

Guidance on setting and assessing internal assessment

Overview

The internal assessment requires an individual investigation – a single task taking about 10 hours, which is worth 25 per cent of a student’s final grade.

The internal assessment investigation consists of:

- identifying an Environmental Systems and Societies (ESS) issue and focusing on one of its specific aspects
- developing methodologies to generate data that are analysed to produce knowledge and understanding of this aspect
- applying the outcomes of the focused investigation to provide understanding or solutions in the broader ESS context.

A focused research question should demonstrate the student’s interest in an aspect of the environment (the context), so that the student is able to discuss the extent to which the research and evaluation in the study can be applied to a wider context at a local, regional or global level (the application). The broader discussion may not be directly related to the student’s own findings if the data is not adequate. However, in their discussion and applications sections, students should be able to propose creative or new solutions or relate findings to current political and management decisions based on the research they have carried out.

For example, if a student carries out a study on the impact of street lighting on one area, he or she may suggest solutions for the way street lighting is used in other areas from the data collected.

Assessment and marking

The internally assessed component of the course is divided into six sections.

Identifying the context	[20%] – 6 marks
Planning	[20%] – 6 marks
Results, analysis and conclusion	[20%] – 6 marks
Discussion and evaluation	[20%] – 6 marks
Applications	[10%] – 3 marks
Communication	[10%] – 3 marks
TOTAL =	100% – 30 marks

To obtain good grades, students must address all six sections and produce a report of between 1500 and 2250 words. Students should be told that words over the 2250 limit will be ignored for marking purposes.

Each assessment criterion has level descriptors that describe achievement levels and provide the range of marks to be awarded (pages 82–87 of the *Environmental systems and societies guide*). Teachers must judge their students’ work against the criteria using the level descriptors.

Assessment criteria

Identifying the context (6 marks)

This criterion assesses the extent to which the student establishes and explores an issue for investigation and develops a relevant research question.

Students should:

- show evidence of personal input and initiative in producing a focused, relevant research question
- explain the connection between an environmental issue and the research question
- discuss the relevant issue that provides the context for the research question.

Planning (6 marks)

This criterion assesses the extent to which the student has developed appropriate methods to gather relevant data. This data could be primary or secondary, qualitative or quantitative, and the student may use techniques associated with experimental and/or social science methods of inquiry. Safety, environmental and ethical considerations, where applicable, must be included.

Students should:

- show clear methodology that is appropriate to address the research question in order to try and obtain reproducible data
- specify repeats (at least three repeats for each level), and collect a suitable number of data sets
- justify the choice of sampling method used
- show a strong awareness of the need for safety procedures and the ethical and/or environmental issues relevant to their methodology (if relevant to their investigation). A database methodology will not have this consideration.

Results, analysis and conclusion (6 marks)

This criterion assesses the extent to which the student's report provides evidence that the student has selected, recorded, processed and interpreted the data in ways that are relevant to the research question and can support a conclusion.

Students should:

- produce results tabulated with clear column headings and titles to tables, and with correct errors to readings included in column headings
- process data in ways that are realistic and appropriate
- use statistical analysis, if appropriate
- use correct analysis so that all relevant patterns are displayed
- correctly interpret the data and formulate an appropriate conclusion based on the data
- produce a valid conclusion from their processed data, with correct interpretation of data so that a detailed conclusion to the research question can be deduced.

Discussion and evaluation (6 marks)

This criterion assesses the extent to which the student discusses the conclusion in the context of the environmental issue, and carries out an evaluation of the investigation.

Students should:

- discuss the strengths but also the weaknesses of the method used – this includes limitations of the data, sources of error in the methodology and equipment used
- suggest modifications that will address any significant weaknesses, and also suggest further areas to research
- evaluate the conclusion in the context of the environmental issue.

Applications (3 marks)

This criterion assesses the extent to which the student identifies and evaluates at least one way to apply the outcomes of the investigation in relation to the broader environmental issue identified at the start of the project.

Students should:

- justify one potential application of the outcomes of the investigation or solution to the environmental issue they have discussed in their findings
- evaluate the strengths and weaknesses of this solution.

Communication (3 marks)

This criterion assesses whether the report has been presented in a way that supports effective communication, in terms of structure, coherence and clarity. The focus, process and outcomes of the report should be well presented.

Students should:

- Produce a report that:
 - is well-structured, logical, organised and coherent, and the correct length
 - uses appropriate terminology
 - includes appropriate references.

Choice of project

Projects chosen should be appropriate for the region where students live and must reflect students' own interests. Many different methodologies can be used, including surveys, fieldwork, laboratory projects or use of demographic and environmental data. Some examples of projects that would be suitable for consideration are given here.

Aquatic systems

- Water pollution at different sites measured using biotic index and/or chemical analysis
- How aquatic plants (e.g. *Lemna* sp.) grow in different conditions or water types (e.g. if water is polluted by oil, pesticide or fertilisers)
- How acid rain affects the numbers or behaviour of aquatic invertebrates
- How the oxygen content of water varies with the seasons, temperature or water type
- How the biodiversity of flowing water is affected by the flow rate
- How primary production is affected by water depth or other abiotic factors

Terrestrial systems

- How the species diversity of a grassland is affected by grazing animals
- The effect of soil pH on biodiversity
- Whether acid rain affects the germination of seeds

Human influence

- How air quality is monitored using indicator species
- What effect human activities have on the climax vegetation in different areas
- Whether global warming can be monitored by satellite images of sea ice (photo analysis)
- The environmental value systems (EVSS) of different social groups, from data collected using values and attitude surveys or questionnaires
- How calculations of the ecological, carbon or water footprints of different groups relate to their social or other group