



Science Assignment (National 4)

SCQF: level 4 (6 SCQF credit points)

Unit code: H26A 74

Unit outline

This is the Added Value Unit in the National 4 Science Course. The general aim of this Unit is to enable the learner to provide evidence of added value for the National 4 Science Course through the successful completion of an assignment which will allow the learner to demonstrate breadth, challenge and/or application.

Learners will have the opportunity to demonstrate challenge and application in skills of scientific inquiry, investigation, analytical thinking and knowledge and understanding.

Learners will investigate a topical scientific issue, using knowledge and skills selected from *Fragile Earth/Human Health/Applications of Science* key areas.

Learners will use a variety of approaches and consider applications of science and their impact on society/the environment. They will communicate information related to the method used or their record of process and findings, which will allow demonstration of scientific literacy skills.

Learners who complete this Unit will be able to:

- 1 Apply skills and knowledge to investigate a topical issue in science and its impact on the environment/society

This Unit is a mandatory Unit of the National 4 Science Course and is also available as a free-standing Unit. The Unit Specification should be read in conjunction with the *Course Support Notes*, which provide advice and guidance on delivery and assessment approaches. 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. It is recommended that the learner should be in the process of completing, or have completed, the following Units in the National 4 Science Course:

Science: Fragile Earth (National 4)

Science: Human Health (National 4)

Applications of Science (National 4)

Equality and inclusion

This Unit Specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence. For further information, please refer to the *Course Support Notes*.

Standards

Outcomes and Assessment Standards

Outcome 1

The learner will:

- 1 Apply skills and knowledge to investigate a topical issue in science and its impact on the environment/society by:**
 - 1.1 Choosing, with justification, a relevant issue in science
 - 1.2 Researching the issue
 - 1.3 Processing and presenting appropriate information/data
 - 1.4 Applying knowledge and understanding of science
 - 1.5 Communicating the findings of the investigation

Evidence Requirements for the Unit

This Unit will be assessed through controlled assessment which meets the Evidence Requirements below.

The assessment method for this Unit will be an assignment in which the learners will draw on and apply the skills and knowledge they have learned during the Course. The assignment offers challenge by requiring skills, knowledge and understanding to be applied in a context that is one or more of the following:

- ◆ unfamiliar
- ◆ familiar but investigated in greater depth
- ◆ integrates a number of familiar contexts

The assignment involves research of a topical issue and communication of the findings. These may be carried out in two stages, Stage 1: a research stage and Stage 2: a communication stage, which may be carried out sequentially or concurrently.

The assignment is:

- ◆ set by centres within the SQA guidelines described below
- ◆ conducted under some supervision and control

Evidence will be internally marked by centre staff in line with SQA guidelines.

All assessment is subject to quality assurance by SQA.

Setting the assessment

The assignment will be set by centres within the following guidelines:

- ◆ Learners will select and investigate a topical issue from a Unit of this Course.
- ◆ The topical issue could have either a positive or negative impact on society/the environment.
- ◆ The assignment topic will be agreed between the learner and the teacher/lecturer.

Conducting the assessment

The assignment will be conducted under some supervision and control, as follows:

- ◆ It is recommended that candidates will gather information over several weeks and that no more than 8 hours should be spent on the whole assignment.
- ◆ During Stage 1: the research stage, candidates may have access to a wide range of resources.
- ◆ During Stage 2: the communication stage, candidates should have access to the material they have generated in Stage 1: the research stage.
- ◆ The teacher/lecturer will provide overall guidelines for the assignment, which will lead the learner through the assignment in clear stages.
- ◆ The teacher/lecturer may also give learners support and guidance to help them progress through each stage of the assignment.

Judging the evidence

Evidence will be internally marked and verified by centre staff in line with SQA guidelines.

A cut-off score of 50% should be applied. Candidates must achieve 7 marks or more to pass.

All assessment is subject to quality assurance by SQA.

Evidence can be drawn from a variety of sources and presented in a variety of formats. The following table describes the evidence for the Assessment Standards which require exemplification.

Assessment Standards	Evidence required
Choosing, with justification, a relevant issue in science	A clear statement of the issue being investigated. A brief statement why the issue is relevant to the environment/society.
Researching the issue	Selection/collection of appropriate information/data from at least two relevant sources.
Processing and presenting appropriate information/data	Present information/data from one of the selected sources in a different way. The presentation must use a diagram, flow chart, table, graph, chart, key, or other appropriate format with all appropriate labelling. Process presented information/data accurately. The processing can include: plotting graphs/charts from tables, populating tables from other sources.
Applying knowledge and understanding of science	An explanation/description of the underlying science as it relates to the issue. Explanation/description of at least one impact of the issue on the environment/society, using some knowledge of the underlying science.
Communicating the findings of the investigation	The communication must be clear, concise, relevant and appropriately structured.

Re-assessment

In relation to Unit assessment, SQA's guidance on re-assessment for Units applies.

Further information is provided in the exemplification of assessment in *Unit Assessment Support*. Advice and guidance on possible approaches to assessment is provided in the *Course Support Notes*.

Development of skills for learning, skills for life and skills for work

Please refer to the *Course Specification* for information about skills for learning, skills for life and skills for work.

Further Mandatory Information on Course coverage for the National 4 Science Course

The following gives details of mandatory skills, knowledge and understanding for the National 4 Science Course. Assessment of this Added Value Unit will involve selecting appropriate skills, knowledge and understanding from those listed below, in line with the Evidence Requirements above. This list of skills, knowledge and understanding also provides the basis for the assessment of all of the Units in the Course:

- ◆ demonstrating knowledge and understanding by making statements, describing information, providing explanations
- ◆ applying knowledge of science to familiar situations, interpreting information and solving problems
- ◆ planning and safely carrying out experiments/practical investigations to illustrate effects
- ◆ using information handling skills by selecting, presenting and processing information
- ◆ making generalisations based on evidence/information
- ◆ drawing valid conclusions and giving explanations supported by evidence
- ◆ suggesting improvements to experiments/practical investigations
- ◆ communicating findings/information

These skills will be assessed, across the Course, in the context of the key areas.

The following list provides further detail of the key areas for the National 4 Science Course:

Fragile Earth

- ◆ conflicts, benefits, and solutions to issues in the uses of water, including sources and origins of drinking water; extraction of water
- ◆ conflicts and issues associated with food production, including plant and livestock farming, impact of technology on food production, impact of farming on the environment
- ◆ conflicts and issues with production and use of energy, including the generation of power from a range of sources (fossil fuels, plants, renewables), risks and benefits of energy sources; sustainability of energy sources; concept of conservation of energy
- ◆ conflicts and issues with extraction and uses of metals, including properties of metals; methods of extraction of metals; abundance and sources of metals; impact of metal extraction on the environment; recycling metals

Human Health

- ◆ **what is health?** — how to keep healthy, understanding of the impact of nutrition on health
- ◆ **threats to health** — preventative measures (including understanding of the immune system and use of vaccines)
- ◆ **health claims** — review articles and information in the media

Applications of Science

- ◆ **telecommunications** — principles and applications of telecommunications uses and properties of electromagnetic waves
- ◆ **materials** — including properties of substances; properties and uses of novel materials and impacts, risks and benefits of their use
- ◆ **risks and safety** — measures associated with science at work, including chemical, radiation and electrical risks and safety

Administrative information

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Superclass: RA

History of changes

Version	Description of change	Authorised by	Date
1.1	Evidence Requirements section: wording added to clarify assessment conditions; Further mandatory information section: amendment to wording to clarify skills list	Qualification Development Manager	June 2013
2.0	Minor rewording of Assessment Standards 1.3 and 1.4 for clarity. Minor amendments for clarification of assessment conditions and evidence requirements	Qualifications Manager	April 2018

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