



National 1  
unit  
specification



## Unit specification

### Science in the Environment: Simple Experiments (National 1)

<b>Unit code:</b>	J5HC 71
<b>SCQF:</b>	level 1 (6 SCQF credit points)
<b>Valid from:</b>	session 2021–22

This document provides detailed information about the unit to ensure consistent and transparent assessment year on year.

This document is for teachers and lecturers and contains all the mandatory information required to deliver and assess the unit.

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# Unit outline

The aim of this unit is to provide learners with opportunities to participate in all aspects of scientific experiments safely. The simple experiments can be drawn from across any of the different branches of the sciences (biology, physics and chemistry).

Learners who complete this unit will be able to:

- 1 participate in simple practical experiments

Please read this unit specification in conjunction with the unit support notes, which provide advice and guidance on delivery, assessment approaches, and developing skills for learning, skills for life and skills for work.

Exemplification of the standards in this unit is given in unit assessment support.

## **Recommended entry**

Entry to this unit is at the discretion of the centre. Relevant experiences and outcomes may provide an appropriate basis for doing this unit.

# Standards

## Outcome and assessment standards

### Outcome 1

#### 1 Participate in simple practical experiments by:

- 1.1 taking part in simple experiments in line with health and safety procedures
- 1.2 taking part in recording the results of simple experiments

### Evidence requirements for the unit

You should use your professional judgement, subject knowledge and experience, and understanding of your learners, to determine the most appropriate ways to generate evidence, and which conditions and contexts to use.

Evidence for this unit could include observation checklists, logs, short recorded oral responses, photographic evidence or equivalent. You should be confident that there is enough evidence to support your judgement that the assessment standards have been met:

- ◆ outcome 1: the learner must show evidence of participating in at least four simple experiments, and in recording the experiment results. The experiments can come from a biology, physics or chemistry context

Learners will normally receive a high degree of support to achieve the outcome of the unit. It is your responsibility to ensure that the level of support is appropriate for the requirements of the unit.

Unit assessment support provides exemplification of assessment.

# Skills for learning, skills for life and skills for work

This unit helps learners to develop broad, generic skills. These skills are based on [SQA's Skills Framework: Skills for Learning, Skills for Life and Skills for Work](#) and draw from the following main skills areas:

## 1 Literacy

### 1.3 Listening and talking

You must build these skills into the unit at an appropriate level, where there are suitable opportunities.

# Equality and inclusion

This unit is designed to be as fair and as accessible as possible with no unnecessary barriers to learning or assessment.

You should take into account the needs of individual learners when planning learning experiences, selecting assessment methods or considering alternative evidence. The unit support notes provide further information.

Guidance on assessment arrangements for disabled learners and/or those with additional support needs is available on the assessment arrangements web page:

[www.sqa.org.uk/assessmentarrangements](http://www.sqa.org.uk/assessmentarrangements)

# Further information

The following links provide useful information and background:

- ◆ [National 1 web page](#)
- ◆ [Building the Curriculum 3 to 5](#)
- ◆ [Guide to Assessment](#)
- ◆ [SCQF Handbook: User Guide](#)
- ◆ [SQA Skills Framework: Skills for Learning, Skills for Life and Skills for Work](#)
- ◆ [Skills for Learning, Skills for Life and Skills for Work: Using the Curriculum Tool](#)
- ◆ [SQA e-assessment web page](#)

# Appendix: unit support notes

## Introduction

These support notes are not mandatory. They provide advice and guidance to teachers and lecturers on approaches to delivering the unit. Please read these unit support notes in conjunction with the unit specification and appropriate assessment support materials.

## Developing skills, knowledge and understanding

You are free to select the skills, knowledge, understanding and contexts that are most appropriate.

Learners who complete this unit will be able to participate in activities involving simple experiments and record experiment results.

## Approaches to learning and teaching

This section provides general advice and guidance on approaches to learning and teaching that you can use to deliver this unit.

At SCQF level 1, learners require varying degrees of support, depending on their needs. Some learners may:

- ◆ take part at an experiential or sensory level, requiring full support
- ◆ require frequent direction and support to enable them to take part
- ◆ take part independently or with intermittent support

You should give learners as much support as they need to engage with learning, teaching and assessment activities while maintaining the integrity of the outcome and assessment standards.

The following table provides examples of approaches to learning and teaching. These may also provide naturally occurring evidence that you can use to assess learners against the assessment standards.



## Science in the Environment: Simple Experiments

Outcome 1: participate in simple practical experiments

### Assessment standards

1.1 taking part in simple experiments in line with health and safety procedures

### Approaches for learning and teaching

Health and safety procedures will depend on the experiment and any equipment used, but could involve, for example:

- ◆ washing hands before and after each experiment
- ◆ wearing appropriate clothing, gloves and goggles, as necessary
- ◆ cleaning any spillages
- ◆ basic safety procedures relating to heat, electricity and acidic liquids

The experiments could involve a wide variety of simple activities to explore the world around us. Simple experiments that could be considered and the broad scientific contexts they relate to include:

#### In the context of biology:

- ◆ **My Body** — link to activities in the Science in the Environment: My Body — Appearance unit. Survey, compare, and contrast differences.
- ◆ **Plants** — what do plants need to grow? Grow small seedlings in different light conditions to see what effect sunlight levels have on their growth.
- ◆ **The environment** — pond dipping. Wee beastie survey.
- ◆ **Keeping healthy** — listen to your heartbeat with stethoscope — walk around. Stop. Listen. How fast? Run for a minute. Stop. Listen. How fast? Comparative results rather than discrete measurements may be more appropriate for some learners.

#### In the context of chemistry:

- ◆ **Acids and alkalis** — what happens to a dirty, dull penny when you soak in vinegar, water or milk? Invisible messages — what 'inks' would work, for example lemon juice, water? Make a volcano.
- ◆ **Metals** — what is inside a penny?

Assessment standards	Approaches for learning and teaching
	<p><b>In the context of physics:</b></p> <ul style="list-style-type: none"> <li>◆ <b>Matter substances</b> — make your own lava lamp.</li> <li>◆ <b>Energy</b> — make a potato clock. Solar energy. Different coloured tiles left in sunlight for an hour — will all colours heat up the same?</li> <li>◆ <b>Forces</b> — push, pull, and twist. Predicting which force will be required for everyday activities.</li> <li>◆ <b>Density</b> — make a rainbow in a glass (dissolved skittles, different colours have more colourant and so greater density. Layer these).</li> <li>◆ <b>Electricity</b> — creating a circuit — light up that bulb. Test a range of materials to see if they conduct a charge. Can you create electricity with your body? — static electricity.</li> <li>◆ Explore a range of materials to see if they can produce static electricity when rubbed.</li> <li>◆ <b>Magnetism</b> — predicting and testing everyday items to see if they are magnetic.</li> <li>◆ <b>Light, colour and sound</b> — balloon speakers, cup telephones. Does sound travel the same through different materials? — test cotton wool, bubble wrap, newspaper, air-filled yogurt pots over ears.</li> <li>◆ Make colour wheel spinners — make the colours disappear.</li> <li>◆ How can you see over a wall taller than you? — make a periscope.</li> <li>◆ <b>Earth and space</b> — sun moves across the sky — make a sun dial.</li> </ul>
1.2 taking part in recording the results of simple experiments	<p>The recording process could involve a variety of responses; a simple checklist; posing questions with yes or no answers that the learner could tick, point to, or communicate using their normal communication method. For example:</p> <ul style="list-style-type: none"> <li>◆ Is the material magnetic? Yes or No.</li> <li>◆ Has the shadow on the sun dial moved after an hour? Yes or No.</li> <li>◆ Does the vinegar clean the dirty coin? Yes or No.</li> <li>◆ Does your heart beat faster after exercise? Yes or No.</li> </ul> <p>Some experiments may involve comparisons, in which case the results checklist could involve questions such as:</p>

Assessment standards	Approaches for learning and teaching
	<ul style="list-style-type: none"> <li>◆ Is the flower that was kept in the cupboard as big as the flower kept on the windowsill? Yes or No.</li> <li>◆ Are your hands the same size as your classmates' hands?</li> <li>◆ Which material covering your ears made the loud noise sound the quietest and which material made it sound the loudest?</li> </ul>

## Approaches to assessment and gathering evidence

There is no external assessment for National 1 units. All units are internally assessed against the requirements outlined and described in the unit specification and the unit assessment support pack.

To achieve the unit, learners must achieve the unit outcome.

At SCQF level 1, most evidence for assessment is gathered on a naturally occurring, ongoing basis, rather than from more formal assessment methods. There are many contexts that you might use for gathering evidence, for example, extra-curricular and/or outdoor learning.

Naturally occurring evidence is evidence that occurs in and as part of learning and teaching, which you can gather for assessment purposes in a variety of ways:

- ◆ observation of evidence demonstrated during an activity (using an observation checklist, visual recording, photography or equivalent)
- ◆ oral questioning before, during, and on completion of an activity (recorded using an audio-visual or audio recording or using your detailed written notes as evidence)
- ◆ learning and teaching activities that generate physical evidence for assessment
- ◆ identifying opportunities to record evidence during out-of-centre activities

You should focus on small, well-defined steps in learning. In this way, the learner is more likely to achieve success in the units and in any subsequent learning.

Learners benefit from receiving accurate and regular feedback regarding their learning. This helps to ensure they are actively involved in the assessment process. It is important that you use different approaches to assessment to suit the varying needs of learners.

## Combining assessment within units

It may be possible to reduce the volume of assessment for this unit by designing broad assessment tasks that cover a number of assessment standards at one time. However, for some learners it may be more appropriate to design assessment tasks that include smaller steps and/or repetition, which could help with the retention and reinforcement of learning.

## Developing skills for learning, skills for life and skills for work

This section highlights the skills for learning, skills for life and skills for work that learners should develop in this unit. These are based on SQA's Skills Framework: Skills for Learning, Skills for Life and Skills for Work and should be built into the unit where there are appropriate opportunities. The level of these skills will be appropriate to the level of the unit.

Some examples of potential opportunities to practise or improve these skills are given in the following table.

Skills for learning, skills for life and skills for work	Approaches for learning and teaching
<p><b>1 Literacy</b></p> <p>1.3 Listening and talking:</p> <ul style="list-style-type: none"> <li>◆ listening means the ability to understand and interpret ideas, opinions and information presented orally for a purpose and within a context, drawing on non-verbal communication as appropriate</li> <li>◆ talking means the ability to communicate orally ideas, opinions and information for a purpose and within a context</li> </ul>	<p>Where appropriate, learners could use their normal communication method during learning and teaching activities to communicate, for example:</p> <ul style="list-style-type: none"> <li>◆ recording the results of the simple experiments</li> </ul>

It is important that you provide learners with opportunities to develop these broad general skills as an integral part of their learning experience.

# Administrative information

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## History of changes

Version	Description of change	Date

Note: please check [SQA's website](#) to ensure you are using the most up-to-date version of this document.