Hanslope Primary School

Science Knowledge Organiser

Year One

Scientist Study: Mary Anning

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Year Two – Staying Healthy

National Curriculum Links:

- describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.

How does this link to my future learning?

- 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
- identify that humans and some other animals have skeletons and muscles for support, protection and movement.

What will I know by the end of this unit:

Exercise

- Humans (and many other animals) need to **exercise**. It builds our muscles and helps to pump blood around our body. Regular exercise makes us stronger and faster.
- Exercise also helps to keep our weight down. When we are too heavy and have too much fat, it is much harder to move, and puts a strain on our bodies.

Eating a Balanced Diet

It is also important that humans eat a **balanced diet** with all of the right nutrients – this helps us to grow bigger, stronger and healthier!

- Eating a balanced diet includes having **fruit & vegetables**, **starchy** foods such as breads and pastas, **meats** and **fish** (and other alternatives) and foods containing **fats**.

Hygiene

- It is important to be **hygienic**. This includes regularly washing our hair and bodies, washing hands before eating and brushing our teeth.
- Being hygienic stops the spread of germs, which can cause diseases.

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Year Three - Plants

How does this link to my previous learning?

-Plants need a number of different things in order to grow, including water and nutrients, light, the right temperature, space and time.
-Plants begin life as seeds or bulbs. Seeds do not need sunlight as they have their own food store.
Water and oxygen allow seeds and bulbs to germinate (start to grow).
-Plants have a life cycle, that includes the seed, seedling and flowering stages.

National Curriculum Links:

- 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.

What key vocabulary will I learn:

Roots
-The roots grow into the ground. They are responsible for pulling water and minerals to the plant.
-They expand into the ground to widen the area they can find water. They also help to anchor the plant into the ground.
Stem/Trunk
-The stem/trunk carries the water and nutrients up to the leaves.
-The stem also carries food from the leaves to the rest of the plant.
-Stems grow upwards, reaching up for the sun.
Leaves
-Leaves are responsible for catching sunlight. They also allow both air and water to enter the plant.
-Leaves have veins inside them, to allow water and nutrients to flow.
Flowers
-Flowers are the parts of plants that are responsible for making both food and seeds.
-The petals of a flower attract insects for pollination. The flower has male and female parts, which work together to make seeds. are many different sizes & shapes of leaves, to fit the plant's needs.

What will I know by the end of this unit:

Flowers play an important role in the reproduction of plants.
-The male part of a flower is called a **stamen** – it is made up of a **filament** and an **anther**. The anther contains **pollen**.
-The female part of a flower is called a **carpel**. It is made of a **stigma**, a **style** and an **ovary**.
-When the male pollen lands on the female stigma **pollination** occurs.
-This process means that a **seed** is produced.
-Insects are drawn to flowers by bright petals. When they feed on the flower's nectar they are dusted with pollen. They then spread this to other places when they leave
-Plants need **air**, **light**, **water**, **nutrients**, **temperature** and **space** in order to live and grow. The amounts needed of each of these requirements varies from plant to plant.
-A plant that is kept in a dark place will grow tall and spindly, as it searches for light.
-A plant that is not watered will have a weak stem. Its leaves will dry up and eventually it will die.
-A plant that is not given enough space will have stunted growth, and may die if it cannot reach enough light.
-A seed will not germinate at all if the temperature is too cold.

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Year Four – Animals Including Humans - Healthy Eating, Teeth and Digestion

National Curriculum Links:

- 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.

How does this link to my previous learning?

-Animals cannot create their own food, they must eat in order to get nutrition.
-Because of this, animals are called consumers.
-Animals and humans need the right types and amounts of nutrition.
-Nutrition groups include carbohydrates, fats, proteins, fibre, vitamins and minerals.
-Skeletons are important for support, movement and protection. Muscles help us to move and keep our posture.

How does this link to my future learning?

- describe the changes as humans develop to old age.

What key vocabulary will I learn:

-**Incisors** (at the front) are used to cut food.
-**Canines** are used to tear food.
-**Pre-molars** are used to crush food.
-**Molars** (at the back) are used to grind food.
Ingestion – The food is taken in by the mouth, and broken down by teeth and saliva.

Ingestion – The food is taken in by the mouth, and broken down by teeth and saliva.
Absorption – Food is further broken down in the stomach & intestines. Nutrients are absorbed into our bodies through our blood. The liver and pancreas produce the bile and enzymes to help the digestion along.
Excretion – Waste food that the body doesn't need is sent to the anus for excretion.

-**Producers** are able to make their own food (for example plants, through photosynthesis).
-**Primary consumers** are animals that eat producers.
-**Secondary consumers** are animals that eat primary consumers.
-**Tertiary consumers** are animals that eat secondary consumers.

What will I know by the end of this unit:

Humans have up to 32 adult teeth, made up of 4 different types. Each of these types have an important job. Our teeth are like this because we are omnivores. Different animals have different teeth layouts depending on their food.

There are three main stages of the digestive system: Ingestion, absorption, excretion.
Digesting food takes many hours.

Food chains show how each living thing gets food, and how nutrients are passed from producers through different consumers.
-Food chains begin with plant life, and end with animal life. At the top of the food chain are apex predators – animals which have no natural predators that eat them.
Each plant and animal in the food chain is affected by the others. For example, if there were fewer mice in the habitat, there may be more plants (because the mice aren't eating them) but less snakes (fewer mice to eat).

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Year Five

Year Five will be focussing on the skills of working scientifically this term rather than a set topic in science.

The skills they are focussing on can be found in the Working Scientifically document.

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Year Six - Light

How does this link to my previous learning?

- Light is a form of energy that makes it possible to see.
- Light is given off some objects (for example the Sun). Darkness is the absence of light.
- Light can reflect off surfaces (e.g. mirrors). Light is absorbed by other materials.
- Objects can be labelled as transparent, translucent, or opaque, depending on the amount of light that they let through.
- Shadows are formed when light is blocked by an opaque object.

National Curriculum Links:

- recognise that light appears to travel in straight lines
- 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
- 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
- use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

What key vocabulary will I learn:

-We see things because...
a.) they are a **light** source, sending light into our eyes, or
b.) light is **reflected** from a light source off them and into our eyes.
When the light enters our eyes, we see the object!
-E.g. we see the sun because it is a light source, sending light into our eyes.
-However, the moon is not **luminous** (does not produce its own light). We see it because light from the sun reflects off it into our eyes.
- After light reflects off objects, it continues to travel in a straight line, but in a new direction.
-**Opaque** objects let no light through (creating the darkest shadows), **translucent** objects let some light through (creating fainter shadows), **transparent** objects let all light through (no shadow).

What will I know by the end of this unit:

-Light originates from light sources.
-Light sources can be natural (e.g. the sun, the stars) or man-made (e.g. street lamp, Christmas tree lights, glow stick, mobile phone, TV).
-Light travels in a straight line from light sources.
-We can see that light travels in straight lines when we shine a torch in a dark room, or when a ray of light comes through a window.
-When an object passes in front of a ray of light, the light can be blocked, creating a shadow.
-Our eyes have a small window at the front called a **pupil**, through which light can enter. The pupil looks as though it is black because it is dark inside our eyes.
-When it is dark, our pupils go larger, in order to let more light in so that we can see better. In bright lights, our pupils go smaller.
-At the back of our eye is a sensitive sheet of nerves called a **retina**. They can detect light when it comes in through the pupil, and send messages to the brain about what we can see.