

## Year 2 Science Curriculum Overview

Where we use our enquiry skills to observe and experience the world around us by asking and answering questions.

During year 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- Asking simple questions and recognising that they can be answered in different ways.
- Observing closely at that moment and over time, using simple equipment and begin to take measurements using more standard units.
- Observing changes and patterns.
- Performing simple tests.
- Identifying and classifying.
- Using their observations and ideas to suggest answers to questions and notice similarities, differences and patterns.
- Gathering and recording data to help in answering questions including from secondary sources of information.

### Autumn One


#### Uses of Everyday Materials- Chemistry

‘How do we choose materials?’

‘Can we change the shape of solid materials?’

**Lesson 1:** I can identify the properties of materials. (opaque, transparent, absorbent, non absorbent, reflective, non-reflective).

**(Misconception 1)**


Enquiry type: 

Enquiry skill: observe, record, report

Working scientifically: Observing closely at that moment and over time, using simple equipment. Observing changes. Identifying and classifying.

**Deepening understanding:** Think like a scientist-concept cartoon/ create a riddle do you know what I am....(Nicky Waller book).

**Lesson 2:** I can identify the suitability of materials. (Lazy Jack story revised-Nicky Waller)

Enquiry type: 

Enquiry skill: observe



Working scientifically: Identifying. Using their observations and ideas to suggest answers to questions.

### Autumn Two

#### Plants- Biology

‘What do plants need to grow?’

**Lesson 1:** I can find out what plants need to grow and stay healthy.

Enquiry type:   test-light, water, temperature-Cress Heads Nicky Waller.



Enquiry skills:-ask questions, set up, observe, record

Working scientifically: Observing closely at that moment and over time, using simple equipment and begin to take measurements using more standard units. Observing changes and patterns. Performing simple tests.

Gathering and recording data to help in answering questions including from secondary sources of information.

**Deepening understanding:** Think scientifically- Can you use two types of seeds? What do you think will happen? Why? Do all plants need the same thing?

**Lesson 2:** I can describe what plants need to grow and stay healthy. **(Misconception 1)**

Enquiry type:   test-light, water, temperature-Cress Heads Nicky Waller.

**Deepening understanding: Ridiculous materials Nicky Waller/ think of a creative use for used materials e.g. an empty plastic bottle.**

**Lesson 3:** I can investigate if materials are absorbent or transparent.



Enquiry type: *test materials for: soaking up blood for a bandage for Mary Seacole / black out blinds for Crimean War*

Enquiry skill: set up, results, report/interpret.

Working scientifically: Observing closely at that moment using simple equipment. Performing simple tests. Using their observations and ideas to suggest answers to questions and notice similarities, differences and patterns. Gathering and recording data to help in answering questions.

**Deepening understanding: Think scientifically. 'Would all of the materials that are absorbent/transparent be suitable for mopping up the spillage/ making a black out blind-Consider all of their properties.**

**Lesson 4:** I can research people from the past who have developed useful, new materials. (Charles Macintosh)



Enquiry type:

Enquiry skill: ask questions, observe, interpret.

Working scientifically: Gathering and recording data to help in answering questions including from secondary sources of information.

**Deepening understanding: Create your own waterproof fabric. Cause and effect because of Charles Macintosh.....has happened today.**

**Lesson 5:**

I can change the shape of solid objects.



Enquiry type:

Enquiry skill: observe, record

Working scientifically: Observing changes. Performing simple tests. Using their observations and ideas to suggest answers to questions and notice similarities, differences and patterns. Gathering and recording data to help in answering questions including from secondary sources of information.

**Deepening understanding: Is it a permanent or temporary change?**

**Lesson 6:**

I can change the shape of a solid object- (curly wurly challenge Nicky Waller).

Enquiry skills:-interpret.

Working scientifically: Using their observations and ideas to suggest answers to questions and notice similarities, differences and patterns.

**Deepening understanding: What happens if plants do not get the things they need?**

**Lesson 3:** I can observe seeds and describe how they grow into mature plants.

(Misconception 2)



Enquiry type: *Nicky Waller observing plants from seeds.*

Enquiry skills: set up, observe, record.

Working scientifically: Observing closely at that moment and over time, using simple equipment and begin to take measurements using more standard units. Observing changes. Using their observations and ideas to suggest answers to questions and notice similarities, differences and patterns.

**Deepening understanding: Think like a scientist concept cartoon**

**Lesson 4:** I can observe bulbs and describe how they grow into mature plants.

(Misconception 3)



Enquiry type: *Nicky Waller observing plants from bulbs.*

Enquiry skills: set up, observe, record.

Working scientifically: Observing closely at that moment and over time, using simple equipment and begin to take measurements using more standard units. Observing changes. Using their observations and ideas to suggest answers to questions and notice similarities, differences and patterns.

**Deepening understanding: Talk like a scientist to discuss the statement 'All plants grow in the same way.' Discuss similarities and differences.**

**Lesson 5:** I can understand the lifecycle of a bean plant.

(Misconception 4)



Enquiry type:

Enquiry skills: ask questions, observe, report



Enquiry type:

Enquiry skill: observe, measure, record. (model measuring with a ruler) (model creating a graph)

Working scientifically: Observing closely at that moment using simple equipment and begin to take measurements using more standard units. Observing changes. Using their observations and ideas to suggest answers to questions and notice similarities, differences and patterns. Gathering and recording data to help in answering questions.

**Deepening understanding: What methods were used to change the shape-twist, pull etc.**

**Misconceptions: (Firmly teach the Science first before discussing any misconceptions unless they arise within children's thinking).**

- 1) Solid is another word for hard.

Working scientifically: Asking simple questions and recognising that they can be answered in different ways. Gathering and recording data to help in answering questions including from secondary sources of information.

**Deepening understanding: Do all plants follow the same lifecycle? What are the similarities and differences?**

**Misconceptions: (Firmly teach the Science first before discussing any misconceptions unless they arise within children's thinking).**

- 1) Plants are not alive as they cannot be seen to move.
- 2) Seeds are not alive.
- 3) All plants start out as seeds.
- 4) Seeds and bulbs need sunlight to germinate.

**Vocabulary:**

object, material, wood, metal, plastic, glass, brick, rock, paper, cardboard, fabric, opaque, transparent, absorbent, non absorbent, reflective, non-reflective, flexible, rigid, suitability, shape, push, pull, twist, squash, bend, stretch.

**Resources:**

PZAZ, Materials boxes.

**Better Reading Better Science texts:**

Everyday Materials: Rosie Rivere Engineer, Lets Build a House, The Chickens Build a Wall.

**Cross Curricular Links:**

History: Exploring historic inventions of useful materials.

Geography: Villages in Zambia summer term.

Literacy: writing a riddle.

Maths: measuring length and weight of blu tac, creating a graph of results.

**Vocabulary:**

fruit, seed, seedling, seed dispersal, bulb, shoot, lifecycle, germination, healthy, water, light, temperature

**Resources:**

PZAZ, seeds, bulbs, planting equipment (pots, soil), seeds and green plants kit, botanical gardens kit, think tanks.

**Better Reading Better Science texts:**

Ten seeds, Eddie's garden

**Cross Curricular Links:**

Maths: Measuring plant growth.

Geography: discussing plant growth in different extreme environments.

**National Curriculum: By the end of the Autumn Term, pupils should be taught to**

- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
- Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.
- Observe and describe how seeds and bulbs grow into mature plants.
- Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.


## Spring One

## Spring Two

### Living things and their habitats- Biology

**‘What features do animals have that allow them to thrive in their environment?’**  
**‘Where can we/animals source food from?’**

**Lesson 1:** I can identify the seven life processes of a living thing.

Enquiry type: 


Enquiry skills: observe

Working scientifically: Asking simple questions and recognising that they can be answered in different ways. Observing closely at that moment using simple equipment. Identifying. Using their observations and ideas to suggest answers to questions and notice similarities, differences and patterns.

**Deepening understanding:** Talk like a scientist to discuss the question ‘How do you know that you are alive?’

**Lesson 2:** I can explore and compare things that are living, dead and never alive.

**(Misconception 3 & 4)**

Enquiry type: 

Enquiry skills: observe, record, interpret

Working scientifically: Asking simple questions and recognising that they can be answered in different ways. Observing closely at that moment and over time, using simple equipment and begin to take measurements using more standard units. Identifying and classifying. Using their observations and ideas to suggest answers to questions and notice similarities, differences and patterns.

**Deepening understanding:** Think like a scientist-odd one out.

**Lesson 3:** I can prove that a plant is alive.


**(Misconception 2)**

Enquiry type:  *plant maze*

Enquiry skill: set up, observe, record

Working scientifically: Observing closely at that moment and over time, using simple equipment. Observing changes and patterns. Performing simple

**Lesson 1:** I can identify that most living things live in a habitat to which they are suited.

Enquiry type:  *VR*


Enquiry skill: observe, interpret

Working scientifically: Asking simple questions and recognising that they can be answered in different ways. Observing closely at that moment.

Identifying. Using their observations and ideas to suggest answers to questions and notice similarities, differences and patterns.

**Deepening understanding:** Talk like a scientist. Place an animal in the wrong habitat and discuss why it would not be suited and which habitat it would be suited to.

**Lesson 2:** I can identify how habitats provide for the basic needs of different animals and plants.

Enquiry type: 

Enquiry skill: observe, interpret


working scientifically: Asking simple questions and recognising that they can be answered in different ways. Observing closely at that moment.

Identifying. Using their observations and ideas to suggest answers to questions and notice similarities, differences and patterns.

**Deepening understanding:** Discuss and explore the statement ‘My habitat provides for my basic needs.’

**Lesson 3:** I can interpret a food chain to help identify how animals obtain their food.

**(Misconception 2)**

Enquiry type: 



Enquiry skill: observe, interpret

working scientifically: Asking simple questions and recognising that they can be answered in different ways. Observing closely at that moment.

tests. Using their observations and ideas to suggest answers to questions and notice similarities, differences and patterns.

**Deepening understanding:** Think like a scientist-concept cartoon.

**Lesson 4:** I can identify and name animals and plants in their habitats. (Misconception 1)



Enquiry type:   *Observe woodland/pond/ urban habitat*

Enquiry skill: observe, record (tally chart), interpret

Working scientifically: Asking simple questions and recognising that they can be answered in different ways. Observing closely at that moment using simple equipment. Observing patterns. Identifying. Using their observations and ideas to suggest answers to questions and notice similarities, differences and patterns. Gathering and recording data to help in answering questions.

**Deepening understanding:** Compare the habitats looking at similarities and differences.

**Lesson 5:** I can identify and name animals and plants in their microhabitats.

Enquiry type:   *Observe microhabitats within the woodland*

Enquiry skill: observe, record (pictogram), interpret

Working scientifically: Asking simple questions and recognising that they can be answered in different ways. Observing closely at that moment using simple equipment. Observing patterns. Identifying. Using their observations and ideas to suggest answers to questions and notice similarities, differences and patterns. Gathering and recording data to help in answering questions.

**Deepening understanding:** Compare the habitats looking at similarities and differences.


**Misconceptions:** (Firmly teach the Science first before discussing any misconceptions unless they arise within children's thinking).

- 1) An animal's habitat is like its 'home'.
- 2) Plants and seeds are not alive as they cannot be seen to move.
- 3) Fire is living.
- 4) An apple in a fruit bowl is not alive.

Identifying. Using their observations and ideas to suggest answers to questions and notice similarities, differences and patterns.

**Deepening understanding:** Identify broken food chains.

**Lesson 4:** I can build a food chain to help identify how animals obtain their food.

Enquiry type: 

Enquiry skill: set up, interpret

working scientifically: Asking simple questions and recognising that they can be answered in different ways. Observing closely at that moment. Identifying. Using their observations and ideas to suggest answers to questions and notice similarities, differences and patterns.

**Deepening understanding:** Discuss patterns between parts of the food chain. If one part changed how would it affect the other parts?

**Lesson 5:** I can investigate Rachel Carson's findings on water pollution and the effect this has on ocean food chains.

Enquiry type:   *water pollution investigation*

Enquiry skill: - observe, record, interpret

Working scientifically: Asking simple questions and recognising that they can be answered in different ways. Observing closely at that moment. Observing changes and patterns. Performing simple tests. Using their observations and ideas to suggest answers to questions and notice similarities, differences and patterns.

**Deepening understanding:** Have an ocean food chain and explain the effect on it. Cause and effect because of Rachel Carsons.....has happened today.

**Misconceptions:** (Firmly teach the Science first before discussing any misconceptions unless they arise within children's thinking).

- 1) An animal's habitat is like its 'home'.
- 2) Arrows in a food chain mean 'eats'.

**Vocabulary:**

living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, names of local habitats pond, woodland, names of micro-habitats under logs in bushes.

**Resources:**

PZAZ, VR headsets avantis world animals and habitat zone, planting equipment (seeds, pots, soil), real food, trays, stones, colourful food sprinkles, spray bottles.

**Better Reading Better Science texts:**

Living things and their habitat: Lost and Found, Meerkat Mail, Hoot Owl Master of Disguise

**Cross Curricular Links:**

Maths: surveying animals in habitats, sorting foods tables/venn diagrams.

Computing: Use of VR to explore world habitats.

Geography: recognising the basic features of habitats, oceans autumn term and hot and cold places spring term.

History: Exploring life and findings of Rachel Carsons.

**National Curriculum: By the end of the Spring Term, pupils should be taught to**


- Explore and compare the differences between things that are living, dead, and things that have never been alive.
- Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.
- Identify and name a variety of plants and animals in their habitats, including microhabitats.
- Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.

## Summer One

## Summer Two

### Animals including humans- Biology 'How do humans and animals grow?' 'How do humans stay healthy?'

**Lesson 1:** I can identify that animals have offspring that grow into adults.


Enquiry type: 

Enquiry skill: observe, record

Working scientifically: Asking simple questions and recognising that they can be answered in different ways. Identifying.

**Deepening understanding:** Talk like a scientist to answer the statement 'Do all offspring look like their adult?'

**Lesson 2:** I can identify that chickens have offspring that grow into adults.

Enquiry type: 


*grow chicks*

Enquiry Skill: -observe, record

Working scientifically: Asking simple questions and recognising that they can be answered in different ways. Observing closely at that moment and over time, using simple equipment and begin to take measurements using more standard units. Observing changes and patterns. Identifying. Using their observations and ideas to suggest answers to questions and notice similarities, differences and patterns.

**Deepening understanding:** Think like a scientist concept cartoon.

**Lesson 3:** I can identify that humans have offspring that grow into adults.

Enquiry type: 


Enquiry skill: observe, record

Working scientifically: Asking simple questions and recognising that they can be answered in different ways. Identifying.

**Deepening understanding:** Think like a scientist concept cartoon.

**Lesson 4:** I can identify the basic needs of humans and animals. # (misconception 2 & 3)

**Lesson 1:** I can identify the importance of hygiene for humans.


Enquiry type: 

Enquiry skill: observe, record

Working scientifically: Asking simple questions and recognising that they can be answered in different ways. Identifying.

**Deepening understanding:** Think like a scientist concept cartoon.

**Lesson 2:** I can explore the work of Louis Pasteur to understand how germs are spread.


Enquiry type: 

Enquiry skill: ask questions, interpret

Working scientifically: Asking simple questions and recognising that they can be answered in different ways. Gathering and recording data to help in answering questions including from secondary sources of information.

**Deepening understanding:** Cause and effect because of Louis Pasteur.....has happened today.

**Lesson 3:** I can investigate how germs are spread to show the importance of hygiene

Enquiry type: 


*investigate how germs spread in the air and by touch*

Enquiry skill: measure, record, interpret

Working scientifically: Observing closely at that moment and over time, using simple equipment and begin to take measurements using more standard units. Observing changes and patterns. Performing simple tests. Gathering and recording data to help in answering questions including from secondary sources of information.

**Deepening understanding:** Use your findings to discuss how we can be hygienic.




Enquiry type:   
Enquiry skill: observe, record  
Working scientifically: Asking simple questions and recognising that they can be answered in different ways. Identifying.

**Deepening understanding:** Talk like a scientist odd one out.

**Lesson 5:** I can describe the importance for humans of eating the right amounts of different types of food.

**(Misconception 1)**


Enquiry type:   
Enquiry skill: record, interpret  
Working scientifically: Asking simple questions and recognising that they can be answered in different ways. Identifying and classifying.

**Deepening understanding:** Discuss the statement 'A meal can only contain one food group.'


**Misconceptions:** (Firmly teach the Science first before discussing any misconceptions unless they arise within children's thinking).

- 1) The only reason we eat food is to give us energy.
- 2) Respiration is breathing.
- 3) Breathing is respiration.

**Lesson 4:** I can identify the importance of exercise for humans.

Enquiry type:   
Enquiry skill: ask questions, interpret  
Working scientifically: Asking simple questions and recognising that they can be answered in different ways. Identifying. Gathering and recording data to help in answering questions including from secondary sources of information.  
**Deepening understanding:** Using your learning discuss what could happen to our bodies if we do not exercise?

**Lesson 5:** I can investigate the importance of exercise for humans.

Enquiry type:  *Look at the effects that different exercises have on pulse rate/your body*  
Enquiry skill: measure, record, interpret  
Working scientifically: using simple equipment and begin to take measurements using more standard units. Observing changes and patterns. Performing simple tests. Gathering and recording data to help in answering questions including from secondary sources of information.

**Deepening understanding:** Using your findings discuss the statement 'Watching TV is an exercise.'

**Misconceptions:** (Firmly teach the Science first before discussing any misconceptions unless they arise within children's thinking).

### Vocabulary:

offspring, reproduction, growth, child, young/old (chick/hen, baby/child/adult, caterpillar/butterfly), exercise, heartbeat, breathing, pulse, hygiene, germs, disease, food types

### Resources:

PZAZ, incubator, caterpillar net, use VR avantis world to explore lifecycles, real food, meter stick, spray bottles, paper, glitter, stop watch

### Better Reading Better Science texts:

Tadpole Promise, Caterpillar Butterflies

### Cross Curricular Links:

PE: Performing different types of exercise, measuring pulse rate, balanced diet.

RSE: Looking after yourself.

D & T: Balanced diet

History: Exploring the life and findings of Louis Pasteur.

R.E: Easter new life spring term.

**National Curriculum: By the end of the Summer Term, pupils should be taught to**

- Notice that animals, including humans, have offspring which grow into adults find out about and describe the basic needs of animals, including humans, for survival (water, food and air).
- Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.

**Science capital:**

Educational visit: Local area to identify and compare the uses of everyday materials, Peak Wildlife Centre to explore living things and their habitats, Strawberry picking sources of food.

School environment: explore habitats and microhabitats and the living things within them, grow your own food to show plants as a source of food.

Creative Homework: Build a microhabitat.

Parent workshops: Build a kite considering the suitability of materials.

Professional visits: Farmer to discuss the sources of food. Older person/ mother to discuss the human lifecycle. School Birdman Alan-birds of prey in school to look at food chains (invite year 4).

Themed days: Annual science day/science week

