

A Scientific Journey of a child at The Meadows Primary School (1)

YEAR 1

AUTUMN

HUMANS COMPARED TO ANIMALS

- identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals
- describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)
- identify and name a variety of common animals that are carnivores, herbivores and omnivores
- explore and compare the differences between things that are living, dead, and things that have never been alive.
- find out about and describe the basic needs of animals, including humans, for survival (water, food and air)
- notice that animals, including humans, have offspring which grow into adults

LIGHT AND DARK

- recognise different light sources, including the sun
- 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 a solid object
- notice that light is reflected from surfaces
- recognise that they need light in order to see things and that dark is the absence of light

SPRING

HUMANS AND KEEPING HEALTHY

- identify, name, draw and label the basic parts of the human body
- Identify which part of the body is associated with each sense.
- describe the importance of exercise for humans.
- explore how their body can move
- find out about and describe the basic needs of humans, for survival (water, food and air)
- notice that humans have offspring which grow into adults

SOUND

- identify the sounds they hear in the local environment.
- explore how to make sounds using everyday objects and describe the quality of the sounds they make.
- explore how sounds can be changed and develop their sound vocabulary.
- recognise that sounds get fainter as the distance from the sound source increases.
- explore how we hear sounds.

SUMMER

MATERIALS AND THEIR PROPERTIES

- Distinguish between an object and the material from which it is made
- Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock

A Scientific Journey of a child at The Meadows Primary School (2)

- Describe and compare the simple physical properties (for example, roughness, hardness, shininess, ability to float, transparency) of a variety of everyday materials
- Compare and group together a variety of everyday materials on the basis of their simple physical properties. (e.g. hardness, roughness, shininess, ability to float, flexibility)
- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
- Identify natural materials as those found in nature.
- Recognise that some materials have been man-made.
- Recognise that some materials can be recycled.

PLANTS AND SEEDS

- identify and name a variety of common plants, including garden plants, wild plants and trees, and those classified as deciduous and ever-green
- identify and describe the basic structure of a variety of common flowering plants, including roots, stem/trunk, leaves and flowers.
- compare plants, identifying similarities and differences between them, and group them in their own ways.
- find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.
- observe and describe how seeds and bulbs grow into mature plants
- explore the simple life cycle of plants

YEAR 2

AUTUMN

CHANGING MATERIALS

- Find out how the shapes of some materials, and solid objects made from these materials, can be changed by squashing, bending, twisting and stretching.
- Pupils explore how some everyday materials (for example water, chocolate, bread, clay) change when they are heated or cooled.

EARTH AND SPACE

- Identify the differences between day and night.
- Understand some key characteristics of night and day.
- Begin to understand the movement of the moon throughout a month.
- Observe changes across the four seasons.
- Observe and describe the weather associated with the seasons and how day length varies.

SPRING

ELECTRICITY

- To understand the dangers of electricity.
- Identify a range of common, everyday appliances that use electricity.
- Identify appliances that use mains electricity and electricity stored in a battery.
- Identify what electricity can be changed into.
- Be able to get a bulb to light in a simple circuit.

A Scientific Journey of a child at The Meadows Primary School (3)

- Identify and name the components of a simple circuit.
- Be able to represent simple circuits in pictures.

FORCES

- Find out about and describe the movement of familiar things.
- Recognise that a force can be a push or a pull.
- Recognise that forces make things start, stop, speed up, slow down or change direction.

SUMMER

HABITATS

- identify and name a variety of plants and animals in their habitats, including micro-habitats
- describe the structure of a variety of common invertebrates (minibeasts)
- identify and name a variety of common animals that are mini-beasts (invertebrates)
- compare the structure of a variety of common invertebrates (mini-beasts)
- identify and name a variety of plants and animals in their habitats, including micro-habitats
- describe and compare the structure of a variety of common invertebrates (as well as birds, fish, amphibians, reptiles, mammals)
- describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.
- describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other
- identify that most living things live in habitats to which they are suited

YEAR 3

AUTUMN

MATERIALS AND THEIR PROPERTIES

- Distinguish between an object and the material from which it is made
- Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock
- Describe and compare the simple physical properties (for example, roughness, hardness, shininess, ability to float, transparency) of a variety of everyday materials
- Compare and group together a variety of everyday materials on the basis of their simple physical properties. (e.g. hardness, roughness, shininess, ability to float, flexibility)
- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
- Identify natural materials as those found in nature.
- Recognise that some materials have been man-made.
- Recognise that some materials can be recycled.

LIGHT AND DARK

- recognise that dark is the absence of light.
- recognise that they need light in order to see things.
- recognise that light from the sun can be dangerous and that there are ways to protect their eyes.

A Scientific Journey of a child at The Meadows Primary School (4)

- recognise that shadows are formed when the light from a light source is blocked by a solid material.
- recognise that shadows can be changed.
- find patterns in the way the size of the shadows change.
- recognise that light is reflected from some surfaces.
- recognise that they need light in order to see things.

SPRING

HUMANS AND KEEPING HEALTHY

- identify that humans, like some animals, have muscles for movement.
- identify that humans, as animals, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat
- identify the different types of teeth in humans and their simple functions.
- describe the ways in which nutrients and water are transported within humans, as animals
- describe the simple functions of the basic parts of the digestive system in humans

SOUND

- Pupils identify sounds in the environment and the directions that they come from.
- Pupils identify the qualities of the sounds they hear
- Pupils identify how sounds are made, associating some of them with something vibrating.
- Pupils explore how the sounds from a sound maker can be changed
- Pupils recognise that sounds get fainter as the distance from the sound source increases.
- Pupils recognise that vibrations from sounds travel through a medium to the ear.
- Pupils understand that we hear a sound when it travels from a sound source to our ears.

SUMMER

CHANGING MATERIALS

- Compare and group materials together, according to whether they are solids, liquids or gases.
- Use a range of thermometers to measure the change in materials as they are heated and cooled.
- Observe that some materials change state when they are heated or cooled.
- Recognise that changes of state are reversible.
- Identify the part played by evaporation and condensation in the water cycle.
- Recognise that changes of state are reversible.

PLANTS AND SEEDS

- Pupils observe and explore a range of plants from different habitats and the conditions they need in order to grow.
- explore the requirements of plants for life and growth (air, light, water, nutrients, room to grow) and how they vary from plant to plant
- identify and describe the functions of different parts of flowering plants: roots, stem.
- investigate the way in which water is transported within plants

A Scientific Journey of a child at The Meadows Primary School (5)

- explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal
- explore the characteristics that make something a living thing.

YEAR 4

AUTUMN

HUMANS COMPARED TO ANIMALS

- compare the teeth of humans with those in other animals and explore how these are related to the diet of the animal.
- identify that humans and some other animals have skeletons for support, protection and movement.

EARTH AND SPACE

- Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.
- Describe the Sun, Earth and Moon as approximately spherical bodies.
- Describe the movement of the Earth relative to the Sun in the solar system.
- Describe the movement of the Moon relative to the Earth.
- Pupils to observe and describe how day length varies throughout the year.

SPRING

ROCKS AND SOIL

- Explore different kinds of rocks, including those in the local environment, observing their appearance, texture and characteristics.
- Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.
- Explore the uses made of a variety of rocks, including those in the local environment.
- Explore how rocks change over time
- Explore, in simple terms, how different groups of rocks are formed, for example, by heat or compression.
- Describe, in simple terms, how fossils are formed when things that have lived are trapped within rock.
- Explore different types of soils, including those in the local environment, observing what the soils are made up of.
- Explore the properties of different types of soils, including those in the local environment, such as how well water drains through the soil.
- Recognise that soils are made from rocks and organic matter.

ELECTRICITY

- Pupils identify common appliances that run on electricity
- Pupils construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
- Pupils recognise the dangers of mains electricity and the need for care in circuit electricity
- Pupils identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.
- Pupils recognise some common conductors and insulators, and associate metals with being good conductors.
- Pupils recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
- Pupils recognise that electricity (electrical energy) can be converted into other useful forms of energy within an electrical circuit.

A Scientific Journey of a child at The Meadows Primary School (6)

SUMMER

FORCES

- Know how to measure a force in Newtons (N), using a newton meter.
- Compare how things move on different surfaces.
- Notice that some forces need contact between two objects.
- Predict whether two magnets will attract or repel each other, depending on which poles are facing.
- Describe magnets as having two poles.
- Observe how magnets attract or repel each other and attract some materials and not others.
- Recognise 'movement force' as the force that makes an object move.
- Recognise that 'magnetic force' is the force of attraction or repulsion between two magnets and between a magnet and a magnetic material.
- Notice that magnetic forces can act at a distance.
- Recognise 'movement force' as the force that makes an object move.
- Recognise that 'water resistance' is the force, caused by the water, which opposes the movement through the water.
- Identify the effects of water resistance, a force caused by the water, which opposes movement through the water.

HABITATS

- recognise that environments can change and that this can sometimes pose dangers to specific habitats.
- recognise that living things can be grouped in a variety of ways
- explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
- construct and interpret a variety of food chains, identifying producers, predators and prey.

YEAR 5

AUTUMN

MATERIALS AND THEIR PROPERTIES

- Explore a variety of everyday materials and compare their features and characteristics.
- Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets
- Explore how some materials are obtained, including natural and man-made.
- Recognise that some materials are available naturally and need to be processed for use while others are manufactured.
- Compare the properties of different materials and relate these properties to the various ways in which the materials are used.
- Understand how some materials are recycled.
- Recognise some of the issues about sustainability of materials.
- Compare the behaviour of some solids, liquids or gases and recognise that they each group have their own characteristics.
- Recognise that materials can be grouped into solids, liquids and gases, based on their properties.

LIGHT AND DARK

- understand that there are several different light sources, made up of primary and secondary light sources.

A Scientific Journey of a child at The Meadows Primary School (7)

- understand that light appears to travel in straight lines.
- use the ideas that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
- explore the patterns in the length and direction of shadows as the position of the light source is changed.
- understand that light appears to travel in straight lines.
- explore how light is reflected from a reflective surface.
- explore different light effects such as rainbows, refraction.
- 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 ideas that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.

SPRING

HUMANS AND KEEPING HEALTHY

- identify and name the main parts of the human circulatory system, and explain the functions of the heart, blood vessels and blood (including the pulse and clotting).
- Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.
- Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.
- Describe the ways in which nutrients and water are transported within humans as animals
- Describe the changes as humans develop from birth to old age. (birth, growth, development, reproduction, death).
- Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.

SOUND

- identify a range of sound sources that produce different sounds.
- identify how sounds are made, associating some of them with something vibrating
- Find patterns between the volume of a sound and the strength of the vibrations that produced it
- Find patterns between the pitch of a sound and features of the object that produced it
- Recognise that vibrations from sounds travel through a medium to the ear
- Pupils recognise that we hear when vibrations from a sound source travel through a medium to the ear.

SUMMER

CHANGING MATERIALS

- Measure the temperature at which some materials change state in degrees Celsius (°C)
- Demonstrate that changes of state are reversible changes.
- Research the temperature at which some materials change state in degrees Celsius (°C)
- Associate the rate of evaporation with temperature.
- Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.
- Explore the work of scientists in creating new and useful materials

A Scientific Journey of a child at The Meadows Primary School (7)

PLANTS AND SEEDS

- Explore plants in the local environment
- explore the requirements of plants for life and growth (air, nutrients from soil, and room to grow) and how they vary from plant to plant.
- identify and describe the functions of different parts of flowering plants: leaves and flowers
- identify and describe the functions of different parts of flowering plants: leaves and flowers
- explore the part that flowers play in the life cycle of flowering plants, including pollination and seed formation.
- describe the life process of reproduction in some plants.
- explore the life processes that make something a living thing.

YEAR 6

AUTUMN

COMBINING AND SEPARATING MATERIALS

- Understand that materials can be grouped together, according to whether they are solids, liquids or gases
- Understand that solids, liquids and gases have specific properties
- Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)
- Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature
- Demonstrate that changes of state are reversible changes
- Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution
- Recognise that dissolving, mixing and changes of state are reversible changes
- Describe how to recover a soluble solid from a solution
- Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating (and decanting).

EARTH AND SPACE

- Describe the Sun, Earth and Moon as approximately spherical bodies.
- Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.
- Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.
- Describe the movement of the moon relative to the Earth.
- Understand that a moon is a celestial body that orbits a planet (Earth has one moon; Jupiter has four large moon and numerous smaller ones)
- Observe and describe how day length varies through the year

SPRING

HUMANS COMPARED TO ANIMALS

- describe the ways in which nutrients and water are transported within animals, including humans.
- describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird
- describe the life process of reproduction in animals.

A Scientific Journey of a child at The Meadows Primary School (7)

- recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
- recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago
- identify how animals are adapted to suit their environment in different ways and that adaptation may lead to evolution.

ELECTRICITY

- recognise common appliances that use electricity
- recognise the dangers of mains electricity and the need for care in circuit electricity
- compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches
- associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit
- use recognised symbols when representing a simple circuit in a diagram.
- understand that electrical energy can be converted into other useful forms of energy such as light, sound or movement energy
- recognise the work of other scientists in the field of electricity

SUMMER

FORCES

- Recognise that forces are a push or a pull
- explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.
- identify the effects of air resistance, water resistance and friction, which act between moving surfaces.
- recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.

HABITATS

- describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals
- give reasons for classifying plants and animals based on specific characteristics.
- identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
- describe the differences in the life cycles of an insect, (a mammal, an amphibian, and a bird)
- describe the life process of reproduction in some plants and animals.