

Science Learning Sequences

September 2022






Sample plans



NORDEN

Community
Primary School

*Being the
best we can be*

| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
|---------------|--|---|--|---|--|---------------------------|
| EYFS | <ul style="list-style-type: none"> • Use all their senses in hands-on exploration of natural materials • Explore collections of materials with similar and/or different properties. • Talk about what they see, using a wide vocabulary • Explore how things work • Plant seeds and care for growing plants. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things • Explore and talk about different forces they can feel. | | | <ul style="list-style-type: none"> • Explore the natural world around them • Describe what they see, hear and feel whilst outside • Understand the effect of changing seasons on the natural world around them | | |
| Year 1 | Seasonal Change 1 | Classification of Animals | Everyday Materials | Animals – Knowing seen parts of human body | Plants | Season Change 2 |
| Year 2 | Living things and their habitats | Plants 1 | Materials and their everyday uses |  | Humans – Healthy living | Plants 2 |
| Year 3 | Light and dark | Rocks and soils | Forces and magnets |  | Plants | Skeletons and muscles |
| Year 4 | Electricity | Digestive system and teeth | Sound | States of matter |  | Classification of animals |
| Year 5 | Reversible and irreversible changes |  | Life cycles of Living Things: plants and animals |  | Earth and Space | Forces |
| Year 6 | Electricity | Electricity | Classification | Heart and the circulatory system | Light | Evolution and inheritance |

Understanding of the World: Science

3 and 4-year olds will ...

Children should be learning to:

- Use all their senses in hands-on exploration of natural materials
- Explore collections of materials with similar and/or different properties.
- Talk about what they see, using a wide vocabulary

Key Vocabulary

- plastic
- wood
- glass
- bricks
- metal
- leather

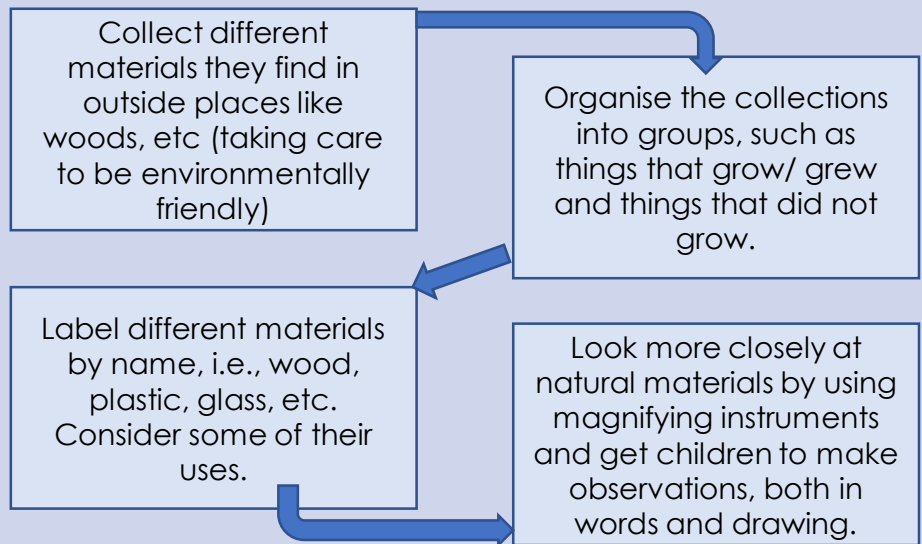
Examples of how this could be supported

Provide interesting natural environments for children to explore freely outdoors. Make collections of natural materials to investigate and talk about. Suggestions:

- contrasting pieces of bark
- different types of leaves and seeds
- different types of rocks
- different shells and pebbles from the beach

Provide equipment to support these investigations. Suggestions: magnifying glasses or a tablet with a magnifying app. Encourage children to talk about what they see. Model observational and investigational skills. Ask out loud: "I wonder if...?" Plan and introduce new vocabulary, encouraging children to use it to discuss their findings and ideas

Stages of Development



The Natural World: End of nursery expectation

- Able to comment and ask questions about aspects of their familiar world, such as the place where they live or the natural world;
- Talking about some of the things they have observed such as plants, animals, natural and found objects;
- Talking about why things happen and how things work;
- Developing an understanding of growth, decay and changes over time;
- Showing care and concern for living things and the environment.

Understanding of the World: Science

Reception aged children will ...

Children should be learning to:

Describe what they see, hear and feel whilst outside

Key Vocabulary

- showers
- drizzle
- robin
- chaffinch
- oak tree
- conkers

Examples of how this could be supported

Encourage focused observation of the natural world.
Listen to children describing and commenting on things they have seen whilst outside, including plants and animals.
Encourage positive interaction with the outside world, offering children a chance to take supported risks, appropriate to themselves and the environment within which they are in.
Name and describe some plants and animals children are likely to see, encouraging children to recognise familiar plants and animals whilst outside

Stages of Development

Experience being out in the wind, rain and sun.
Begin to talk about the experience of getting wet and feeling the wind

Begin to recognise some of the potential hazards associated with the outside environment but also recognise its beauty

Have the vocabulary to describe their experiences in much greater detail

Begin to name some of the common plants and animals they see, including names of common birds

The Natural World: Early Learning Goal

- **Explore the natural world around them, making observations and drawing pictures of animals and plants;**
- **Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class;**
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

Long-term overview for SCIENCE

YEAR 1

Know about the characteristics of each of our seasons

Name the seasons and know the months associated with each

Know about the type of weather in each season

Observe and know about the changes in the seasons

Science Knowledge

- Know the name the seasons
- Know about the weather associated with each season
- Know the months within each season

Working Scientifically

Observation over time

- Changes in temperature throughout the year
- Changes in rainfall throughout the year

Pattern seeking

- Length of daylight throughout the year
- Leaf colour and fall and different stages

Long-term overview for SCIENCE

YEAR 2

Know that animals have preference about the habitats they live in

Identify and name plants and animals in a range of habitats

Know how a specific habitat provides for the basic needs of things living there

Match living things to their habitat

Know how animals find their food

Name some different sources of food for animals

Science Knowledge

- Know and explain how seeds and bulbs grow into plants
- Know what plants need in order to grow and stay healthy (water, light & suitable temperature)

Working Scientifically

Researching

- Research animals and how they adapt to their environment

Grouping and Classifying

- Group animals based on their natural habitats

Long-term overview for SCIENCE

YEAR 3

Know that the Earth is made up of different types of rocks

Know how fossils are formed

Know what soil is

Know the difference between igneous, sedimentary and metamorphic rocks

Group together different rocks according to different attributes

Know that some crystals are extremely rare and valuable

Science Knowledge

- Compare and group rocks based on their appearance and physical properties, giving reasons
- Know how soil is made and how fossils are formed
- Know about and explain the difference between sedimentary, metamorphic and igneous rock

Working Scientifically

Research

- Research how fossils and different types of rocks are formed

Grouping and Classifying

- Identify different rocks and the group they belong to

Long-term overview for SCIENCE

YEAR 4

Know exactly what happens to the food we eat

Know and name the parts of the digestive system

Know about the function of each organ of the digestive system

Know and identify the different types of teeth in humans

Know the function of different human teeth

Construct and use food chains to identify producers, predators and prey

Science Knowledge

- Identify and name the parts of the human digestive system
- Know the functions of the organs in the human digestive system
- Identify and know the different types of human teeth
- Know the functions of different human teeth
- Use and construct food chains to identify producers, predators and prey

Working Scientifically

Research

- Research the different body parts involved in digestion

Grouping and classifying

- Classify plants/ animals into either producer, consumer or predator

Long-term overview for SCIENCE

YEAR 5

Know about the life cycles of humans and various animals

Know about the life cycle of a human being

Know what the terms puberty, gestation and reproduction mean

Know the life cycle of different living things, e.g. mammal, amphibian, insect and bird

Know about the process of reproduction in plants

Know about the process of reproduction in animals

Science Knowledge

- Know the life cycle of different living things e.g. mammal, amphibian, insect and bird
- Know the differences between different life cycles
- Know the process of reproduction in plants
- Know the process of reproduction in animals
- Create a timeline to indicate stages of growth in humans

Working Scientifically

Research

- Research changes in humans at different stages in our lives
- Research the life cycle of different animal groups

Grouping

- Classify/ group and animal based on its group and species

Pattern seeking

- Compare height with physical task e.g., distance a ball is thrown

Long-term overview for SCIENCE

YEAR 6

Know why we can see and the part our eyes have in helping us see

Know that light travels in straight lines

Understand that because light travels in straight lines objects are seen because they give out or reflect light into the eye

Know how our eyes work

Know that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes

Know that light travels in straight lines and therefore shadows have the same shape as the objects that cast them

Science Knowledge

- Know how light travels
- Know and demonstrate how we see objects
- Know why shadows have the same shape as the object that casts them
- Know how simple optical instruments work e.g. periscope, telescope, binoculars, mirror, magnifying glass etc.

Working Scientifically

Grouping and Classifying

- Group materials based on transparency

Pattern seeking

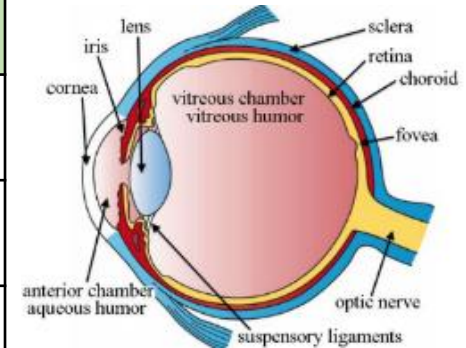
- Compare distance from light source and shadow

Knowledge Organiser

Years 6

Subject: Science Main Learning: Light

| Key knowledge | Vocabulary | |
|--|-------------------|---|
| Know why we can see and the part our eyes have in helping us see | retina | This is at the back of your eye and it has light-sensitive cells called rods and cones |
| Know that light travels in straight lines | cornea | This is a thin, clear and covers your eye. It's important because it helps you see by focusing light as it enters the eye |
| Understand that because light travels in straight lines objects are seen because they give out or reflect light into the eye | iris | By opening and closing the pupil, the iris controls the amount of light that enters the eye |
| Know that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes | pupil | Can be compared with the shutter of a camera. It is surrounded by the iris which is the coloured part of the eye |
| Know that light travels in straight lines and therefore shadows have the same shape as the objects that cast them | lens | Is a curved piece of glass or plastic designed to refract light in a specific way |
| Know how our eyes work | light wave | One of the characteristics of light is that it behaves like a wave. Light can be defined by its wavelength and frequency. The frequency is how fast the waves vibrate up and down |



SCIENCE



Prior Knowledge –

Know what electricity is
and why it is important in
our lives.



- Name 3 appliances that run on electricity.
- Name 3 items that have batteries in to make them work.
- Name 3 items that you need to charge up to make them work.
- List the components that you will need to make a light bulb light up.
- Draw a circuit with a motor in and label each part.
- Draw and label a circuit that includes a switch to turn a buzzer on and off.

7. What is the scientific word used for a battery?
8. What does a switch do?
9. Predictions: will the lamp light up in this circuit?
10. Predictions: will the lamp light up in this circuit?
11. One of the diagrams did not show a light that would light up. Explain why it will not work.
12. What does an insulator of electricity do?
13. What does a conductor of electricity do?
14. Look at the diagram in 14. Which of the objects; paperclip, paper or coin, will not complete the circuit?
15. What objects did you find in the classroom that were conductors of electricity?

Year 4 — Science Quiz



Know what electricity is and why it is important in our lives.



Name.....

Date.....

1.

2.

3.

4.

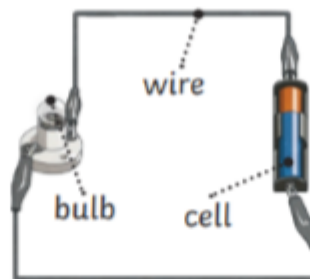
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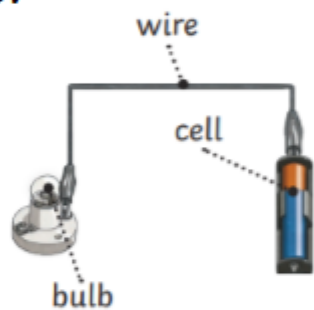
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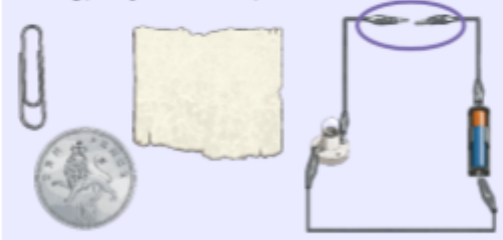
11.

12.

13.

14.

The type of material placed in the circuit.



15.