

Cranmore Infant School

Science curriculum

*We love to learn and together
we grow*

Vision Statements

Science

At Cranmore, our vision is to ignite pupils' curiosity and encourage them to confidently explore and discover the world around them, so that they develop a deeper understanding of the world we live in. To achieve this it involves exciting, practical hands on experiences that encourage curiosity and questioning. Our aim is that these stimulating and challenging experiences help children secure and extend their scientific knowledge and vocabulary.

In addition, the teaching of Science will promote and develop transferable skills such as observation, communication and teamwork and allow mathematical skills to be applied. We believe that these opportunities will ensure that our children are confident, life-long learners who will explore and seek to make sense of the world around them.

Science Aims

- Prepare our children for life in an increasingly scientific and technological world today and in the future.
- Help our children acquire a growing understanding of the nature, processes and methods of scientific ideas.
- Help develop and extend our children's scientific concept of their world.
- Build on our children's natural curiosity and developing a scientific approach to problems.
- Encouraging open-mindedness, self-assessment, perseverance and developing the skills of investigation - including observing, measuring, predicting, experimenting, communicating, interpreting, explaining and evaluating.
- Develop the use of scientific language, recording and techniques.
- Make links between science and other subjects.

Science whole school schema

	Nursery	Reception	Year 1	Year 2
Knowledge	<ul style="list-style-type: none"> Materials - describing and exploring basic changes Humans - food growth senses Animal - basic characteristics growth simple life cycles Plants - simple sequence of growth Weather- basic aspects and changes 	<ul style="list-style-type: none"> Materials- describing features, sorting natural/manmade Humans discuss features and characteristics Animal -observe and describe Plants -describe sequence variety plant growth Habitats - observe and discuss Weather- seasonal changes 	<ul style="list-style-type: none"> Materials- describing according to properties exploring changes due to force Animal describe and basic classification, linked to habitat Working scientifically Plants- growth sequence varieties and structure Weather- measure and observe Scientist from the past 	<ul style="list-style-type: none"> Materials- describing and sorting according to properties and investigating changes due to force Animal classification, growth, basic reproduction Working scientifically Plants- key elements for growth, links to seasons, environment Habitats- conditions, animals
Key Concepts	<ul style="list-style-type: none"> Observe how humans move, feed, grow and use their senses and talk about what they see Begin to talk about the weather Explore through the senses Patterns of environmental change Understand that living things grow Observe plants in the learning environment Examine animals to observe characteristics and features Describe simple sequence of events in a life cycle Explore pushes and pulls in the setting 	<ul style="list-style-type: none"> Observe, describe and discuss simple features and characteristics of human beings_ Observe and discuss changes in environment and the effects on ourselves_ Understand seasonal/weather change Observe, discuss and explain how every day materials change when cooled, heated, Know one simple sequence of plant growth Observe, describe and classify simple features and characteristics of animals Observe and discuss different habitats Observe, describe and sequence the life cycle of a variety of animals Talk about and observe pushes and pulls in the learning environment 	<ul style="list-style-type: none"> Use different approaches to answer scientific questions Carry out simple tests Organise objects or materials into groups Name the main parts of plants and trees Name the main parts of the body, including those related to the 5 senses Distinguish between an object and the material from which it is made Describe the simple physical properties of a variety of everyday materials Describe how the weather varies with the season Find out about people who have developed new materials. 	<ul style="list-style-type: none"> Use simple equipment for observations Link ideas and answers to observations Collect information to help answer scientific questions Describe how some plants and animals are suited to different habitats Describe how animals obtain food by eating plants or other animals Describe the basic needs for plant growth (light, water appropriate temperature) Describe the basic needs of humans and other animals (water, food, air) Describe different uses of materials according to their properties.

Nursery

Science Knowledge

- ▶ 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.
- ▶ Shows care and concern for living things and the environment.

NURSERY

Science curriculum

	Autumn	Spring	Summer
Key Concepts	<ul style="list-style-type: none">• Observe how humans move, feed, grow and use their senses and talk about what they see• Introduce children to and explore aspects of Autumn and Winter• Begin to talk about the weather• Explore through the senses• Patterns of environmental change• Observe and discuss daily change	<ul style="list-style-type: none">• Observe, discuss and explain how every day materials change when cooled, heated,• Relate heat/cold to themselves• Understand that living things grow• Know one simple sequence of plant growth• Observe plants in the learning environment	<ul style="list-style-type: none">• Examine animals to observe characteristics and features• Describe simple sequence of events in a life cycle• Explore pushes and pulls in the setting
Working Scientifically	<ul style="list-style-type: none">• Explore through the senses• Compare/contrast similarities and differences and raise questions		

Nursery Science vocabulary

Materials

hard soft change hot cold

Weather

Weather hot cold change month season

Animals

Grow life cycle

Plants

Grow stem flower leaf roots

Reception

Science Knowledge

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

RECEPTION

Science curriculum

Autumn

- Observe, describe and discuss simple features and characteristics of human beings_
- Observe and discuss changes in environment and the effects on ourselves_
- Understand seasonal/weather change

Spring

- Recognise, name and describe different materials talk about a range of properties and materials, know that some materials are found naturally and others are man made
- Hypothesise and predict changes in a wide range of materials when heated, cooled, wet
- Observe and describe simple characteristics of plant growth
- Observe, identify and discuss similarities and differences between plants
- Know, describe and record sequences of the growth of a variety of plants

Summer

- Encourage children to think about ways of improving the natural environment
- Understand and talk about seasonal weather changes (spring/summer)
- Change in relation to animal growth
- Observe, describe and classify simple features and characteristics of animals
- Observe and discuss different habitats
- Observe, describe and sequence the life cycle of a variety of animals
- Talk about and observe pushes and pulls in the learning environment

Key Concepts

- Introduce/develop opportunities for exploration which will stimulate children's spontaneous curiosity to:
 - Explore through the senses
 - Compare and contrast similarities and differences and raise questions
 - Sort
 - Sequence
- Introduce and develop opportunities for investigation which will encourage children to:
 - Ask and raise questions
 - Try to predict what might happen
 - Describe and discuss observations
 - Use specific vocabulary

Working Scientifically

Reception Science vocabulary

Materials

fabric texture shiny dull rough wood glass metal rubber change

Weather

Weather seasons predict

Animal Kingdom

Life cycle mother baby grow describe

Plants

stem seed root leaf bud bulb flower

Year One

Science Knowledge

- Use different approaches to answer scientific questions
- Carry out simple tests
- Organise objects or materials into groups
- Name the main parts of plants and trees
- Name the main parts of the body, including those related to the 5 senses
- Distinguish between an object and the material from which it is made
- Describe the simple physical properties of a variety of everyday materials
- Describe how the weather varies with the season
- Find out about people who have developed new materials.

YEAR ONE

Science curriculum

Autumn

Spring

Summer

Prior Learning

Materials

In EYFS children will have learned some of the vocabulary they need for this unit. They will have used comparative language. They will know the names of some materials such as wood and glass. They should have handled objects made from a range of materials

Our Environment

This unit is taught across the whole year with a minimum of two lessons in each term. Pupils study the same natural area during the course of the year, looking at how the area as a whole changes and at how individual aspects such as a single tree change during the different seasons. They use their senses to observe the area and find common animals and plants within the area. They learn how to show respect for the area and for the living things in it.

The Animal Kingdom

Pupils are likely to be familiar with some animal names and most will know the names for the main parts of the human body

Weather

Pupils are likely to have carried out observations of the weather in EYFS and to have learned some basic vocabulary about the weather. They are likely to have discussed the four seasons.

Plants

Pupils may have grown seeds and/or bulbs before in the Early Years Foundation Stage. They may have looked at plants and trees outside. They may know some of the vocabulary related to the structure of flowering plants and trees

Key Concepts

Materials

The object and the material it is made from are different. Materials can be described by their properties: hard/soft, weak/strong, dull/shiny etc.

We can sort and compare materials according to their properties.

The shape of some materials can be altered by forces such as twisting, squashing, stretching and bending

Our Environment (2 lessons)

The environment changes with the seasons.

Some animals and plants die off or hibernate for part of the year

The Animal Kingdom

Animals can be classified and grouped by their characteristics

There are some basic classes of animals: mammals, birds, fish, amphibians, reptiles and invertebrates

Animals look different, live in different places and eat different things.

Weather

We experience different types of weather in the UK and some kinds of weather are associated with different seasons of the year.

We can measure and observe the weather.

It is dangerous to look at the Sun and to play in the Sun without protection

Plants

- That plants grow from seeds and bulbs
- That all flowering plants share a basic structure consisting of roots, stem, leaves and flowers.

That all trees also have a basic structure consisting of roots, trunk, branches and leaves

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

Year One

Science vocabulary

Materials

china rigid stretchy inelastic stiff bendy waterproof absorbent transparent appearance fabric texture shiny dull Property rough wood glass metal rubber

Weather

Weather season climate measure predict forecast weather station weather satellite Sun spring summer autumn winter typical

Animal Kingdom

scales warm blooded fur amphibian reptile fish mammal cold blooded fins bird hygiene germs energetic

Plants

plant compost fruit water shoot deciduous evergreen grow trunk seed branch bulb nut sprout pip petal cultivated roots flower germinate stem leaf environment respect nature

Year Two

Science Knowledge

- Use simple equipment for observations
- Link ideas and answers to observations
- Collect information to help answer scientific questions
- Describe how some plants and animals are suited to different habitats
- Describe how animals obtain food by eating plants or other animals
- Describe the basic needs for plant growth (light, water appropriate temperature)
- Describe the basic needs of humans and other animals (water, food, air)
- Describe different uses of materials according to their properties.

YEAR TWO

Science curriculum

Autumn

Spring

Summer

Prior Learning

Materials

In Year 1 pupils learned vocabulary to describe material properties. They carried out simple tests on materials sorted them in order by property, e.g. opacity. They investigated the best material to make a particular object.

Living things

Pupils are likely to have come across the terms living, alive and dead. They will have studied different classes of animals in Year 1 and will know in basic terms what plants need to stay healthy.

Habitats

Pupils will have learned about the basic groups of animals and should know that animals can be carnivores, omnivores or herbivores. They will have learned that animals are carnivores, herbivores or omnivores. They should have studied animals and plants in their environment and be used to working outdoors.

Animals and their needs

Children may have seen animals developing in EYFS and have some prior knowledge of life cycles as a result. They will have explored animal diets in Year 1.

Plants

Pupils will have learned about the basic structure of plants in Year 1 and they will have grown seeds, observing the growth each week. They will have sorted seeds from similar non-organic items and looked inside seeds. They will have been introduced to the notion that seeds grow into new plants. They will have learned the names of some common British plants, including trees, and will have looked at the differences between trees and other plants

Local Habitats (taught across the whole year)

Pupils visit the same habitats and microhabitats at different times of year and explore the seasonal changes in a habitat and a micro-habitat. They continue to develop their observation skills.

Key Concepts

Materials

The object and the material it is made from are different.
Materials can be described by their properties: hard/soft, weak/strong, dull/shiny etc.
We can sort and compare materials according to their properties.
The shape of some materials can be altered by forces such as twisting, squashing, stretching and bending

Living Things

That objects can be classified as living things, things that were once alive and things that have never been alive.
That life is characterised by a series of processes that are common to all living things, including plants.

Habitats

Different local conditions in nature are called habitats.
Different habitats contain different animals and plants that are suited to their habitats in different ways.
Plants make their own food. Some animals eat plants and some eat other animals.

Animals and their Needs

Animals grow from juveniles into mature adults.
Mammals give birth to live young but other animals lay eggs.
Many immature animals including humans need care in order to mature but others grow up independent of their parents.
A good diet, hygiene and exercise are important for maintaining good health.

Plants

That plants need water, warmth and light to grow
That the roots of a plant grow first followed by a shoot and then leaves
That plants change through the seasons with some plants dying and others becoming dormant.

Local Habitats

That the area where living things live and feed is called a habitat.
That within habitats there are microhabitats that support living things.

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 Two Science vocabulary

Materials

translucent wood brick glass metal fabric transparent hard soft bendy flexible rigid elastic texture rubber opaque malleable properties force

Living things

movement sensitivity excretion nutrition growth reproduction characteristic young (offspring)

Animals

carnivore omnivore herbivore diet food chain producer insect mini-beasts mammal limpet barnacle periwinkle whelk rock pool

Habitats

habitat micro
habitat environment meadow river stream woodland forest beach sand
dunes damp sheltered exposed

Plants

plant compost fruit water shoot deciduous evergreen grow trunk seed branch bulb
nut sprout pip petal cultivated roots flower
germinate stem leaf weed seed plant bark twig branch