AET Science End Points

Developed by Science Subject leaders September 2022 the contents share the composites identified for learning over time. Beneath each composite, within the document, are the components of knowledge children need to achieve that composite.

The next step for the group is to overlay this with investigative skills and knowledge

Contents

Animals, including humans - Biology

EYFS

Recognise animals, including humans and how to care for them

- To know animals, need to be cared for
- To make observations of common animals
- To know how to describe myself (hair, eyes, skin)
- To name and describe people in my family and community
- To know ways to look after myself (wash hands, teeth, toilet hygiene, keeping warm)

Year 1

Identify and compare a variety of common animals and their structures

- To name a variety of animals (fish, amphibians, reptiles, birds and mammals)
- To understand the terms carnivores, herbivores & omnivores
- To name animals that are carnivores, herbivores & omnivores
- To compare the structures of a variety of common animals (e.g. wings, ears, tails)
- To know the basic parts of the human body, including the parts responsible for the 5 senses

Year 2

Understand how animals, including humans grow into healthy adults

- To understand the term offspring
- To know offspring grow into adults
- To know that some offspring don't look like their adult
- To know that animals, including animals need water, food & air to survive
- To know to grow into a healthy adult the importance of exercise, healthy eating and hygiene

Year 3

Understand the function of a skeleton and muscles

- To know the names of some bones (skull, spine, ribs)
- To know the purpose of the skeleton and muscles – movement, protection, support

Understand the importance of nutrition for animals, including humans

To know animals do not make their own food

- To know the nutrients found in food: carbohydrates, protein, vitamins, minerals, fats, sugars, fibre
- To know a balance of nutrients is needed to stay healthy

Year 4

Understand the journey of food through the human body

- To know the 4 types of teeth and their functions – Incisors for cutting, canines for tearing, molars and premolars for chewing
- To identify the key stages of digestion – teeth & saliva, oesophagus, stomach, small intestine, large intestine & rectum

To understand food chains

- To know the terms producer, prey, predator
- To construct a food chain using the correct terminology

Year 5

Understand how humans develop to old age

- To know the stages of the human life cycle
- To identify specific steps in each stage (baby – crawling, teenage – puberty)

Year 6

Understand the importance of a healthy circulatory system

- To know the main parts of the circulatory system and their function (heart, blood vessels and blood)
- To know that water and nutrients are transported in the blood
- To understand the effect of lifestyle choices (diet, exercise, drugs) on your circulatory system

Plants - Biology

EYFS

Understand what a plant is:

- To make observations of familiar plants
- To know plants, need to be cared for
- To name and describe some plants
- To draw pictures of plants

Year 1

Identify, name and describe a variety of plants:

- To name some garden plants
- To name some wild plants
- To understand the term evergreen
- To label a plant: roots, stem (trunk), petals or flowers

Year 2

Know how to grow a healthy plant:

- To know a plant starts as a seed or a bulb
- To observe and describe how seeds and bulbs grow.
- To know that plants need water, light and warmth to grow and stay healthy.

Year 3

Know the functions of different parts of flowering plants

- To explain the function of the roots, stem/trunk, leaves & flowers
- To know the requirements plants, need to grow: air, light, water, nutrients from soil and room to grow
- To know that different plants require different amounts of air
- To know that water travels from the soil, to the roots to the stem and the
- To understand the term pollination (using male and female parts)
- To know 3 forms of seed dispersal – wind, animal, water (river/stream/canal)

Living things and their habitats - Biology

EYFS

To know what a habitat is

- To know that a habitat is a home for animals and plants
- To explore a variety of habitats (woodland, pond, park, under a log)
- To build a home for an animal (bug hotel etc)

Year 2

To understand the importance of a habitat

- To compare things that are living, dead and never been alive
- To name a variety of plants/animals suited to a habitat/microhabitat (movement, finding food)
- To understand that habitats provide shelter, food & water for animals & plants
- To understand that plants/animals within a habitat depend on each other
- To construct a simple food chain starting with a plant

Year 4

To classify living things and understand how habitats can change

- To know how to group living things in a variety of ways (key features)
- To use a classification key
- To know some positive ways humans can impact a habitat (e.g. nature reserves)
- To know some negative ways habitats can be humans or nature can impact a habitat (e.g. littering, deforestation)

Year 5

Understand the lifecycles of a variety of plants & animals

- To know the terms sexual and asexual reproduction
- To know how plants, reproduce sexually (through pollination)
- To know how plants, reproduce asexually (through bulbs, tubers, runners, plantlets)
- To know how different animals, reproduce sexually
- To compare the life cycles of different animals (mammals, insects, birds, amphibians, reptiles)

Year 6

To classify living things based on specific and common characteristics

- To know that living things can be grouped into plants, animals and micro-organisms
- To understand the terms vertebrate and invertebrates
- To know animals can be grouped into vertebrates and invertebrates
- To know the common characteristics of the vertebrates' group - fish, amphibians, reptiles, birds, mammals
- To know that invertebrates can be grouped into insects, spiders, snails and worms
- To know plants can be grouped into flowering and non-flowering

Evolution & Inheritance

Describe how living things have adapted and evolved over time.

- I can define the terms evolution and inheritance.
- I know that fossils provide information about living things that inhabited the Earth millions of years ago.
- I recognise that living things have adapted and evolved over time to survive within the environment.
- I understand that organisms reproduce and offspring inherit similar characteristics.
- I know that variation exists within a population and between offspring of some plants.

Materials - Chemistry

EYFS

To begin to name and recognise simple properties of materials in their environment.

- I can name the material I am using to make a model and begin to identify a key property the material has.
- I can reuse materials and talk about what can be recycled.
- I can test a material to see if they are suitable e.g. is this bridge strong enough for the Billy Goats Gruff.
- I can take photos or draw pictures to record how materials change.

Y1 Everyday Materials

To identify, group and describe everyday materials using their properties.

- I know how to group every day materials into metals, rock, fabrics, wood, plastic and glass.
- I know how to distinguish between an object and the material it is made from. (This is a table it is made of wood, this is a window it is made of glass, etc)
- I know how to sort and compare everyday materials using **hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through.**

Y2 Uses of everyday materials

To compare materials suitability for different uses.

To recognise that some materials can change shape by applying a force.

- To understand why a material is suitable or not suitable for a specific purpose using the vocabulary, **opaque, transparent and translucent, reflective, non-reflective, flexible, rigid.**
- To label a picture or diagram of an object made from a combination of different materials describing their properties. e.g. house is made from bricks, slate, glass because …
- To understand what properties a suitable material needs to have.
- To know how the shape of a material can be changed in a variety of ways - **squashing, bending, twisting and stretching.**

Y3 Rocks

To identify and compare rocks, fossils and soils.

- To know that rock is a naturally occurring material.
- To know the name of some types of rock including **marble, chalk, granite, sandstone, slate.**
- To know examples of **igneous** (granite), **sedimentary** (sandstone, chalk) and **metamorphic** (slate marble) rock.
- To understand the vocabulary of (grain, crystals, layers, hard, soft, texture, absorb water) to describe the observable features of the named rocks.
- To understand how a fossil is formed.
- To understand that soils are a mixture of rocks and living/dead matter.

Y4 States of matter

To recognise that materials can change state by heating and cooling.

- To understand materials can be grouped into solids, liquids and gases.
- To understand how heating causes solids to melt into liquids and liquids to evaporate into gases.
- To understand how cooling causes gases to condense into liquids and liquids to freeze into solids.
- To know melting point of water is 0°C and the boiling point is 100°C.
- To know that the higher the temperature the faster the rate of evaporation.
- To understand how condensation and evaporation occur within the water cycle.

Y5 Properties of Materials

To justify materials suitability for different uses.

To identify that changes can be reversible or irreversible.

- To know how to group everyday materials based upon properties including their hardness, solubility, transparency, conductivity *(electrical and thermal), and response to magnets. (Electricity covered in Year 4 and magnets covered in Y3)*
- To know that some materials will dissolve in liquid to form a solution, these are **soluble** and solids that do not dissolve are **insoluble**.
- To understand why a material is suitable or not suitable for a specific purpose based upon its physical properties.
- To understand when some materials are mixed, they can be separated by sieving, filtering, evaporating or by magnetic properties. These changes are reversible.
- To understand that when some materials are mixed a chemical reaction can create a change of state or a new material. These changes are **irreversible** e.g. burning and rusting.
- To understand that heating can sometimes cause materials to change permanently. When this happens, a new substance is made.

Light - Physics

EYFS

To understand the term shadow

- To know what a shadow looks like.
- To know that we see shadows on a sunny day.
- To know shadows changes during the day.

Year 3

To understand light is an energy that can be manipulated.

- To understand darkness is the absence of light.
- To know how we see objects in light.
- To understand that it is dangerous to view the sun directly and state precautions used to view the sun, for example in eclipses.
- To know the terms transparent, translucent and opaque
- To understand how shadows are formed
- To understand how shadows, change size.

Year 6

To understand that light travels in straight lines and to know how we see objects.

- To understand that animals see light sources when light travels from the source into their eyes.
- To understand that animals see objects when light is reflected off that object and enters their eyes.
- To know that light reflects off all objects (unless they are black). Non-shiny surfaces scatter the light so we don't see the beam.
- To know that light travels in straight lines, called rays or beams of light

Seasonal Changes - Physics

EYFS

To recognise the changes in the natural world around them.

- To understand the differences between day and night.
- To know that there are changes in the natural world around them inc. seasons

Year 1

To understand that we experience four seasons.

- To know different types of weather.
- To know the names of the four seasons.
- To understand the differences in the local environment inc living things, throughout the year
- To understand how things in my life change during the seasons. i.e. the clothes I wear, the activities I do etc.

Forces & Magnets - Physics

EYFS

To recognise the everyday use of simple forces.

- To understand that movement changes as a result of pushing and pulling an object
- To know that different objects can float or sink.

Year 3

To know that forces are a push or a pull in a direction and understand magnetism.

- To know examples of forces in everyday life
- To understand that objects can move differently on different surfaces
- To know that magnets have two poles which attract and repel
- To understand that not all metals are magnetic/attracted to a magnet

Year 5

To know that there are different types of forces and understand their different effects

- To understand that air resistance and water resistance are forces against motion caused by objects having to move air and water out of their way.
- To know that friction is a force against motion caused by two surfaces rubbing against each other.
- To understand that some objects require large forces to make them move; gears, pulley and levers can reduce the force needed to make things move.
- To know that some objects/animals are streamlined to minimise the effects of air/water resistance.

Sound - Physics

EYFS

To recognise the term sound

- To know and name the sounds I hear.
- To understand the source of sounds.
- To know how I make different sounds.

Year 4

To know that sound is a vibration which travels through a medium to the ear.

- To understand that sound is a type of energy created by vibrations; the louder the sound, the bigger the vibration.
- To understand that sound travels from its source in all directions and we hear it when it travels to our ears.
- To know that sound travel can be blocked.
- To know that sound moves through all materials by making them vibrate; changing the way an object vibrates changes its sound.
- To know that sound volume changes dependant on the distant from the sound source
- To know that faster vibrations (higher frequencies) produce higher pitched sounds

Electricity - Physics

Year 4

To know how a simple electric circuit works

- To know that electricity is a form of energy.
- To understand that a source of electricity (mains or battery) is needed for electrical devices to work.
- To know that electricity sources push electricity round a circuit.
- To understand a complete circuit is needed for electricity to flow and devices to work.
- To understand that some materials allow electricity to flow easily and these are called conductors.
- To know that materials that don't allow electricity to flow easily are called insulators.

Year 6

To know and understand that the amount of voltage in a circuit can affect the output of a component inc brightness, volume and speed.

- To know that batteries/cells are a store of energy and this energy pushes electricity around the circuit.
- To know that battery/cell energy is measured in voltage.
- To understand that when the battery's/cell's energy is gone it stops pushing. (Voltage measures the 'push.')
- To know the symbols for: lamp, wire, buzzer, cell, battery, motor, switch (open), switch (closed).
- To understand that a series circuit will not work if a lamp is broken or a wire is disconnected.
- To understand how to vary the output of a component e.g. bulb, buzzer, motor

Earth & Space - Physics

EYFS

To recognise the changes in the natural world around them.

- To understand the key features that identify the Sun, the Moon and the stars through observation.
- To know the differences between day and night.

Year 5

To know and understand the movement of the Earth, Moon and other planets in the Solar System.

- To know the approximate shape of the Sun, Earth and Moon – Spherical
- To understand the movement of planets in the Solar System
- To know how the Earth and Moon moves.
- To understand why we have day and night.
- To know the moon has different phases.