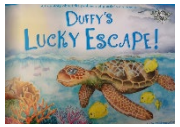
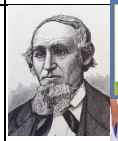
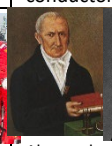
Science Knowledge and Skills Coverage. (Year 4)

INTENT

Content/ Knowledge	Living Things and Habitats	Animals Including Humans	Sound	Electricity	States of Matter
	-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 the environment. -Recognise that environments can change and this can sometimes pose dangers to living things.	- Describe the simple functions of the basic parts of the digestive system in humans. -Identify the different types of teeth in humans and their simple functions. Construct and interpret a variety of food chains, identifying producers, predators and prey.	-Identify how sounds are made, associating some of them with something vibrating. -Recognise that vibrations from sounds travel through a medium to the ear. -Find patterns between the volume of a sound and the strength of the vibrations that produced it. -Recognise that sounds get fainter as the distance from the sound source increases.	-Identify common appliances that run on electricity. Construct simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Identify whether or not a lamp will light in a simple circuit, based on whether or not the lamp is part of a complete loop with a battery. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors.	-Compare and group materials together, according to whether they are solids, liquids or gases. -Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius. -Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.
Book/ Science Capital	 Steve Irwin Escape Biologist  Duffy's Lucky	 John Hams    Scatologist Dentist	 Sound collector engineers Poem  Alexander Graham Bell  F1	 Alessandro Volta  Michael Faraday  Henry Snaith  Oscar and the bird book	 Dr Pearl Agyakwa
Scientific Enquiry	Identify animals and Classify into different groups. Identify similarities and differences in Human characteristics Find patterns in mini beast habitats. Identify animals and classify into groups Research endangered animals. I can research the effects of changing environment.	Identify the organs of the digestive system and use model to explain thinking. Identify the different teeth and know Their function. Identify and compare similarities and Differences in human and animal Teeth. Set up a comparative test to show effects of tooth decay. Observe tooth decay over time. I can research animal food chains to Find out what animals eat. Identify foods animals eat to classify. Identify patterns	Identify how sounds are made. Conduct a fair test to establish the best String phone. Spot patterns in results into how well Sound travels. H/W- research how hearing aids work. Pattern seek to make conclusions. Carry out a pattern seeking enquiry. Set up a fair test Look for patterns in results.	Identify electrical components and classify appliances. I can identify patterns in my observations. I can conduct a comparative test. I can identify the properties of materials. I can find out about different scientists and energy sources. I know how electricity has developed over time.	I can compare and group materials together depending on their properties. I can look for patterns in my observations. I can construct a fair test to investigate melting points. I can observe what happens when liquid changes to a solid. I can carry out a fair test and identify change and measure factor.
Working Scientifically	Observe characteristics of living things Identify similarities and differences in characteristics. To gather and record data in a table. I can record observations from Scientific enquiry enquiry. I can ask relevant questions to things I can use evidence to answer questions and present findings. Record findings about endangered species	Observe the similarities and differences in human/animal teeth. Interpret and present learning of digestive system through models. Set up own test to see the effects of Different liquids on tooth decay. Make predictions based on sci Knowledge of liquids to decay teeth. I can record my results in a table and Bar graph. I can ask questions to find out what Animals eat. Evaluate learning	I can observe vibrations which cause Sound. Measure distance to nearest cm. Set up tests to create the best string Phone. Record results in a table and spot patterns. Record sound measured in in a table. Produce line graph. Evaluate musical instrument based on Sound and knowledge of pitch. Observe how sounds are created. Set up own tests and record results. Set up own tests based on animal ear Shapes or this could be asking questions.	I can record my work using labelled drawings I can make predictions using scientific language I can interpret my results using my scientific knowledge I can identify the properties of different Materials. I can pose scientific questions I can record how electricity can help us	Make careful observations and Identify similarities and differences. I can make predictions using Straightforward evidence and observations. I can use a thermometer to take accurate measurements. I can interpret what I have observed using my own scientific knowledge. I can set up tests to answer questions. I can record using diagrams what I

IMPLEMENTATION

					know about the water system.
Ideas/WOW moments.	1. Identify animals and group based on characteristics. Match animal to habitat. 2. Human guess who, classification key with human characteristics. Make classification key for liquorice Allsorts. 3. Mini beast hunt- recording type of habitat and what mini beasts are found. 4. Make own classification keys for mini beasts found. Classify leaves using given keys. Identify evergreen and deciduous trees. 5. Duffy book with sea pollution. Children research endangered animal and think of the reasons why. 6. Discuss how environments change and how animals adapt. Round robin of 3 environments- children record changes and effects humans have on habitats.	1. Digestive system drama. Make model of digestive system. 2. Identify different teeth, functions by eating different food. Compare with household items. 3. Tooth decay and effects. Set up egg experiment in liquids. Make own toothpaste 4. Herbivore, carnivore, omnivore. Look at skeletons and teeth. 5. Food chains- poo dissection. Link to mole book. 6. Food chains/food webs. 7. Evaluate learning, concept map and quiz.	1. Poem- sound collector. Round robin of activities to observe sound. 2. Order sound cards, how are sounds made? String phone test. 3. Sound in water- Whale song. Bottles, straws, ruler experiment. 4. Which frequency of sound travel the furthest? 5. Storm in a circle. Honda advert. Sound walk. Investigation into pitch making musical instruments. 6. F1 Ear muffs. Planning own test using post it note approach. Recap. 7. Animal ears and slinky demo.	1. Sorting appliances in to mains and battery. Explore electrical circuits, symbol bingo. Challenge cards. 2. Oscar and the bird- thinking about electricity in real life. Human circuit. Building simple circuits 3. Testing conductors and insulators. 4. Connecting a switch and making own switch using different materials. 5. Scientists linked to the development of electricity. Children make a wind turbine 6. Renewable energy types, children design a house for the future.	1. Ballooning around- ice. Sorting materials based on properties. 2. Predicting, glove experiment and dancing raisins. 3. Investigating into melting points. Difference between melting and dissolving. 4. Making ice cream. 5. Evaporation and condensation. Fair test. 6. Materials Scientist. Modelling the water cycle part 2- window water cycle.
Cross Curricular	**PSHE**- Looking after the environment and animals. Safety when collecting mini beasts **Maths**- Using keys and grouping. Creating recording tables and looking for patterns. **English-** creating poster to impart information, spell scientific vocabulary correctly. **Geography-** different climates and explore how animals are adapted to different climates. **Sustainability-** Explore different types of pollution and the effects on animals. **MFL**- Learn animal names in a different language.	**PSHE-** links to oral hygiene, importance of visiting the dentist. **Maths**- using tables to record and classify. **DT-** to know how different foods are broken down. **English**- spelling scientific words correctly and writing ideas in a logical way. **Geography-** how to look after our environment.	**English**- to add music to poems. **Maths**- to create tables, line graphs and sorting diagrams. **PSHE**- safety with ears and loud sounds. **DT-** use a range of resources to create different sounds and block sounds. **S&L**- to listen carefully to identify different sounds.	**English**- interpreting results and using and spelling scientific words correctly. Oscar and the bird book for stimulus. **Maths**- Using tables and Venn diagrams. **DT**- evaluating the effectiveness of different materials. **PSHE**- Safety when using electrical appliances. **History**- learning about historical development of electricity and scientists of the past and present. **Geography/sustainability**- learn about different types of renewable energy and how this may be used in the future.	**DT**- evaluating the effectiveness of different materials. **English**- interpreting results and using and spelling scientific words correctly. Oscar and the bird book for stimulus. Using connectives to add details to predictions. **Maths**- Using tables and Venn diagrams. Using scales to read thermometer. Bar and line graphs. **PSHE**- Safety when using a naked flame. **Geography**- Links to the water cycle.
Resources	• Doll (optional), camera, chalk, post it notes • Mini beast equipment e.g., pooters, umbrella, litter sieve, petri dishes, viewing tank, magnifying glasses. • Selection of leaves (or could use pictures). • Duffy's lucky escape book (optional) • Bowl, oil, water, blue food colouring, feathers, milk, bottle, cress, soil, water, glitter, plastic animals, ice, lamp, A3 paper, colouring pens.	• Small bowl, masher or fork, banana/plain biscuit or cracker, spoon, water, 25cm clear plastic tubing, clear sandwich bag, lemon juice, scissors, tights, tray, paper cups. • Mirrors, teeth model (optional), teeth mirrors if you have them, apple, baguette, jelly sweets/grapes. • Eggs, jars, water, tea/coffee, fizzy drink, vinegar, toothpastes x 3 types. • Optional lesson- baking soda, water, glycerine, salt, essential oil/flavouring. • Flour, salt, bicarb, vegetable oil, hot water, brown food colouring, mixing bowl, jugs, gloves + ind animal components can be real or plastic items. e.g grass, hay, berries, insects, bones, shells e.g. egg and snail, corn, vegetables.	• Tuning fork, ping pong, bowl of water, rice, drum, metal coat hanger, string, balloon, radio/music, metal slinky. • Cups of different sizes and materials, string of different lengths, material and thickness. • Bottles, water, straws, rulers. • Trundle wheel, music source. • Range of pots and containers, elastic bands, rice, tins, balloons, lollypop sticks, bottles, water. • Range of materials for ear defenders. • (Optional lesson) paper, scissors, tape, music, paper plates, balloon, nut.	• Post it notes. • Bulb, cells, wires for each child. • Oscar and the bird book (optional) read along included. • Cells, bulbs, wires, switches, motors, buzzer, batteries. • Energy ball/stick (optional). • Whiteboards/scrap paper (optional) • Range of materials e.g. steel, rubber, gold, aluminium, sea water, oil, tin foil, copper, plastic, glass, iron. • Range of switches (optional) bulbs, wires, cells. Buzzers (optional) • Range of conductive materials e.g. split pins, paperclips, wire, metal, nails, tin foil. • Cardboard, tape.	• Blu tac/plasticine • Post it notes • Balloons 3 per group. Plus teacher demo set if required. Tray • Scissors • Materials e.g. talcom powder, flour, rice, milk, air freshener/aerosol, sand, toothpaste, juice, balloon with air, water etc. • Transparent bottle or beaker, • Latex gloves • Rubber band, White vinegar, Bicarb • Beaker/glass, Lemonade, rasisns • Bag of ice, salt, milk or milk shake (vanilla essence and sugar if using milk) • Ziplock bags • Towel (optional) • Glass/mirror • Black paper, water • Wet paper towels or towel per group, string, pegs, fair test planning board. • Jar or bowl, cling fil, water, ice, blue food colouring, zip lock pens, permanent markers.

IMPACT		Children identify that animals and plants can be classified in a number of possible ways including vertebrates and invertebrates, flowering and non-flowering plants. Children can ask yes/no characteristic questions to classify a small number of living things. Can name living things in a range of habitats, giving key features that helped identify them. Can give examples of how an environment may change both naturally and due to human impact. Can use classification keys to identify unknown plants and animals.	Can sequence the main parts of the digestive system. Can draw the main parts of the digestive system onto a human outline. Can describe what happens in each part of the digestive system. Can point to three different types of teeth in their mouth and talk about what each is used for. Demonstrate journey of food through body. Can explain teeth in animals and if they are carnivores, herbivores or omnivores.	Can describe different types of objects producing different sounds and that the sound is produced by vibration in the object. Can describe sounds travelling through different mediums such as air, water, metal. Can find patterns between pitch and volume and the features of the object producing it. Can recognise that sounds get fainter as the distance from the sound source increases. Demonstrates how to increase/decrease pitch and volume.	Can name the components in a circuit. Can make an electric circuit. Can control a circuit using a switch. Can name some metals that are conductors. Can name materials that are insulators. Can communicate structures of circuits using drawings. Can incorporate a switch. Can describe how a switch works.	Can name properties of solids, liquids and gases. Can give everyday examples of melting and freezing. Can give everyday examples of evaporation and condensation. Can describe the water cycle. Can give reasons to justify why something is a solid liquid or gas. Can give examples of things that melt/freeze and how their melting points vary from their observations, can give the melting points of some materials. Using their data, can explain what affects how quickly a solid melts. Can measure temperatures using a thermometer. Can explain why there is condensation on the inside the hot water cup but on the outside of the icy water cup from their data, can explain how to speed up or slow down evaporation. Can present their learning about the water cycle in a range of ways e.g. diagrams, explanation, model.