

Newquay Junior Academy - Summer Sequence – SCIENCE



YEAR 3

Prior knowledge...

Animals including humans

Basic stages of an animal life cycle. The importance of exercise for humans. The basic needs of animals including humans for survival.

Plants

Seeds and bulbs grow into mature plants. Plants need light, water and warmth to grow and stay healthy.

YEAR 4

Prior knowledge...

States of matter

Distinguish between an object and the material from which it is made. Identify and name a variety of everyday materials.

Describe the simple physical properties of a variety of everyday materials. Compare and group together a variety of everyday materials on the basis of their simple physical properties.

YEAR 5

Prior knowledge...

Animals including humans

Describe the simple functions of the basic parts of the digestive system in humans.

Identify the different types of teeth in humans and their simple functions.

Materials (mixture and separation)

Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock and simply describe their physical properties.

YEAR 6

Prior knowledge...

Light and sight

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 a solid object.

Find patterns in the way that the sizes of shadows change.

INTENT

Animals including humans

Pupils will develop knowledge, skills and understanding in nutrition, muscles, bones and joints and conduct their own research to answer questions.

Plants

Pupils will investigate and identify the parts of a flowering plant. They will be able to explain the function of different parts and will investigate and identify the conditions required for successful growth.

States of matter

Pupils will understand the molecular structure of the three states of matter (solid, liquid and gas). They will practically investigate the processes involved to change these states. Pupils will be able to use scientific vocabulary to explain how the water cycle works.

Animals including humans

Pupils will be able to describe the different stages of a human life cycle.

Materials (mixture and separation)

Pupils will be able to explain that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.

They will also be able to use their knowledge of solids, liquids, and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.

Light and sight

Pupils will be able to explain that light travels in straight lines and will be able to use this knowledge to investigate how we see.

VOCABULARY / STICKY KNOWLEDGE

Animals including humans - Nutrients, nutrition, carbohydrates, protein, fats, vitamins, water, fibre, skeleton, bones, joints, endoskeleton, exoskeleton, vertebrates, invertebrates, muscles, contract, relax. Different animals are adapted to eat different foods.

Many animals have skeletons to support their bodies and protect vital organs. Muscles are connected to bones and move them when they contract. Movable joints connect bones.

Plants - Air, light, water, nutrients, soil, support, anchor, reproduction, pollination, dispersal, transportation, flower, energy, growth, seedling, carbon dioxide, oxygen, sugar, photosynthesis, chlorophyll. Plants are producers, they make their own food. Leaves absorb sunlight and carbon dioxide. Plants have roots which provide support and draw water from the soil. Seeds/bulbs require the right conditions to germinate and grow.

States of matter - Solid, liquid, gas, particles, state, materials, properties, matter, melt, freeze, water, ice, temperature, process, condensation, evaporation, water vapour, energy, precipitation, collection.

Solids, liquids and gases have different properties. Materials can be divided into solids, liquids and gases.

Heating causes solids to melt into liquids and liquids evaporate into gases.

Cooling causes gases to condense into liquids and liquids to freeze into solids.

The temperature at which given substances change state are always the same.

Animals including humans - foetus, embryo, womb, gestation, baby, toddler, teenager, elderly, growth, development, puberty, hormone, physical, emotional.

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

Puberty is something we all go through, a process which prepares our bodies for being adults, and reproduction. Hormones control these changes; which can be physical and/or emotional.

Materials (mixture and separation) - solid, liquid, gas, particles, state, materials, properties, matter, melt, freeze, water, ice, temperature, process, condensation, evaporation, water vapour, energy, precipitation, collection

When two or more substances are mixed and remain present the mixture can be separated. Some changes can be reversed and some can't. Materials change state by heating and cooling. Sometimes mixed substances react to make a new substance. These changes are usually irreversible.

Light and seeing - Light source, dark, reflect, ray, mirror, bounce, visible, beam, sun, glare, travel, straight, opaque, shadow, block, transparent, translucent, reflect absorb emitted scattered refraction

Animals see light sources when light travels from the source into their eyes.

Animals see objects when light is reflected off that object and enters their eyes.

Light reflects off all objects (unless they are black). Non-shiny surfaces scatter the light so we don't see the beam.

Light travels in straight lines.

SEQUENCE OF LESSONS

Animals including humans

Explorify -

<https://explorify.uk/en/activities/the-big-question/what-food-helps-to-keep-us-healthy>

1. To identify that animals and humans need the right types and amounts of nutrition.
2. To identify that animals and humans cannot make their own food; they get nutrition from what they eat.
3. To identify that some animals and humans have skeletons for support, protection and movement.

Plants

<https://explorify.uk/en/activities/zoom-in-zoom-out/pink-and-white>

1. Identify and describe the different parts of flowering plants: roots, stem, leaves & flower.
2. Investigate the requirements of plants for growth – light, air, water, nutrients and how water is transported within plants.
3. Explore that part that flowers play in the life cycle of a flowering plant.
4. To explore the part that seed dispersal plays in the life cycle of a flowering plant.

States of matter

1. To explain the particle structure and properties of a solid, liquid and gas.
2. To practically investigate gas.
3. To explain how materials change state when they are heated or cooled.
4. To practically explain the process of evaporation.
5. To explain the process of the water cycle.

Animals including humans

What if the average human lifespan was 200 years?

1. To create a timeline of a human life.
2. To study the development from foetus to birth.
3. To work scientifically to investigate gestational periods.
4. To learn about the changes experienced in puberty.

Materials (Mixture and separation)

Investigating using water and cornflour – changing a liquid into a solid when held.

1. To know that some materials will dissolve in a liquid to form a solution.
2. To use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.
3. To explain that some changes result in the formation of new materials, and these are not usually reversible.
4. To practically investigate the process of oxidation.

Light and sight

Which Is the odd one out? [Shine a light - Explorify](#)

1. To explain how the eye works.
2. To recognise that light appears to travel in straight lines.
3. To use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.
4. To explain that we see things because light travels from light sources to our eyes or from light sources to objects and then into our eyes.
5. To use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

OUTCOME / COMPOSITE

Animals including humans

Pupils will make their own human skeleton using a variety of materials.

Plants

Pupils will lead the growing project with Newquay Zoo.

States of matter

Pupils will produce their own water cycle in a bag.

Animals including humans

Pupils will produce their own human timeline.

Materials (Mixture and separation)

Pupils will have practically investigated reversible and irreversible changes.

Light and sight

Pupils will use play-doh to create their own version of an eye and be able to explain how it works.