

## Year 4 Science

### Working Scientifically

4.WS1 - Asking relevant questions and using different types of scientific enquiries to answer them

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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4.WS2 - Setting up simple practical enquiries, comparative and fair tests

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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4.WS3 - Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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4.WS4 - Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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4.WS5 - Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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4.WS6 - Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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4.WS7 - Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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4.WS8 - Identifying differences, similarities or changes related to simple scientific ideas and processes

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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4.WS9 - Using straightforward scientific evidence to answer questions or to support their findings.

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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Pupils in years 3 and 4 should be given a range of scientific experiences to enable them to raise their own questions about the world around them. They should start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions; recognise when a simple fair test is necessary and help to decide how to set it up; talk about criteria for grouping, sorting and classifying; and use simple keys. They should begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them. They should help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used. They should learn how to use new equipment, such as data loggers, appropriately. They should collect data from their own observations and measurements, using notes, simple tables and standard units, and help to make decisions about how to record and analyse this data.

With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions. With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected, and finding ways of



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improving what they have already done. They should also recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations. Improving what they have already done. They should also recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations.

Pupils should use relevant scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences.

These opportunities for working scientifically should be provided across years 3 and 4 so that the expectations in the programme of study can be met by the end of year 4. Pupils are not expected to cover each aspect for every area of study.



## Year 4 Science

### Living Things and Habitats

4.LT1 - Recognise that living things can be grouped in a variety of ways

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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4.LT2 - Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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4.LT3 - Recognise that environments can change and that this can sometimes pose dangers to living things

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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Pupils should use the local environment throughout the year to raise and answer questions that help them to identify and study plants and animals in their habitat. They should identify how the habitat changes throughout the year. Pupils should explore possible ways of grouping a wide selection of living things that include animals, flowering plants and non-flowering plants. Pupils could begin to put vertebrate animals into groups, for example: fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects.

Note: plants can be grouped into categories such as flowering plants (including grasses) and non-flowering plants, for example ferns and mosses.

Pupils should explore examples of human impact (both positive and negative) on environments, for example, the positive effects of nature reserves, ecologically planned parks, or garden ponds, and the negative effects of population and development, litter or deforestation.



## Year 4 Science

### Animals Including Humans

#### 4.A1 - Describe the simple functions of the basic parts of the digestive system in humans

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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#### 4.A2 - Identify the different types of teeth in humans and their simple functions

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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#### 4.A3 - Construct and interpret a variety of food chains, identifying producers, predators and prey

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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Pupils should be introduced to the main body parts associated with the digestive system, for example: mouth, tongue, teeth, oesophagus, stomach, and small and large intestine, and explore questions that help them to understand their special functions.

Pupils might work scientifically by: comparing the teeth of carnivores and herbivores and suggesting reasons for differences; finding out what damages teeth and how to look after them. They might draw and discuss their ideas about the digestive system and compare them with models or images.

## Year 4 Science

### Matter

4.SM1 - Compare and group materials together, according to whether they are solids, liquids or gases

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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4.SM2 - Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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4.SM3 - Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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Pupils should explore a variety of everyday materials and develop simple descriptions of the states of matter (solids hold their shape; liquids form a pool not a pile; gases escape from an unsealed container). Pupils should observe water as a solid, a liquid and a gas and should note the changes to water when it is heated or cooled.

Note: teachers should avoid using materials where heating is associated with chemical change, for example, through baking or burning.

Pupils might work scientifically by: grouping and classifying a variety of different materials; exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice-cream for a party). They could research the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid. They might observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of temperature on washing drying or snowmen melting.

## Year 4 Science

### Sound

4.S1 - Identify how sounds are made, associating some of them with something vibrating

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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4.S2 - Recognise that vibrations from sounds travel through a medium to the ear

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4.S3 - Find patterns between the pitch of a sound and features of the object that produced it

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4.S4 - Find patterns between the volume of a sound and the strength of the vibrations that produced it

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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4.S5 - Recognise that sounds get fainter as the distance from the sound source increases

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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Pupils should explore and identify the way sound is made through vibration in a range of different musical instruments from around the world; and find out how the pitch and volume of sounds can be changed in a variety of ways.

Pupils might work scientifically by: finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. They might make earmuffs from a variety of different materials to investigate which provides the best insulation against sound. They could make and play their own instruments by using what they have found out about pitch and volume.

## Year 4 Science

### Electricity

#### 4.E1 - Identify common appliances that run on electricity

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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#### 4.E2 - Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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#### 4.E3 - Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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#### 4.E4 - Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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#### 4.E5 - Recognise some common conductors and insulators, and associate metals with being good conductors

Not Met	Shallow	Emerging	Developing	Deepening	Functional
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Pupils should construct simple series circuits, trying different components, for example, bulbs, buzzers and motors, and including switches, and use their circuits to create simple devices. Pupils should draw the circuit as a pictorial representation, not necessarily using conventional circuit symbols at this stage; these will be introduced in year 6.

Note: pupils might use the terms current and voltage, but these should not be introduced or defined formally at this stage. Pupils should be taught about precautions for working safely with electricity.

Pupils might work scientifically by: observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit.