Science Progression Document

Year 1

Topic 1: Chemistry **Materials** **Key Question: Why do we use different materials for different things.**	**Prior learning:** EYFS - Children have explored different materials in continuous provision. They have discussed the textures of different materials and used different materials during model making activities. **Future Learning:** Year 2 – Children will look at the suitability of a variety of everyday materials. Year 3 – Children will study rocks in more detail looking at the properties of different types of rock. Year 4 – Children will study 'States of Matter' where they will look at a variety of solids, liquids and gases. Year 5 – Children will study 'Properties and Changes of Materials' where they will explore deeper into states of matter and reversible and irreversible changes. KS3 – Children will study 'States of Matter and Changes'	**Vocabulary** material plastic, wood, metal, water, glass, stretchy, shiny, dull, rough, smooth, bendy, not bendy, waterproof, not waterproof, absorbent, not absorbent, transparent, opaque, see through	**Cross Curricular links:** **PSHE:** Inspirational people
Children should know…	**Key Questions:**	**Recap:**	**I am thinking like a scientist…**
□ The name of a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.	What are materials?	Can children look at materials and use words to describe them.	**Identify** different materials by **observing** closely
□ The difference between an object and the material from which it is made	What are objects made of?	Can you list the materials we looked at last lesson.	**Identify and compare** a material and the object it is made from
□ The simple physical properties of a variety of everyday materials	How are materials different?	What are these materials and how are they the same/different?	**Observe and describe** the properties of different materials
□ How materials can be grouped based on their properties.	How can we sort materials?	Can you identify what these objects are made of?	**Compare and group** together a variety of everyday materials on the basis of their simple physical properties.

□ That materials are chosen and used for different purposed based on their properties	Which materials would be best for an umbrella/curtains?	Which of these materials would you group together? Why?	**Perform a simple test** to explore a question.
□ The life and word of William Addis	Who is William Addis?	Which material was best to make an umbrella/curtains? Why?	**Research** the life and work of William Addis.

Misconceptions: Children may think of the word 'material' meaning fabric. Children need to know that material refers to the matter from which something is made. They may think that if something is hard then it must be strong or if something is soft then it must be fragile. Glass is hard but very fragile while fabric is soft but can be strong.

Key vocabulary to Explain (Pre-Teach):
Types of material such as: wood, metal, plastic, glass, rubber, rock, fabric, paper, brick.
Words to describe materials such as: hard, soft, rough, bumpy, smooth, fragile, strong, heavy, light, waterproof, porous.

1. Lifecycle of a chick/duck. What does it need to survive? (EYFS)
2. How might we see outside change this year? Why? (EYFS)

Stretch and challenge:
- Create houses from different materials to identify the best material
- STEM activities such as build the longest bridges or the tallest tower from a selection of materials.
- Investigate different spoons (plastic, metal and wooden) to decide which is best.
- Explore different metals or different fabrics to show they are not all the same
- Read more stories to conduct investigations to find the best material e.g Princess and the Pa (which material would make the best matress)

Topic 2: Biology **Animals including humans** **Key Question: How can animals be grouped according to their animal group and what they eat.**	**Prior learning:** EYFS – Children have learnt the name of different animals and their habitats (Woodland, farm, hot climate, cold climate). They have also looked at the similarities between themselves and their classmates. **Future Learning:** Year 2 – Children will study animals further and learn about offspring and the basic needs that animals need to survive. Year 3 – Children will learn about the importance of nutrition for animals. They will then focus on muscles and the skeleton. Year 4 – Children will recap grouping animals in different ways based on their features, nutrition and skeleton. They will also create classification keys based on their study. Year 6 – Children will learn how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals.	**Vocabulary** Amphibians Birds Fish Mammals Reptiles Carnivore Herbivore Omnivore Senses: sight, hearing, smell, taste, touch.	**Cross Curricular links:** **PSHE:** similarities and differences of each other and how to look after their bodies.
Children should know…	**Key Questions:**	**Recap:**	**I am thinking like a scientist…**
The name of basic parts of the human body (head, neck, shoulder, arms, elbows, legs, knees, ankle, face, ears, eyes, hair, mouth, teeth)	What are our body parts called?	How many parts of the body can they name? How are we different?	**Produce labelled diagrams** of the human body.
The five human senses and the body parts that are used for each one. How humans use their senses to make sense of the world around them. How humans adapt when ones of their senses is impaired.	What are senses?	Alphabet of body parts.	**Perform simple tests** to explore how different senses are used. **Observe closely**, using simple equipment, what happens when one of our senses is taken away.
The names of a variety of common animals including fish, amphibians, reptiles, birds and mammals.	What are the different animal groups?	What parts of the body are associated with our senses?	**Identify and classify** animals from different groups. **Describe** how they identify and group different animals.
The characteristics, similarities and differences between a variety of common animals including fish, amphibians, reptiles, birds and mammals,	How are animals different?	What are the different animal groups? Can they name animals belonging to that group?	Use observations to **compare and contrast** animals and **explain** similarities and differences.

That carnivores are animals that eat meat. That herbivores are animals that eat plants. That omnivores are animals which eat meat and plants. Which animals are in each of the three groups.	Do all animals eat the same thing?	Can they match characteristics to animal group?	**Identify and classify** animals based on what they eat and **gather data** to **identify** which group different animals belong to.

Misconceptions: Children might think that all animals eat the same thing. They may not realise that animals eat different things. There may also be misconceptions about animals eating humans e.g. sharks eat humans. This needs to be discussed that no animals hunt humans and that we do not live in the same habitat.
Children may discuss how all humans have two arms/two legs/eyes to see/ears to hear. Teachers may want to discuss how some children have disabilities so do not have all the same body parts or cannot use all of their senses to show diversity and inclusivity.

Key vocabulary to Explain (Pre-Teach):

animal – a living thing
herbivore – an animal that just eats plants
carnivore – an animal that just eats meat
omnivore – an animal that eats both plants and animals
mammal – a type of animal that has hair on its body and drinks milk
bird – a type of animal with feathers, wings and a beak **fish** – a type of animal with scales, fins and lives in water **reptile** – a type of animal with scales that lives on land
amphibian – a type of animal that is born in water but then develops lungs and lives on land

1. Name animals from different climates.
2. Name parts of plant/flower

Stretch and challenge:

- write descriptions of different animals using the scientific words they have learnt
- create their own animal and group it based on its features
- explore other animals through stories, non-fiction texts or continuous provision
- draw portraits of themselves and others to identify similarities and differences.
- design a menu for a restaurant for different animals (e.g. a menu for a restaurant for sharks)
- explore different senses through games, continuous provision, nursery rhymes.
- explore deeper into comparing humans by focusing on personality, likes and dislikes.

Topic 3: Biology **Plants** **Key Question: Can I identify parts of a plant?**	**Prior learning:** EYFS – Children learnt about growing plants during signs of Spring topic. They planted cress/sunflowers and watched them grow. **Future Learning:** Year 2 – Children will study how plants grow from seeds and bulbs in more detail. They will also look at what plants needs to grow and stay healthy. Year 5 – Children will look at the life cycle of a plant including the life process of reproduction. KS3 – Children will study plants in much closer detail, observing the cell structure and how plants create their own food through photosynthesis.	**Vocabulary** Wild plants Garden plants Deciduous Evergreen Roots Nutrients Stem Leaves Flowers Petals Fruit Seed Bulb Blossom Oak chestnut	**Cross Curricular links:** **Geography:** seasonal changes
Children should know…	**Key Questions:**	**Recap:**	**I am thinking like a scientist…**
That plants start from seeds or bulbs.	How does a plant begin?	Can I recall what I know about plants?	**Plan and carry out** an investigation to observe plants grow. **Observe** what happens to seeds and bulbs when they are planted in soil.
The basic structure and parts of a flowering plant.	What are the parts of a plant?	Recall lifecycle of a plant.	**Observe** real life plants and **label** different parts. **Label a diagram** of a plant.
The names and appearance of a variety of wild plants.	What are wild plants?	Parts of a plant	**Observe** different wild plants in the local environment.
The names and appearance of a variety of garden plants.	What are garden plants?	Name and describe some wild plants.	**Observe closely** different garden plants. **Compare and contrast** familiar plants and **describe** how they are able to identify and group them.
The difference between deciduous and evergreen trees and how they each change or remain the same through the changing seasons.	How do trees change through the year?	Name and describe some garden plants	**Identify** and **classify** trees are evergreen or deciduous. **Keep records** of how plants change over time.

The basic structure and parts of a tree.	What are the parts of a tree?	To recall different types of trees and why they are different.	**Observe** real life trees and **label** the different parts. **Label a diagram** of a tree.

Misconceptions:
Children may not realise that plants are living things and can die. They may think that things with faces and brains are alive. May not understand that plants have roots which help the plant.

Key vocabulary to Explain (Pre-Teach):

plant – a living organism
tree – a woody plant
deciduous – a tree that loses its leaves annually
evergreen – a tree the does not lose its leaves
flower – the seed bearing part of a plant that is usually surrounded by brightly colouredpetals
roots – the part of the plant that attaches into the ground for support and nutrient collection
stem – the main stalk of a plant
leaf – part of a plant that is typically flat and hangs off the stem

1. What do plants need to grow?
2. What materials would sink/float?

Stretch and challenge:

- plant a variety of different plants and compare what they look like and how they grow
- take part in looking after the school garden/allotment (if you have one)
- invite a gardener in for the children to ask questions
- look at seeds of different plants
- investigate different fruits and vegetables – do they all taste the same?
- find out if other animals eat different plants