



Progression Framework

Science

Year Four

Progression Frameworks

Introduction

The Progression Framework for science is divided into two parts: *Progression in concepts and Working Scientifically*:

- *Progression in concepts* is based on the statements relating to key ideas in science. It is split into Biology, Chemistry and Physics; within each of these a number of 'big ideas' have been identified and used to show how later statements progress from earlier ones. See below for more information about the big ideas.
- *Working Scientifically* is based on the main skill areas which are broadly viewed as processes (e.g. planning investigations, reporting findings). Each of these is then subdivided into individual skills. As the Programme of Study statements are by Key Stage rather than by year, these have been taken as relating to the second year of each Key Stage and statements have been developed for the previous year that represent progress towards that.

Progression Framework for Science, Year Four

Domain: Biology

'Big idea'	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)
1) Living things can be classified according to observable features	4.1.1 Recognise that living things can be grouped in a variety of ways LINK: 6.3.1	Suggest a way of grouping living things, e.g. sort shells by colour.	Suggest different ways of sorting the same group of living things, e.g. grouping birds according to where they live, what they eat and size of adults.	Suggest why some ways of grouping living things may be more useful than others, e.g. why grouping by number of legs is an easy aid to identification.
	4.1.2 Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment LINK 3.2.1	Use classification keys to group and identify members from a small group of living things.	Use classification keys to group and identify members from a range of familiar and less familiar living things.	Devise own classification keys to group living things.
2) Habitats provide living things with what they need	4.2.1 Recognise that environments can change and that this can sometimes pose dangers to living things LINK 6.3.3	Describe how environments might change.	Describe examples of living things that are threatened by changes to environments, e.g. owls and habitat loss.	Describe examples of living things adapting to environmental change, e.g. urban foxes, and examples of extinction due to environmental change.
3) Living things exhibit variation and adaptation and these may lead to evolution	There is no content for this Big Idea in Year 4.			
4a) Life exists in a variety of forms and goes through cycles – Plants	There is no content for this Big Idea in Year 4.			
4b) Life exists in a variety of forms and goes through cycles – Animals	There is no content for this Big Idea in Year 4.			

Progression Framework for Science, Year Four

Domain: Biology

'Big idea'	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)
5) The human body has a number of systems, each with its own function	4.5.1 Describe the simple functions of the basic parts of the digestive system in humans LINK 3.4b.1	Describe the purpose of the digestive system in humans.	Identify what each of the principal organs in the digestive system do.	Explain why the simple functions of the basic parts of the digestive system in humans are necessary.
	4.5.2 Identify the different types of teeth in humans and their simple functions	Recognise that humans have different types of teeth.	Describe the function of each type of tooth in the human skull.	Explain why humans have different types of teeth.
	4.5.3 Construct and interpret a variety of food chains, identifying producers, predators and prey LINK 3.4b.1	Understand the roles of producers, predators and prey.	Use a food chain to represent predator-prey relationships.	Suggest what might happen in a food chain if the population of one of the organisms changes.

Progression Framework for Science, Year Four

Domain: Chemistry

'Big idea'	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)
1) Different rocks have different properties and the formation of soil & fossils can be explained	There is no content for this Big Idea in Year 4.			
2) Materials have physical properties which can be investigated and compared	4.2.1 Compare and group materials together, according to whether they are solids, liquids or gases	Recognise the state of matter of different materials.	Group materials according to their state of matter.	Recognise that some materials (e.g. toothpaste) cannot be easily classified as solid, liquid or gas.
3) The physical properties of materials determine their uses	There is no content for this Big Idea in Year 4.			
4) Materials can exist in different states and that these states can sometimes be changed	4.4.1 Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature LINK 5.2.4	Relate the terms 'evaporation' and 'condensation' to water.	Describe how evaporation and condensation happen in the water cycle, and how temperature affects evaporation.	Apply the relationship between rate of evaporation with temperature to everyday contexts.
	4.4.2 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) LINK 5.2.5	Recognise that materials may change state.	Identify changes of state and research values of degrees Celsius at which changes happen.	Suggest patterns in which kinds of materials change state at higher or lower temperatures.

Progression Framework for Science, Year Four

Domain: Physics

'Big idea'	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)
1) There are contact and non-contact forces; these affect the motion of objects	There is no content for this Big Idea in Year 4.			
2) Day, night, month, seasonal change & year are caused by the position and movement of the Earth	There is no content for this Big Idea in Year 4.			
3) Light & sound can be reflected & absorbed and enable us to see & hear	4.3.1 Identify how sounds are made, associating some of them with something vibrating	Identify how an object may vibrate.	Explain, with reference to vibrations, how an object makes a sound.	Group sound-making objects in terms of how they make sounds.
	4.3.2 Recognise that vibrations from sounds travel through a medium to the ear	Recognise that the ear detects vibrations.	Describe the role of a medium in the transmission of sound.	Compare the effectiveness of different media in terms of their ability to transmit sound.
	4.3.3 Recognise that sounds get fainter as the distance from the sound source increases	Suggest why some sounds are louder than others.	Describe the effect of moving further from the source of a sound.	Explain with reference to examples how sounds get fainter as the distance from the source increases.
	4.3.4 Find patterns between the pitch of a sound and features of the object that produced it	Recognise that the pitch of a sound can be varied.	Explain with reference to a particular object how the pitch of the sound can be changed.	Identify generic features that cause the pitch of a note to be changed.
	4.3.5 Find patterns between the volume of a sound and the strength of the vibrations that produced it LINK 5.2.4	Recognise that the volume of a sound can be varied.	Explain with reference to a particular object how the volume of the sound can be changed.	Identify generic features that cause the volume of a note to be changed.

Progression Framework for Science, Year Four

Domain: Physics

'Big idea'	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)
4) Electricity can make circuits work and can be controlled to perform useful functions	4.4.1 Identify common appliances that run on electricity	Recognise that some appliances run on electricity.	List examples of appliances that run on electricity.	Compare and contrast appliances that run on mains electricity with those that run on batteries.
	4.4.2 Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers	Construct a simple circuit.	Construct a simple circuit and name its components.	Identify the functions of components within a circuit.
	4.4.3 Recognise some common conductors and insulators, and associate metals with being good conductors	Identify metal as a conductor.	Sort materials into conductors and insulators, identifying metals as conductors.	Investigate graphite as a conductor and relate to other materials.
	4.4.4 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	Understand that a complete circuit is needed for a circuit to operate.	Predict whether a particular arrangement of components will result in a bulb lighting.	Explain why certain arrangements will not result in the bulb lighting.
	4.4.5 Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit	Describe the function of a switch.	Predict how the operation of a switch will affect bulbs lighting.	Explain how altering the location of a switch affects the operation of the circuit.

Progression Framework for Science, Year Four

Domain: Working scientifically

Process	Sub-process	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)
1) Planning investigations	a) Pupils can ask questions	4.1.a.1 Ask relevant questions (^) LINK 6.1.b.1	Pupil can, with support, develop relevant, testable questions.	Pupil can develop relevant, testable questions, e.g. based on observations of animals.	Pupil can develop a range of relevant testable questions.
	b) Pupils can plan an enquiry	4.1.b.1 Plan different types of scientific enquiries to answer questions (^)	Pupil can plan enquiries, such as a comparative or fair test.	Pupil can plan investigations using different types of scientific enquiry, e.g. exploring various materials by observing change over time, running comparative tests and conducting surveys.	Pupil can, with support, answer questions using evidence gathered from different types of scientific enquiry.
	c) Pupils can identify and manage variables	4.1.c.1 Set up simple and practical enquiries, comparative and fair tests (+)	Pupil can set up a comparative test.	Pupil can set up comparative and fair tests, e.g. finding patterns in the sounds made by elastic bands of different thicknesses.	Pupil can, with prompting, identify and manage variables.

Domain: Working scientifically

Process	Sub-process	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)
2) Conducting experiments	a) Pupils can use equipment to take measurements	4.2.a.1 Make systematic and careful observations using a range of equipment, including thermometers and data loggers	Pupil can use various equipment, as instructed, e.g. a thermometer.	Pupil can use various equipment, as instructed, repeatedly and with care, e.g. thermometers.	Pupil can select and use various equipment repeatedly and with care, e.g. measuring jug to measure volume, and discuss alternatives.

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	b) Pupils explore how to improve the quality of data	4.2.b.1 Take accurate measurements using standard units, where appropriate (+)	Pupil can use standard measurements when taking measurements.	Pupil can recognise the importance of using standard units and measures accurately, e.g. measuring temperature when investigating its effect on washing drying.	Pupil can take measurements that are precise as well as accurate.
	c) Pupils understand the role of repeat readings	There is no content for this sub-process in Year 4.			

Domain: Working scientifically

Process	Sub-process	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)
3) Recording evidence	a) Pupils record work with diagrams and label them	4.3.a.1 Record findings using simple scientific language, drawings and labelled diagrams (^)	Pupil can, with prompting, draw and label diagrams.	Pupil can use words and diagrams to record findings, e.g. how habitats change during the year.	Pupil can start to use labelled diagrams to show more complex outcomes.
	b) Pupils can display data using labelled diagrams, keys, tables and bar charts	4.3.b.1 Record findings using keys, bar charts, and tables (^)	Pupil can, with prompting, use tables to record evidence.	Pupil can use various ways to record evidence, e.g. comparing the teeth of herbivores and carnivores.	Pupil can, with prompting, use various ways to record complex evidence.
	c) Pupils can display data using line graphs	4.3.c.1 Gather, record, classify and present data in a variety of ways to help to answer questions	Pupil can, with prompting, gather and display evidence in various ways.	Pupil can use various ways to record, group and display evidence, e.g. grouping and classifying various materials.	Pupil can use line graph to record basic data.

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Domain: Working scientifically

Process	Sub-process	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)
4) Reporting findings	a) Pupils process findings to develop conclusions and identify causal relationships	4.4.a.1 Report on findings from enquiries, including oral and written explanations, of results and conclusions (^)	Pupil can, with prompting, write a conclusion based on evidence.	Pupil can write a conclusion based on evidence, e.g. effect on brightness of bulbs if more cells are added.	Pupil can, with prompting, write a conclusion using evidence and identifying causal links.
	b) Pupils use displays and presentations to report on findings	PoS: L2.6 Report on findings from enquiries using displays or presentations (^)	Pupil can indicate findings from an enquiry that could be reported.	Pupil can present findings either in writing or orally, e.g. relating to investigating which materials are conductors.	Pupil can, with support, display and present key findings from enquiries orally and in writing.
	c) Pupils explain confidence in findings	There is no content for this sub-process in Year 4.			

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Domain: Working scientifically

Process	Sub-process	Progression statement	What to look for guidance (Working towards expectations)	What to look for guidance (Meeting expectations)	What to look for guidance (Exceeding expectations)
5) Conclusions and predictions	a) Pupils can analyse data	4.5.a.1 Identify differences, similarities or changes related to simple scientific ideas and processes	Pupil can, with prompting, recognise patterns that relate to scientific ideas.	Pupil can recognise patterns that relate to scientific ideas, e.g. finding out which materials make better earmuffs.	Pupil can arrange data to make clear key characteristics.
	b) Pupils can draw conclusions	4.5.b.1 Use straightforward scientific evidence to answer questions or to support their findings	Pupil can, with support, use evidence to produce a simple conclusion.	Pupil can use evidence to produce a simple conclusion, e.g. the effect of temperature on various substances.	Pupil can show how evidence supports a conclusion.
	c) Pupils can develop investigation further	4.5.b.1 Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	Pupil can suggest how an investigation could be extended.	Pupil can use evidence to suggest further relevant investigations, e.g. making own instruments, using ideas about pitch and volume.	Pupil can suggest further relevant comparative or fair tests.

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