

Newquay Junior Academy - Spring Sequence – SCIENCE



YEAR 3

Prior knowledge...

Rocks and soils

Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.

Find out how shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Forces

May have an awareness of how to make things stop and start, using simple pushes and pulls. They may know about floating and sinking.

YEAR 4

Prior knowledge...

Electricity

May have some understanding that objects need electricity to work.

May understand that a switch will turn something on or off.

Sound

May have some understanding that objects make different sounds.

Some understanding that they use their ears to hear sounds.

Know about their different senses.

YEAR 5

Prior knowledge...

Animals including humans (life cycles)

Construct and interpret a variety of food chains, identifying producers, predators and prey.

Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.

YEAR 6

Prior knowledge...

Animals including humans

Describe the changes as humans develop to old age.

Electricity

Pupils will have an understanding of a simple circuit and how it works.

INTENT

Rocks and soils

Pupils will be able to explain the different types of rock and, in a simple manner, how fossils are formed.

Forces (magnetism)

Pupils will be able to group everyday materials based on whether they are magnetic or not.

Pupils will be able to explain that magnets attract some materials and repel others.

Electricity

Pupils will be able to construct a simple circuit and explain how it works. They will also be able to explain that a switch will open and close a circuit.

Pupils will be able to explain the difference between a conductor and an insulator.

Sound

Pupils will be able to explain what happens when a sound leaves a source and how it travels to our ear. Pupils will be able to explain the correlation between pitch and the object producing the sound.

Animals including humans (life cycles)

Pupils will know what a life cycle is. They will be able to compare the stages in the life cycle of a mammal and amphibian. Pupils will be able to explain the life cycle of a plant.

Animals including humans

Pupils will be able to label the internal organs of the human body and explain their function. They will be able to explain how the human heart works and the impact of exercise.

Pupils will be able to explain how muscles work.

Electricity

Pupils will be able to use circuit boards confidently. They will be able to use their knowledge of electrical circuits to design and make a lighthouse.

VOCABULARY / STICKY KNOWLEDGE

Rocks and soils – rocks, igneous, metamorphic, sedimentary, anthropic, permeable, impermeable, chemical fossil, body fossil, trace fossil, Mary Anning, cast fossil, mould fossil, replacement fossil, extinct, organic matter, top soil, sub soil, base rock.

There are different types of rock.

There are different types of soil.

Soils change over time.

Fossils tell us what has happened before.

Palaeontologists use Fossils to find out about the past.

Forces (magnetism) - force, push, pull, friction, surface, magnet, magnetic, magnetic field, pole, north, south, attract, repel, compass

Magnets exert attractive forces on some materials.

Magnets exert attractive and repulsive forces on each other.

Electricity - electricity, electric current, appliances, mains, crocodile clips, wires, bulb, battery cell, battery holder, motor, buzzer, switch, conductor, electrical insulator, component.

A complete circuit is needed for electricity to flow and devices to work.

Some materials allow electricity to flow easily and these are called conductors.

Materials that don't allow electricity to flow easily are called insulators.

Sound – amplitude, volume, quiet, loud, ear, pitch, high, low, particles, instruments, wave.

Sound is produced when an object vibrates.

Sound moves through all materials by making them vibrate.

Sound travels from its source in all directions and we hear it when it travels to our ears.

Animals including humans (life cycles) -

Reproduction, Sexual, Pollination, Dispersal, reproduction, cell, fertilisation, pollination, male, female, pregnancy, young, mammal, metamorphosis, amphibian, insect, egg, embryo, bird, plant

Different animals mature at different rates and live to different ages.

Some organisms reproduce sexually where offspring inherit information from both parents. Environmental change can affect how well an organism is suited to its environment. Different types of organisms have different lifecycles.

Animals including humans -

Oxygenated, Deoxygenated, Valve, Exercise, Respiration Circulatory system, heart, lungs, blood vessels, blood, artery, vein, pulmonary, alveoli, capillary, digestive, transport, gas exchange, villi, nutrients, water, oxygen, alcohol, drugs, tobacco. The heart pumps blood around the body.

Oxygen is breathed into the lungs where it is absorbed by the blood. Muscles need oxygen to release energy from food to do work. (Oxygen is taken into the blood in the lungs; the heart pumps the blood through blood vessels to the muscles; the muscles take oxygen and nutrients from the blood.)

Electricity –

Buzzer, cell, circuit, conductor, insulator, current, motor, switch, voltage

A circuit needs a power source and needs to be complete in order to successfully work.

The flow of electricity around a circuit can be controlled by a switch.

Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit

SEQUENCE OF LESSONS

Rocks and soils

1. Compare and group together different kinds of rocks on the basis of appearance and simple physical properties.
2. Describe in simple terms how fossils are formed when things that have lived are trapped within rock.
3. Recognise that soils are made from rocks and organic matter.

Forces (magnetism)

1. Compare how things move on different surfaces.
2. To notice that some forces need contact between two objects but magnetic forces can act at a distance.
3. Compare and group together everyday materials on the basis of whether they are attracted to a magnet or not.
4. To observe how magnets attract or repel each other and attract some materials and not others.
5. To predict whether two magnets will attract or repel each other depending on which poles are facing.

Electricity

Power stick – using human electricity to create a class circuit. How many children will fit in the circuit?

1. To construct a simple circuit.
2. To 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.
3. To explain the difference between an insulator and a conductor.
4. To recognize that a switch opens and closes a circuit.

Sound

Hidden depths zoom in/out - [Hidden depths - Explorify](#)

1. To explain that sounds are made when an object vibrates and to begin to understand that we hear sounds when the vibrations travel from a source through a medium to our ears.
2. To notice patterns between the pitch and volume of a sound and the features of the object that produced it.
3. To investigate what factors affect the pitch and the volume of sound.
4. To explain how we hear sounds.

Animals including humans (life cycles)

[Wildlife in the pond - Explore](#)

1. To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.
2. To describe the life process of sexual reproduction in plants.

Animals including humans

[Operation Ouch BBC iPlayer -](#)

[Operation Ouch! - Series 3: 2. We](#)

Heart the Heart!

1. To explain the function of internal organs.
2. To explain the structure and function of the human heart.
3. To explain the impact of exercise on the human heart.
4. To explain how muscles work.

Electricity

1. To recognise and draw circuit symbols.
2. To know the difference between a series and a parallel circuit.
3. To design a circuit using recognised symbols.
4. To use knowledge of electrical circuits to design and make a lighthouse.

OUTCOME / COMPOSITE

Rocks and soils

Pupils will make their own fossils using chocolate/sweets and be able to explain how they have been formed.

Forces (magnetism)

Pupils to make a magnetic game.

Electricity

Pupils will design and make their own working torch (linked to English & DT)

Sound

Pupils will make a musical instrument which changes pitch.

Animals including humans (life cycles)

Pupils will have observed the complete life cycle of a butterfly.

Animals including humans

Pupils will make their own heart using craft materials.

Electricity

Pupils will design and make their own working lighthouse (links top DT)