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| **Science in the Early Years- Reception** | | | | |
| **Term**  **Topic** | **Area of Learning** | **Concepts** | | |
| **Nature**  Knowing about the natural world | **Phenomenon**  Observing facts and events | **Real World**  Know about scientists and science in our everyday lives |
| **Reception Autumn 1**  **Family** | CL |  | -Listen to sounds in the environment and identify what they hear.  -Respond to questions about how being outside made them feel. For example, ‘What did you like best about being outside? Was anything particularly exciting/ calming for you? Why do you think it is good to be outside and with nature?’ | **-Learn to ask and answer questions.**  -Understand ‘why’ questions. |
| PSED | **-Notice and name body sensations, thoughts, and emotions.** |  |  |
| PD | -Develop the skills to manage the school day successfully, e.g. lining up, personal hygiene etc. |  | -Describe a range of different food textures and tastes when cooking and notice changes when they are combined or exposed to hot temperatures. |
| UW | -All living creatures are born, grow, reproduce and change over time.  -Learn the lifecycle of a human. There are six stages in the human life cycle: Foetus, baby, childhood, adolescence, adulthood and old age. | -Explore, appreciate and be inquisitive about the natural world. | -Identify patterns in nature, e.g. tree bark, flower petals or leaf shapes. |
| **Reception Autumn 2**  **Changes** | CL |  |  | -Learn expressions for agreeing and disagreeing.  -Learn to distinguish between facts and opinions.  -Opinions tell us what someone thinks or believes. An opinion has no proof and can change from person to person. |
| PSED | -Acknowledge that people do indeed look different, but recognise things they have in common.  -Know the importance of sleep and how it contributes to a healthy lifestyle.  -Learn strategies to support going to sleep, including turning off devices before bedtime, exercising, calming bedtime routines, having a regular bedtime and to avoid stimulants before bedtime.  **-Learn the names of traditional winter vegetables and why they contribute to a healthy diet.** |  | -All people have the right to an opinion and for it to be listened to and taken seriously.  -Understand different points of view and learn how to challenge their own and others’ thinking.  **-Learn how people store food safely at home in cupboards, fridges and freezers.** |
| UW | -Recognise the similarities and differences between their own and others’ features.  -Name the basic parts of the human body.  -Know why animals hibernate in winter and how they prepare for hibernation.  -In the UK the following animals all hibernate: hedgehogs, bats, dormice, some insects (e.g. bumblebees, some butterflies and ladybirds), amphibians (frogs, toads and newts), reptiles (grass snakes, adders, slow worms).  -Learn how animals in the UK use the environment to survive in winter.  -Begin to develop an understanding between the differences between how animals and people survive in winter. | -Use senses to compare different textures of materials.  -Describe the texture of materials using appropriate adjectives.  -Identify clothing that is suitable for all weather conditions and understand why it is necessary.  -Every year, Planet Earth experiences four seasons: autumn, winter, spring and summer.  -Understand the effect that the changing seasons on the natural world around them. -Observe and talk about changes in the weather and the seasons.  -Know that water freezes at 0°C and turns into a solid (ice).  -Frost is made by a layer of water that freezes on things outside over night when the temperature is below 0°C.  -Make comparisons between the temperature in the morning, afternoon and evening. | -Use what they have observed in addition to their own ideas to suggest answers to questions.  -**Different materials have different features, or properties, which make them suitable for different uses.**  **-**Water cannot penetrate waterproof materials. Raincoats often have a plastic coating because plastic is waterproof.  -Learn to group objects according to the material they are made from.  -Sort materials according to their properties such as waterproof/ not waterproof.  -Develop sorting and classifying skills, for example by sorting leaves from coniferous/ deciduous trees.  -Freezing has multiple usages in everyday life (preservation of food). |
| **Reception Spring 1**  **Healthy Living** | CL |  |  | -Time connectives make it easy for us to understand the order of when something happened.  -Listen to and talk about non-fiction texts to develop a deep familiarity with new knowledge and vocabulary. |
| PSED | -Taking care of your teeth helps prevent **plaque**, which is a clear film of **bacteria.**  -Brush teeth at least twice a day - after breakfast and before bedtime for at least 2 or 3 minutes. -Fizzy drinks/juices especially ones that contain sugars and acids can cause tooth decay.  -Milk and cheese are tooth-friendly foods. They contain calcium which will help to repair tooth enamel.  **-Keeping healthy means doing things that are good for your body – things like eating nutritious food, exercising, brushing your teeth, sensible amounts of ‘screen time’ and getting enough sleep.**  -Fruit and vegetables are an important part of a healthy, balanced diet.  -You should not eat more than what your body needs to keep healthy and energised during the day.  -Understand the motivations for exercise should be health, enjoyment and social interactions, rather than weight management.  -Learn how to make a healthy, balanced meal and what it should include (Meat, fish and alternatives/ fruit and vegetables/ dairy products/ breads, cereals and potatoes/ foods containing fat and sugar). |  |  |
| PD | -When you exercise, you breathe faster so you take in more air and your heart beats harder.   * -These exercises get your heart rate to increase: swimming, running, walking, football, riding your bike/scooter, skipping etc.   -Exercise is important because it helps the body to have: stronger [muscles and bones](https://kidshealth.org/en/parents/bones-muscles-joints.html).  -All people have different athletic abilities and body types.  -Notice how varied people are - how they come in all colours, shapes, and sizes. Link respect for diversity in weight and shape with respect for diversity in race, gender, ethnicity etc. |  | -Be able to recognise the change in their bodies from before, during and after exercise. |
| UW | -Humans get two sets of teeth in their lifetime.  -**Baby teeth** can start to appear as early as three months old. These fall out and are replaced by adult teeth.  -**Adult teeth** start to push through at approx. 6 or 7 years old.  -**Human teeth are designed for eating a very mixed diet of plants and animal foods**. An animal that has a mixed diet is called an **omnivore**. |  | -A magnifying glass is a lens which makes things appear bigger, so you can see them better.  -Look closely using equipment.  -Know where some food comes from and give examples of food that is grown. |
| **Reception Spring 2**  **Tales from around the World** | CL | -Sort and classify animals by their suitability to be a pet. Speak in full sentences using because and give a reason to justify their decision. |  | -A Venn diagram is a method used to sort items into groups.  -Develop vocabulary to make comparisons. |
| PSED |  |  | -The purpose of cooling down after exercise is to return your heart rate close to resting. Stopping quickly without a cool down can result in light-headedness, dizziness and/or fainting. |
| PD |  |  | -Recognise the importance of personal hygiene and how to keep themselves clean (bathing, brushing teeth, washing hands or covering their mouth when they cough etc).  -Know how to wash their hands properly with soap and water and when it is necessary to do so. |
| UW | -Ducks are a collection of different species of bird. They are waterfowls, with feathers and webbed feet specially adapted to life in and around water.  -Understand the key features of the life cycle of a duck.  -A habitat is a place that an animal lives. It provides the animal with food, water and shelter.  -Identify the features of suitable habitats for ducks.  -There are many different sorts of habitats around the world. | -Butter is a dairy product made from the fat and protein in milk or cream.  -If cream is shaken, butter will form. Buttermilk will separate from the butter.  -The weather in jungles is very hot and humid. The weather is always warm and there is never any winter or freeze period.  -Understand that the temperature in the jungle is hotter than in London.  -Keep a weather diary to monitor daily changes in the weather for a week, including temperature, rainfall and wind direction/ speed. | -Participate in a science investigation enthusiastically, observing changes closely and suggest answers to questions. |
| **Reception Summer 1**  **The Environment** | CL | -Listen attentively to a blog about the ocean and respond with relevant comments or questions.  -Recognise objects, characters and animals from a description. | -Use simple scientific language to communicate ideas and name phenomena. | -Generate questions using the words, what, when, how and why to find out information.  -Learn the language to reason and persuade e.g. ‘I think…because…’  -Use this language when justifying their opinions.  -Suggest possible hypotheses, apply imagination to their thinking, and to look for alternative explanations and ideas through philosophical discussion. For example, ‘Can something be alive and not alive? Does a raindrop die when it hits the ground? Can something be alive if it’s not real?’ |
| PSED | -People and other living things have different needs; know about the responsibilities of caring for living things.  -Recognise that some things are private and the importance of respecting privacy.  -Parts of their body covered by underwear are private. |  | -Information can be retrieved from computers, tablets and smartphones. Know to tell an adult if what they see makes them feel worried. |
| UW | -In the UK there are different types of coastline, e.g. sandy bays, shingle, stony, caves and cliffs.  -Identify and understand the needs of different living things and what they need to survive.  -Animals need air, water, food, and shelter (protection from predators and the environment); plants need air, water, nutrients, and light.  -In the UK, badgers live in mixed-sex groups in underground 'setts'. A social group living together in the same sett is also known as a 'clan'. | -Sequence the phases of the moon by identifying the moon’s shape. Introduce the language, new moon, crescent, gibbous, full moon.  -The Moon shines brightly in the night sky, but it does not produce its own light. We see the Moon because it **reflects light from the Sun**.  -The Sun produces light/ heat from burning gases.  **-Opaque materials** do not let any light pass through them.  -The planet is getting warmer because of burning rubbish.  -If plastic is not recycled, it can end up in the ocean. -You can recycle glass, metal, paper and plastic.  -The ‘3 R’s’ stand for reduce, reuse, recycle.  -Explore the local area identifying both the built and the natural environment. Express their opinions on natural and built environments.  -Explore the outdoor space and examine how plants attract wildlife.  -Bird feeders encourage birds to visit the garden as they provide them with a source of food. | -Understand how plastic can cause pollution.  -Use photos/ videos to explore their feelings about plastic pollution.  -Use a range of sources of information including ICT.  -Explore and describe the way some everyday materials change when they are heated or cooled.  -Solids and liquids can be changed from one state to another by heating or cooling. -Heat melts a solid and turns it into a liquid. Cooling freezes a liquid into a solid. -Be able to make predictions and evaluate their predictions following an investigation.  -Investigate shadows and develop an understanding that f**or a shadow to be formed an object must block light. The object must be opaque or translucent to make a shadow.**  -Investigate solar energy, by building a solar oven (using a cardboard box, black paper and tin foil) to melt marshmallows. Observe and comment on the change of state.  -Consider a range of steps that can be taken to reduce rubbish pollution.  -Sort and classify materials by their properties (glass, metal, paper and plastic).  -Identify whether food packaging can be recycled.  -Find out about the environment by talking to people, examining photographs and simple maps.  -Recognise that flowers, plants and trees are vital for life, our wellbeing and our long-term survival.  -Explore the differences between living and non-living things and sort living things into groups, explaining how they have sorted them.  -Use a range of sources to find out more information about animal homes (e.g., non-fiction books and the internet).  -Many everyday appliances require electricity from mains electricity or batteries.  -Electricity can be dangerous and appliances must be used safely. Understand that some appliances are less dangerous than others.  -Explore a variety of classroom objects, investigating whether they use electricity of not. |
| **Reception Summer 2**  **Mini-Beasts and Habitats** | CL | -Describe the characteristics of different animals, e.g. stripy/ smooth or their behaviour, e.g. dangerous/ poisonous. |  | -Use comparative adjectives (bigger/ smaller) and superlative adjectives (largest/prettiest) to describe the similarities and differences between reception and year 1. |
| PSED | -Treat animals in the environment with care and sensitivity.  -Recognise the body sensations of these emotions. |  |  |
| PD | **-Understand the importance of healthy daily routines (morning and evening) and the impact these have on their well-being.**  -Some plants can be dangerous to touch. Recognise stinging nettles and know why they should not touch these plants.  -A dock leaf is an effective natural remedy for nettle rash. |  | -Understand that food that has been dropped on the floor, touched with dirty hands or has turned mouldy should not be eaten and can make people ill.  -Describe the taste of some familiar ingredients and make comparisons (e.g. maple syrup and honey). |
| UW | -A ladybird's lifecycle has four stages: **egg, larva, pupa and adult**.  -Many species of ladybird are named after the number of spots (2-spot, 7-spot, 10-spot). Not all ladybirds have spots, some have stripes, patches of streaks.  -Different minibeasts favour different environments based on what they eat and where they lay their eggs.  -The colour and appearance of minibeasts are key to their survival. Discuss the way different invertebrates use colour for warning others and camouflage.  -Stinging nettles are a type of plant which have stinging defensive hairs. They are very important for wildlife. Ladybirds and many butterflies lay their eggs on stinging nettles.  -The scientific term for mini-beasts is ‘**invertebrates**’ - a **creature without a backbone**. | -Explore the natural environment looking for minibeasts and identify their habitats.  -Use technology to capture images of minibeasts in the environment.  -Understand the effect of seasons on the world around them, identify the changes in wildlife and nature in the summer season.  -Participate in fieldwork by describing their environment using observation, discussion, maps and books. | -Compare the lifecycles of living things recognising similarities and differences (ducks, caterpillars, humans).  -Recognise symmetry in mini-beasts.  -Sort insects into groups, e.g. carnivore/ herbivore or camouflage/ brightly coloured.  -Investigate the number of legs and body parts common invertebrates have.  -Research invertebrates using the internet or non-fiction texts. |