Woodside Academy

Science Curriculum

Excellence through Opportunity

Nursery and Reception

30-50 months

- Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world.
- Can talk about some of the things they have observed such as plants, animals, natural and found objects.
- Talks about why things happen and how things work.
- Developing an understanding of growth, decay and changes over time.

40-60 months

- Looks closely at similarities, differences, patterns and change.

Early Learning Goals

- Children know about similarities and differences in relation to places, objects, materials and living things.
- They talk about the features of their own immediate environment and how environments might vary from one another.
- They make observations of animals and plants and explain why some things occur, and talk about changes.

Key Stage 1 (Years 1 and 2)

Working Scientifically

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions

Year 1

Plants

- identify different leaves and name them
- identify different wild flowers and name them

Animals including humans

- children will learn about a range of land animals
- taste testing of different food products
- children will learn about a range of creatures of the sea
- label the body parts
- identify body parts and how they link to the senses
- recognise different body movements

Everyday materials

- what objects are made from and whether they are a source of light, cause a shadow or reflect
- opaque, transparent and translucent
- learn about flammable materials
- strength of materials
- what objects are made from
- discuss properties of materials and why they are used for the construction of different objects
- investigate what objects are made from and their properties
- properties of wood
- to investigate waterproof materials

Seasonal changes

- changes over the seasons including weather

Year 2

Plants

- To understand how to observe plant life
- To understand how to label a plant
- Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy
- Observe and describe how seeds grow into mature plants
- To observe and identify seeds
- To understand the inside of seeds

Animals including humans

- recognise the stages of the chicken life cycle
- recognise common land birds
- life cycle of a chicken
- to know what living means

Living things and their habitats

- recognise food chains and producers and consumers
- Understand that animals and plants survive best in habitats that provide their basic needs
- To be able to explain how animals depend on animals/plants in their habitat
- To be able to name some animals and plants in our school grounds
- To identify and name a variety of plants and animals in their habitats
- To understand what a food chain is

Uses of everyday materials

- identify what things are made from and discuss their suitability for the product
- to understand why an object is made from a particular material
- to understand that fabrics are made from different materials
- to find out how shapes of solid objects can be changed
- to sort plastic from other materials
- to be aware of the ecological issues of throwing away plastic
- to investigate forces that effect movement**.**
- to investigate the effect changing the gradient has on how far something travels in water.
- to be aware of the water cycle and use knowledge to understand the states of water
- to be aware of the water cycle and use knowledge to understand the states of water
- to know about the states of matter of water
- to have an awareness of materials that float and why
- to investigate designs that will allow best floating and sinking

Lower Key Stage 2 (Years 3 and 4)

Working Scientifically

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

Year 3

Forces and magnets

- To look at magnets in action and how they attract or resist each other
- To be aware why magnets repel or attract each other
- Identify materials that are attracted to a magnet
- Investigate objects that attract or repel magnets
- Investigate how two magnets will react to each other
- To be aware how an object moves differently on different surfaces
- To have an awareness of friction and what kinds of surfaces cause friction
- To have a basic awareness of gravity
- To understand why an object floats or sinks

Animals including humans

- To know that a skeleton is needed for support, protection and movement.
- To understand the purpose of different teeth.
- To understand how animal diets effects the teeth they have.
- To know why looking after teeth is important.
- To understand how muscles work in pairs to allow movement and maintain posture
- To investigate whether people who do more sport have stronger muscles

Rocks

- To understand how dinosaurs are classified.
- To be able to conduct a scientific search.
- To be able to classify findings.
- To know how fossils are examined and classified.
- To recognise and understand our impact on the environment.
- To understand different rock types
- To look at similarities and differences between different rocks in terms of physical and properties
- To be aware of different kinds of soil and how they are made

Light

- To recognise light sources
- To recognise objects that reflect light
- To understand how light is used to see things and the absence of light means we cannot see things
- To be aware that looking at bright objects including the sun is dangerous to our eyes
- To understand how a shadow is formed
- To recognise how and why the size or shape of a shadow changes

Plants

- To understand the parts of plants, their function and the conditions affecting plant growth
- To understand that plants share the characteristics of living things, including reproduction.
- To understand what plants need to grow
- To understand that plants disperse seeds in different ways and that some may grow to become adult plants.
- To understand how flour is made

Year 4

Living things and their habitats

- To recognise that living things can be grouped in a variety of ways.
- To identify vertebrates by observing similarities and differences.
- To use a key to identify invertebrates.
- I can show the characteristics of living things in a table and a key

Animals including humans

- To know that all living things need to reproduce in order for the species to survive
- To understand the terms germination, pollination, fertilisation and seed dispersal
- To classify producers, predators and prey and construct relevant food chains.
- To classify different types of trees using fieldwork.

States of matter

- To identify solids, liquids and gasses.
- To recognise the changing states of matter and what they look like.
- To investigate how a material changes form.

Sound

- To identify how sounds are made using vibration.
- To investigate how the ear works and how we hear.
- To find patterns in the pitch of sound and volume.
- To understand that sounds get fainter from a distance.
- To describe the water cycle and its features.

Electricity

- To identify a range of electrical appliances that run on electricity.
- To construct simple circuits by identifying and naming basic parts and linking them together.
- To understand how electrical circuits can produce light.
- To recognise common conductors and insulators.

Upper Key Stage 2 (Years 5 and 6)

Working Scientifically

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments

Year 5

Sound

- To establish current understanding of sound
- To understand that sounds are made when objects vibrate
- To examine how we hear sounds.
- To investigate materials used for soundproofing
- To investigate how the pitch and loudness of sounds can be changed.
- To compare how sounds are produced by musical instruments.

The three states of matter

- To investigate the three states of matter
- To explore separating solids
- To understand filtration.
- To understand mixtures and solutions.
- To investigate factors that affect dissolving.
- To understand evaporation

Forces

- To know weight is a force and can be measured in Newton's.
- To explore the life of a famous Scientist
- To explore force diagrams.
- To understand when an object is submerged in water, the water provides an upward force (up thrust) on it.
- To understand air resistance

Earth and Space

- To understand the relative sizes of the Earth, Moon and Sun.
- To explore the orbit of the moon
- To understand that the moon has phases and appears to change shape
- To explore how seasons occur.
- To explore stars

Living things and their habitats

- To investigate the parts of a plant/flower.
- To explore pollination.
- To investigate seed dispersal
- To explore the life cycles of a plant.
- To explore the life cycles of a mammal
- To explore the life cycle of an amphibian
- To explore the life cycle of an insect (dragonfly or butterfly)
- To explore the life cycle of a bird.

Animals including humans

- To explore the human circle of life.
- To explore the differences in age groups.
- To explore pregnancy in humans.
- To investigate what happens to our bodies during puberty.
- To explore the differences between boys and girls

Year 6

Living things and their habitats

- To understand how living things are classified (Linnaean System)
- To give reasons for classifications
- To classify animals according to a key.
- To explore how the circulation system works.

Light

- To understand how light travels.
- To understand light allows us to see.
- To understand what surfaces reflect light the best.
- To understand how shadows are formed.

Electricity

- To investigate the brightness of a bulb
- To understand factors affecting the variation of components.
- To understand the meaning of electrical symbols.

Animals including humans

- To name the parts of the circulation system.
- To understand how drugs and exercise affect the body.
- To explore the absorption of nutrients.

Evolution and inheritance

- To understand the challenge of classifying all living things.
- To understand who Charles Darwin was.
- To understand what natural selection means.
- To understand what extinction means.
- To understand adaptation and natural selection.