

Newquay Junior Academy - Autumn Sequence – Science



YEAR 3

Prior knowledge...Observed changes across the four seasons. Observed and described weather associated with the seasons and how day length varies.

YEAR 4

Prior knowledge...that animals including humans do not produce their own food. The importance of a balanced and nutritious diet. That humans and some other animals have skeletons and muscles for support, protection and movement.

YEAR 5

Prior knowledge...We have four seasons (autumn, winter, spring and summer). The Sun is a source of light but the Moon is not. Know that a shadow is caused when an object blocks light from passing through it. The properties of a sphere.

YEAR 6

Prior knowledge...Understand there is a variety of life on Earth and know that some animal's differences are important to their survival. Know how animals and plants reproduce and how fossils form over time

INTENT

Light & seeing

Pupils will understand light comes from a source. Pupils will understand that materials can be either opaque, translucent or transparent. They will be able to explain what each of these terms means

Animals including humans

Living things and their habitats
Pupils will understand the structure of a food chain and the impact it has within a habitat. Pupils will understand the structure of the human digestive system.

Earth and Space

Pupils will understand the main bodies that make up our known Solar system and explain that the planets orbit around the Sun. They will be able to explain how day and night using the idea of the Earth's rotation.

Evolution and Inheritance

Pupils will gain an understanding into how humans and other animals evolve and adapt over time as well as how fossils are formed.

VOCABULARY / STICKY KNOWLEDGE

Light source, dark, reflect, ray, mirror, bounce, visible, beam, sun, glare, travel, straight, opaque, shadow, block, transparent, translucent. There must be light for us to see. Without light it is dark. We need light to see things even shiny things. Transparent materials let light through them and opaque materials don't let light through. Beams of light bounce off some materials (reflection). Shiny materials reflect light beams better than non-shiny materials.

Herbivore, Carnivore, Digestive system, tongue, mouth, teeth, oesophagus, stomach, small intestine, large intestine, liver, tooth, canine, incisor, molar, premolar, producer, consumer. Environmental change affects different habitats differently. Different food chains occur in different habitats. Different teeth do different jobs. Food is broken down by the teeth and further in the stomach and intestines where nutrients go into the blood and are transported around the body.

Earth & Space

Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, star, constellation, waxing, waning, crescent, gibbous. Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, planets, solar system, day, night, rotate, orbit, axis, spherical, geocentric, heliocentric. Stars, planets and moons have so much mass they attract other things, including each other due to a force called gravity. Gravity works over distance. Objects with larger masses exert bigger gravitational forces. Objects like planets, moons and stars spin/rotate. Forces Force, gravity, attraction, orbit, trajectory, resistance, friction, particles, variables. Constant, up thrust, buoyancy, displace, levers, decrease, effort, fulcrum, simple machine. That gravity acts to pull objects down to the centre of Earth. The Sun's gravity attracts the planets and keeps them in their orbits in the Solar System. Friction will cause an object to heat up and slow down. An object displaces the water, the more it displaces, the more buoyant it is. Levers, pulleys and gears are all examples of simple machines. They all act to decrease the effort it takes to move an object.

Fossils, Adaptation, Evolution, Characteristics, Reproduction, Genetics, Variation, Inherited, Environmental, Mutation, Competition, Survival of the Fittest, Evidence, Life cycles have evolved to help organisms survive to adulthood. Over time the characteristics that are most suited to the environment become increasingly common. Organisms reproduce and offspring have similar characteristic patterns. Variation exists within a population (and between offspring of some plants)

SEQUENCE OF LESSONS

Explore - Shadow shapes
1 - To recognise that they need light in order to see things and that dark is the absence of light.
2 – To notice that light is reflected from surfaces.
3 – To recognise that light from the sun can be dangerous and that there are ways to protect our eyes.
4 – To recognise that shadows are formed when the light from a light source is blocked by an opaque

1 – To draw and read a simple food chain.
2 – To talk about the characteristics of a habitat and I can identify that most living things live in habitats to which they are suited.
3 – To describe the role of producers, predators and prey in the food chain in specific habitats.
4 – To classify animals based on their characteristics
5 – To identify the different types of teeth in

Earth and Space

Space planetarium visit
1 - To identify different planets which make up our solar system.
2 - To describe the sun, Earth and moon as approximately spherical bodies.
3 - To describe the movement of the Earth and other planets relative to the sun in the solar system.
4 - Use the idea of the Earth's rotation to explain day

1 - To understand and explain the key ideas of the theory of evolution.
2 - To explain the scientific concept of inheritance.
3 - To demonstrate understanding of the scientific meaning of adaptation.
4 - To identify the key ideas of the theory of evolution.
5 - To examine the evidence demonstrating how plants have evolved.

	<p>object.</p> <p>5 – To find patterns in the way that the size of shadows changes.</p> <p>6 – To recognise that shadows are formed when the light from a light source is blocked by an opaque object.</p> <p>Create and be able to tell a story using shadow puppets.</p>	<p>humans and their simple functions.</p> <p>6 - To describe the simple functions of the basic parts of the digestive system in humans.</p> <p>Visit to a local beach and local woodland habitat.</p> <p>Visit to Newquay Zoo.</p>	<p>and night and the apparent movement of the sun across the sky.</p> <p>Visit to the Spaceport</p> <p><u>Forces</u></p> <p>1 – To learn about gravity.</p> <p>2 – To investigate air resistance.</p> <p>3 – To learn about floating and sinking with reference to water resistance.</p> <p>4 – To investigate water resistance, keeping mass constant.</p> <p>5 – To investigate up thrust, changing the shape and size of the object.</p>	<p>6 - To understand how human beings have evolved.</p>
<p>OUTCOME / COMPOSITE</p>	<p>Pupils will practically investigate light. By the end of the topic children will have created their own shadow puppets and will be able to use them to tell a story (Cross curricular link with English and RE)</p>	<p>Pupils will have created their own food chains linked to a specific habitat and be able to explain how it works. Pupils will have created their own practical digestive systems.</p>	<p><u>Earth and Space</u></p> <p>Pupils will have practically investigated the structure of the known solar system and carried out a series of investigations to enable them to explain how night and day occur. They will complete a practical investigation exploring the surface of the moon and how craters are formed, this will result in them making their own lunar landers.</p> <p><u>Forces</u></p> <p>Pupils will complete a series of investigations to learn about forces within the context of space.</p>	<p>Pupils will have practically investigated how evolution and inheritance occurs. They will create their own timelines to show the evolution of animals as well as using photographs to compare traits they have inherited from their parents.</p>