drinking alcohol can be harmful to our health*** ***I know that exercise improves heart and lung function, increases muscle tones, reduces fat and improves fitness and mental health*** ***I know how humans reproduce (SRE)***	***I know that evolution is a process where living things change over many generations due to changes in their physical characteristics*** ***I know that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents*** ***I know that animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution because those animals who are best adapted are more likely to survive. This is called natural selection*** ***I know the key evidence for evolution comes from studying fossils and comparing similar species*** ***I know that human beings are different to other animals because they have conscious thoughts*** ***I know who Charles Darwin and May Anning are and their influences on what we know about evolution***	***I know that light appears to travel in straight lines*** ***I know that reflection happens because the surface changes the direction of the light*** ***I know that we see things because when light hits objects, it reflects into our eyes either directly or after hitting other objects first*** ***I know that white light is made up of the colours of the rainbow (spectrum)*** ***I know that light affects the size and shape of a shadow because it travels in straight lines***	***I know that the brightness of a lamp/ volume of a buzzer is determined by the number and voltage of cells used in the circuit*** ***I know that if I use more batteries in a circuit, the brightness of a bulb or volume of a buzzer will be affected*** ***I know that the number of components in relation to the size of the battery will affect the performance of a circuit*** ***I know how to draw a circuit diagram*** ***I know the symbols for bulb, battery, buzzer, cell and switch*** ***I know that longer wires in a circuit causes an increase in resistance and so the circuit does not perform as effectively***

. The T-RF- Science Curriculum Coverage Year 5/6 Cycle A Vocabulary

Biology			**Physics**	
Living things and their habitats	**Animals including humans**	**Evolution and inheritance**	**Light**	**. Electricity**

Species; Class; adaptation ; Micro-Organism, Vertebrates, Invertebrates, Arachnid; Mollusc; Insect ; Crustacean ; Classification key ; Species, Fungi, Bacteria, Algae, Carl Linnaeus	Circulatory system; heart; blood vessels ; artery ; vein ; oxygenated/ deoxygenated; fitness ;heart/lung function ; Drugs, Atriums, Cardiovascular, Aorta, Capillaries, Pulse, Ventricles,	Off-spring ; Evolve / evolution; Vary/variation; Adapt/adaptation; Inherit/inheritance ; Natural selection ; generation ; characteristics ; homo sapiens Charles Darwin ; Mary Anning ; Extinction ; Palaeontologist, Genes, Chromosomes,	Reflection ; angle ; surface ; Light, Shadows, Light Wave, Light Source, , Refraction, Spectrum, Filters	Bright/dim; Volt/voltage ; series circuit; Components ; short circuit; resistance; performance ; conductor, insulator, socket, cells, volts, generator, turbine, fuses, Thomas Edison
The largest vertebrate is the blue whale, which can grow to 25m long and weighs 140,000kg. The smallest vertebrate is thought to be a tiny frog called the Paedophryne Amauensis. It only grows to about 8mm in length. Vertebrates tend to be much more intelligent than invertebrates. Vertebrate animals can be either warm or cold-blooded. A cold-blooded animal cannot maintain a constant body temperature. An invertebrate is an animal that does not have a backbone. 97% of all animal species are invertebrates. There are a wide variety of interesting ocean animals that are invertebrates. These include sponges, corals, jellyfish, anemones, and starfish.	The heart is composed of four chambers: the right atrium, the right ventricle, the left atrium and the left ventricle. Your heart will beat about 115,000 times each day. Your heart pumps about 2,000 gallons of blood every day. The circulatory system is made of the heart, lungs and blood vessels. Arteries carry oxygenated blood from the heart to the rest of the body. Veins carry deoxygenated blood from the body to heart. Nutrients, oxygen and carbon dioxide are exchanged via the capillaries.	Evolution is a scientific theory used by biologists. It explains how living things changed over a long time, and how they have come to be the way they are. Fossils are the preserved remains of ancient animals and plants. Fossils let scientists know how plants and animals used to look millions of years ago. Animals change over time and adapt to the surroundings in which they live. Inheritance refers to the characteristic traits that are genetically passed to offspring from their parents e.g. hair colour, eye colour, height. Darwin observed that there were many forms of finches that have different beak sizes and shapes. Once he considered the food sources of each finch, he noted the reason for these adaptations. Evolutionary questions are still being actively research by biologists.	Light will travel in a completely straight line until it hits an object that will reflect it. Space does not have any light. We can see things in space due to light bouncing off of the objects in space. Light doesn't travel as fast when it has to pass through mediums that are different, such as air, water or glass. The light that we see from the sun actually left the sun ten minutes before we see it. Light can be controlled and produced in so many ways. A camera can control the amount of light that comes into the camera lens. We also use light in televisions, medical systems, copy machines, telescopes and satellites. Light is used by plants to convert the light into energy as their 'food'. The process is called 'photosynthesis' and converts carbon dioxide through the energy of the light.	Electricity travels at the speed of light. That's more than 186,000 miles per second! Electricity comes from the power station, the wind, the sun, water and even an animal's poo! Electricity is a type of energy that builds up in one place (static), or flows from one place to another (current electricity). Coal is the biggest source of energy for producing electricity. Coal is burned in furnaces that boil water and create steam. A popular way of generating electricity is through hydropower. This is a process where electricity is made by water which spins turbines attached to generators. A bolt of lightning can measure up to 3,000,000 volts, and lasts less than one second!

The T-RF- Science Curriculum Coverage Year 5/6 Cycle B

Biology		Chemistry	Physics	
Living things and their habitats	**Animals including Humans**	**Properties and changes of materials**	**Forces**	**Earth and Space**
NC- • *To 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 plants and animals*	*NC –* • *To describe the changes as humans develop to old age.*	*NC –* • *To 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* • *To know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution* • *To use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating* • *To give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic* • *To demonstrate that dissolving, mixing and changes of state are reversible changes* • *To 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*	*NC –* • *To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object* *To identify the effects of air resistance, water resistance and friction, that act between moving surfaces* *To recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.*	*NC –* • *To describe the movement of the Earth and other planets relative to the sun in the solar system.* • *To describe the movement of the moon relative to the Earth* • *To describe the sun, Earth and moon as approximately spherical bodies,* • *To use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.*
I know that reproduction is when an animal or plant produces one or more individuals similar to itself ***I know that animals use sexual reproduction, which requires male and female*** ***I know that some plants use pollination to reproduce. This is when pollen from the anther is transferred to the stigma by bees and other insects*** ***I know that pollen travels down the stigma to fertilize the ovule. This creates seeds*** ***I know that the life cycles of amphibians and insects may involve metamorphosis for example, a tadpole changes to a frog***	***I know that the stage when children are babies and toddlers is called infancy and this is a stage of rapid growth*** ***I know that puberty is the time when children begin to change into adults*** ***I know that puberty affects boys and girls differently and it is caused by hormonal changes*** ***I know that after puberty and before adulthood people become adolescents*** ***I know that as adults grow older their bodies continue to change*** ***I know that in old age, people's strength and fitness declines***	***I know that some materials are permeable*** ***I know that thermal conductors allow heat to travel through them easily and thermal insulators do not allow heat to travel through them easily*** ***I know that some solids can be dissolved into liquid and are soluble but others cannot and are insoluble*** ***I know that a reversible change is where a material has changed state or two materials that have been mixed can be separated again*** ***I know that some changes are irreversible*** ***I know that magnets, filters, sieves, decanting and evaporation can be used to separate materials***	***I know that gravity causes objects to fall towards the Earth*** ***I know that air/ water resistance and friction can change how something moves*** ***I know that mechanisms (gear, pulley, lever) can allow a smaller force to have a large effect***	***I know that the Earth rotates on its axis anti-clockwise and makes a complete rotation over 24hrs (a day) and this causes day and night*** ***I know that the different parts of the Earth experience daylight at different times*** ***I know that the Earth takes 365 and a quarter day to orbit the sun*** ***I know that the moon orbits the Earth*** ***I know the names of the eight planets of our solar system*** ***I know the planets of our solar system orbit the sun 9star) at the centre of our solar system***

I know about the work of naturalist, David Attenborough				***I know that the Earth, Sun, Moon and other planets are approximately spherical***