

Links to the National Curriculum [Science and Geography]**Links to Key Stage 1 Science**

Pupils observe, explore (using the senses...) and ask questions ['How?', 'Why?', 'What will happen if ...?'] about living things, materials and phenomena. They begin to work together to collect evidence to help them answer questions and to link this to simple scientific ideas. They evaluate evidence and consider whether tests or comparisons are fair. They use reference materials to find out more about scientific ideas. They share ideas, communicating them using scientific language, drawings, charts and tables.

Children of this age may be able to use Earth science fieldwork as part of the exploration and investigation of their locality. Although more likely to focus on biological, historical and geographical matters, the visit may nevertheless form an important foundation for later understanding of the local rocks and their uses.

SC1 Scientific Enquiry.

1. It is important to collect evidence by making observations and measurements when trying to answer a question.
- 2a. Ask questions and decide they might find answers to them.
- 2b. Use first-hand experience and simple information sources to answer questions.
- 2c. think about what might happen before deciding what to do.
- 2e. Follow simple instructions to control risks to themselves and others.
- 2f. Explore using the senses of sight, hearing, touch, taste and smell, as appropriate, to make and record observations and measurements.
- 2h. Make simple comparisons.
- 2j. Review their work and explain what they did to others.

SC2 Life processes and living things.

- 1a. The differences between things that are living and things that have never been alive.
- 4b. Group living things according to observable similarities and differences.
- 5a. Find out about different kinds of plants and animals in the local environment.
- 5c. Care for the environment.

SC3 Materials and their properties

Grouping materials

Pupils should be taught to:

- 1a. Use their senses to explore and recognise the similarities and differences between materials.
- 1b. Sort objects into groups on the basis of simple material properties.
- 1c. Recognise and name common materials[for example, metal, plastic, wood, paper, rock] and recognise that some of them are found naturally.
- 1d. Find out about the uses of common materials.

Changing materials

Pupils should be taught to:

- 2b. Explore and describe the way some everyday materials[for example, water, chocolate, bread, clay] change when they are heated or cooled.

Links to Key Stage 1 Geography

At this level any fieldwork would be holistic and include aspects of science, geography, history, English and other areas of the curriculum.

Geographical enquiry and skills

- ◆ Use fieldwork skills
- ◆ Use and make maps and plans

Knowledge and understanding of places

- ◆ Identify and describe places

Knowledge and understanding of patterns and processes

- ◆ Make observations

Knowledge and understanding of environmental change and sustainable development

- ◆ Recognise changes in the environment

Breadth of study

- ◆ Carry out fieldwork investigations outside the classroom

Links to Key Stage 2 Science

Pupils learn about a wider range of living things, materials and phenomena. They begin to make links between ideas and to explain things using simple models and theories. They apply knowledge and understanding of scientific ideas to familiar phenomena, everyday things and personal health. They begin to think about the positive and negative effects of scientific and technological developments on the environment and in other contexts. They carry out more systematic investigations, working on their own and with others. They use a range of reference sources in their work. They talk about their work and its significance, and communicate ideas using a wide range of scientific language, conventional diagrams, charts and graphs.

For this age group a field visit is likely to have more relevance. A visit to a geoconservation site, as part of a more holistic investigation of a locality, covers aspects of Geography and History as well as Science. Children observe and record rocks and soils in the environment, and collect specimens of rocks and soils for work back at school, with opportunities to consider the economic uses of the local rocks.

SC1 Scientific enquiry

Pupils should be taught:

- 1a. That science is about thinking creatively to try to explain how living and non-living things work, and to establish links between causes and effects.
- 1b. That it is important to test ideas using evidence from systematic observations and measurements.
- 2a. Ask questions that can be investigated scientifically and decide how to find the answer.
- 2b. To consider what sources of information, including first-hand experience and a range of other sources, they will use to answer questions.
- 2i. To make comparisons and identify simple patterns or associations in their own observations and measurements or other data.
- 2j. To use observations, measurements or other data to draw conclusions.
- 2k. To decide whether these conclusions agree with any prediction made and/or whether they enable further predictions to be made.
- 2l. To use their scientific knowledge and understanding to explain observations, measurements or other data or conclusions.
- 2m. To review their work and the work of others and describe its significance and limitations.

SC2 Life processes and living things

- 1c. To make links between life processes in familiar animals and plants and the environments in which they are found

SC3 Materials and their properties

Grouping and classifying materials

Pupils should be taught to:

- 1a. Compare everyday materials and objects on the basis of their material properties, including hardness... and to relate these properties to everyday use of the materials
- 1d. Describe and group rocks and soils on the basis of their characteristics, including appearance, texture and permeability.

Changing materials

Pupils should be taught

- 2b. To describe changes that occur when materials [for example water, clay, dough] are heated or cooled.
- 2d. About reversible changes, including dissolving, melting, boiling, condensing, freezing and evaporating.

Separating mixtures of materials

Pupils should be taught

- 3a. How to separate solid particles of different sizes by sieving (for example, those in soil)

From the QCA Guidance: Unit 3D Rocks and Soils: Year 3 [7-8 year-olds]

[Field visits to local sites would make an important contribution to the activities which lead to these intended learning outcomes:]

- ◆ Identify some rocks, eg marble, granite, slate, and explain why they are used for a particular purpose, e.g. slate for a roof
- ◆ Group rocks according to differences in texture and record and justify the groupings
- ◆ Use results of tests to rank rocks in order of ease of wearing away and/or permeability/porosity
- ◆ Relate the use of particular rocks to their characteristics, and explain why they are used, e.g. that granite is often used for steps for buildings because it doesn't wear away easily, that marble is used because it is attractive to look at
- ◆ Explain why they can't see the rock in some places, eg by saying it is covered with soil or buildings
- ◆ Describe how the soils differ from those in the local environment
- ◆ Rank soils in terms of changing colour and particle size, justifying the ranking in terms of their observations

Links to Key Stage 2 Geography

At this level teaching may become more subject-based, but fieldwork is still likely to be integrated and include aspects of science, geography, history, English, etc. Again it can be readily seen how the science and geography are interlinked at this level, for example a visit to a disused sand and gravel quarry would include not only the geological features, but also soils, natural and planted vegetation, animals (wild and introduced), and land use, including quarrying, recreation and conservation.

Geographical enquiry and skills

- ◆ Identify and describe places and environments
- ◆ Use appropriate fieldwork techniques (for example label field sketches) and instruments
- ◆ Draw plans and maps

Knowledge and understanding of places

- ◆ Recognise, describe and explain changes

Knowledge and understanding of patterns and processes

- ◆ Recognise some ... physical processes (eg river erosion...) and explain how these can cause changes...

Knowledge and understanding of environmental change and sustainable development

- ◆ Recognise how people can improve the environment or damage it, and how decisions about places and environments affect the future quality of people's lives
- ◆ Recognise how and why people may seek to manage environments sustainably, and to identify opportunities for their own involvement (eg a local conservation project)

Breadth of study

To be developed through localities and themes, including a locality in the United Kingdom, and themes such as:

- ◆ Water and its effects on landscapes and people, including physical features of rivers (eg floodplain) or coasts (eg beach), and the processes of erosion and deposition that affect them
- ◆ An environmental issue, caused by change in an environment, and attempts to manage the environment sustainably (eg creating a new nature reserve ...)
- ◆ Carry out fieldwork investigations outside the classroom