



Knowledge and Skills Organiser

Year 3 Science

Light & Shadows

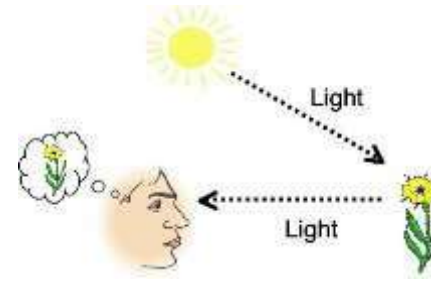
Spirituality

- Sun as the centre of all life
- Being part of a vast universe



Key Learning

- Recognise that they need light in order to see things and that dark is the absence of light
- Notice that light is reflected from surfaces
- 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
- Find patterns in the way that the size of shadows change.



Key Vocabulary

light	light source	
dark	absence of light	
transparent	translucent	opaque
Surface	shiny	matt
shadow	reflect	mirror
sunlight	dangerous	

Key Knowledge

Light

We see objects because our eyes can sense light. Dark is the absence of light. We cannot see anything in complete darkness. Some objects, for example, the sun, light bulbs and candles are sources of light. Objects are easier to see if there is more light. Some surfaces reflect light. Objects are easier to see when there is less light if they are reflective.

Shadows

Shadows are formed on a surface when an opaque or translucent object is between a light source and the surface and blocks some of the light.

The size of the shadow depends on the position of the source, object and surface.

The light from the sun can damage our eyes and therefore we should not look directly at the sun and can protect our eyes by wearing sunglasses or sunhats in bright light.

Key Skills (working scientifically)

- Explore how different objects are more or less visible in different levels of lighting.
- Explore how objects with different surfaces (e.g. shiny vs matt) are more or less visible.
- Explore how shadows vary as the distance between a light source and an object or surface is changed.
- Explore shadows which are connected to and disconnected from the object e.g. shadows of clouds and children in the playground.
- Choose suitable materials to make shadow puppets.
- Research, make and use sundials





Knowledge and Skills Organiser

Year 3 Science

Rocks, soils & Fossils

Spirituality

- Timelessness
- cyclical



Key Learning

- Compare and group rocks on the basis of their appearance and simple physical properties.
- Describe how fossils are formed when things that have lived are trapped within rock
- Recognise that soils are made from rocks and organic matter.

Key Knowledge

Three types of naturally occurring rock:

Igneous Rock

Rock that has been formed from magma or lava.

Sedimentary rock

Rock that has been formed by layers of sediment being pressed down hard and sticking together. You can see the layers of sediment in the rock.

Metamorphic rock

Rock that started out as igneous or sedimentary rock but changed due to being exposed to extreme heat or pressure.

Soil—the uppermost layer of the Earth. It is made up of: • minerals • air; • water; • organic matter

Mary Anning—English fossil collector who became world famous for important finds she made in Jurassic marine fossil beds in Dorset.

The Rock Cycle



Key Vocabulary

appearance

grains

Sedimentary

fossil

Physical properties

absorbent

gravestones

sediment

Igneous

soil

hard/soft

permeable

crystals

Metamorphic

organic matter

shiny/dull

impermeable

Key Skills (working scientifically)

- **Observing rocks and** exploring how and why they might have changed over time;
- Using a hand lens or microscope to help them to identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them.
- Research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed.
- **Explore different soils** and identify similarities and differences between them
- Investigate what happens when rocks are rubbed together or **what changes occur when they are in water.**
- Raise and answer questions about the way soils are formed.





Knowledge and Skills Organiser

Year 3 Science

Forces & Magnets

Spirituality

- Power of forces - uncontrollable
- How forces affect our lives



Key Learning

- Compare how things move on different surfaces.
- Notice that some forces need contact between two objects, but magnetic forces can act at a distance.
- Observe how magnets attract or repel each other and attract some materials and not others.
- Compare and group together everyday materials on the basis of whether they are attracted to a magnet and identify some magnetic materials.
- Describe magnets as having two poles.
- Predict whether two magnets will attract or repel each other, depending on which poles are facing.



Key Vocabulary

force	push	pull	twist
contact	friction	attract	repel
non-metal	iron	steel	poles
Gravity	contact	force	magnet
magnetic force		strength	
bar magnet	ring magnet	button magnet	horseshoe magnet
north pole	south pole		

Key Knowledge

Forces
A force is a push or a pull. A force can speed up, slow down or change the direction of an object. When an object moves on a surface, the texture of the surface and the object affect how it moves. It may help the object to move better or it may hinder its movement.

Magnets
A magnet attracts magnetic material. The strongest parts of a magnet are the poles. Magnets have two poles – a north pole and a south pole. For some forces to act, there must be contact. Some forces can act at a distance e.g. magnetism. The magnet does not need to touch the object that it attracts.

Key Skills (working scientifically)

- Carry out investigations to explore how objects move on different surfaces e.g. spinning tops/coins, rolling balls/cars, clockwork toys, soles of shoes etc.
- Explore what materials are attracted to a magnet.
- Classify materials according to whether they are magnetic.
- Explore the way that magnets behave in relation to each other.
- Use a marked magnet to find the unmarked poles on other types of magnets.
- Explore how magnets work at a distance e.g. through the table, in water, jumping paper clips up off the table.
- Devise an investigation to test the strength of magnets.





Knowledge and Skills Organiser

Year 3 Science

Plants

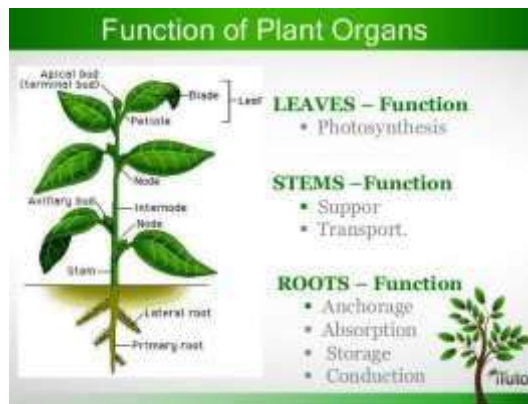
Spirituality

- Caring for our world
- Life cycles
- Wellbeing benefits
- sustainability



Key Learning

- 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 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.



Key Vocabulary

Photosynthesis

Pollen transportation

Insect/wind pollination xylems

seed formation seed dispersal

wind dispersal animal dispersal

water dispersal germination

Key Knowledge

Many plants, but not all, have roots, stems/trunks, leaves and flowers/blossom. The roots absorb water and nutrients from the soil and anchor the plant in place. The stem transports water and nutrients/minerals around the plant and holds the leaves and flowers up in the air to enhance photosynthesis, pollination and seed dispersal.

The leaves use sunlight and water to produce the plant's food.

Some plants produce flowers which enable the plant to reproduce.

Pollen, which is produced by the male part of the flower, is transferred to the female part of other flowers (pollination).

This forms seeds, sometimes contained in berries or fruits which are then dispersed in different ways.

Different plants require different conditions for germination and growth.

Key Skills (working scientifically)

- Comparing the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser;
- Discovering how seeds are formed by observing the different stages of plant life cycles over a period of time;
- Looking for patterns in the structure of fruits that relate to how the seeds are dispersed.
- Observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.





Knowledge Organiser Year 3 Science Animals including humans Part 1 Healthy Eating

Spirituality

- Wellbeing
- Balance
- Care for self and others
- empathy



Key Learning

- animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food;
- animals get nutrition from what they eat
- humans should eat a balanced diet



Key Vocabulary

Nutrition	nutrients
carbohydrates	sugars
protein	fibre
vitamins	minerals
fat	water
carnivore	herbivore
	omnivore

Key Knowledge

Animals, including humans, need food, water and air to stay alive.
 Living things need food to grow and to be strong and healthy.
 Plants can make their own food, but animals cannot.
 A balanced diet should include all the different food groups: proteins, carbohydrates, fibre, vitamins and minerals and fats.
 To stay healthy, humans need to exercise, eat a healthy diet and be hygienic.
 Exercise is important to keep us healthy and we must adapt our diet to suit our lifestyle to keep healthy.

Key Skills (working scientifically)

- Compare and contrast the diets of different animals (including their pets)
- Group animals according to what they eat.
- Research different food groups and how they keep us healthy
- Design meals based on what they find out.
- Explore food labels and how the information can be used to inform our diets.





Knowledge Organiser

Year 3 Science

Animals including humans

Part 2 Teeth

Spirituality

- Wellbeing
- self care
- responsibility

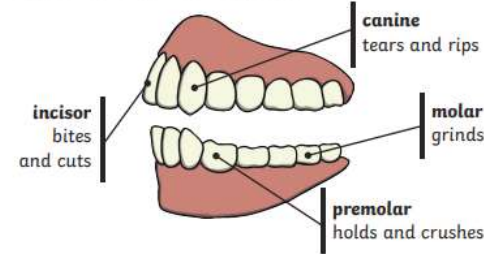


Key Learning

- Identify the different types of teeth in humans and their simple functions.
- Explore the structure of a tooth and compare them with models or images.
- Classify animals as herbivores, carnivores or omnivores according to the type of teeth they have in their skulls.



Human Teeth and Their Functions



Key Vocabulary

- incisors
- canine
- pre-molar
- molar
- carnivore
- herbivore
- omnivore

Key Knowledge

The teeth of an animal are designed to eat different foods depending on the diet of the animal.

Omnivores, herbivores and carnivores.

Humans have four types of teeth: incisors for cutting; canines for tearing; and molars and premolars for grinding (chewing).

To help prevent tooth decay we need to limit sugary food and drink; brush teeth twice daily using a fluoride toothpaste; and visit your dentist regularly.

Key Skills (Working scientifically)

- Observing and recording own teeth. Make an imprint in polystyrene to compare jaws.
- Researching why baby teeth fall out.
- Explore eating different types of food to identify which teeth are being used for cutting, tearing and grinding (chewing).
- Comparing the teeth of carnivores and herbivores, and suggesting reasons for differences
- Finding out what damages teeth and how to look after them.
- Set up an investigation looking at the effect of sugar/ fizzy drinks/ tea on teeth.

