

Extended Essay. Comment and Assessment Rubric – Environmental systems and societies

Criterion A: Focus and method

This criterion focuses on the topic, the research question and the methodology. It assesses the explanation of the focus of the research (this includes the topic and the research question), how the research will be undertaken, and how the focus is maintained throughout the essay.

(Strands: Topic, Research question, Methodology)

An EE in environmental systems and societies should focus upon the interaction of the natural environment and human societies. Students must ensure that the topic would not be better submitted under a subject area within the experimental or human sciences.

The topic should be precise and focused and clearly established in the research question, which must be posed as a question. For example, “The potential of residential solar power systems to meet the demands in Canberra, Australia” is better than “Efficiency of solar energy”.

The research question should not be understood as a statement of the topic but rather as a specifically expressed question that the research will attempt to answer. It leads on from the topic area chosen, for example: “To what extent can residential solar power systems meet the energy demands in Canberra, Australia?”

The question must encourage critical argument rather than a descriptive or narrative response.

Students should explain the significance of the research and indicate how the research question relates to existing knowledge.

They also need to demonstrate that the research has been well planned and that they have selected an appropriate approach to address the research question.

If the approach involves experimentation or practical fieldwork, a detailed description of the methodology used should be provided that would allow the work to be repeated.

The sources consulted must be sufficient and each must contribute to the research focus of the essay.

If the study is based on secondary data, students need to ensure that the selection of sources is wide and reliable. Students must be particularly aware of the potential unreliability of internet-based sources.

Criterion A: Focus and method. *The Assessment Criteria*

Level	Descriptor
0	The work does not reach a standard outlined by the descriptors below.
1–2	<p>The topic is communicated unclearly and incompletely</p> <ul style="list-style-type: none">- Identification and explanation of the topic is limited; the purpose and focus of the research is unclear, or does not lend itself to a systematic investigation in the subject for which it is registered. <p>The research question is stated but not clearly expressed or too broad</p> <ul style="list-style-type: none">- The research question is too broad in scope to be treated effectively within the word limit and requirements of the task, or does not lend itself to a systematic investigation in the subject for which it is registered.- The intent of the research question is understood but has not been clearly expressed and/or the discussion of the essay is not focused on the research question. <p>Methodology of the research is limited</p> <ul style="list-style-type: none">- The source(s) and/or method(s) to be used are limited in range given the topic and research question.- There is limited evidence that their selection was informed.
3–4	<p>The topic is communicated</p> <ul style="list-style-type: none">- Identification and explanation of the research topic is communicated; the purpose and focus of the research is adequately clear, but only partially appropriate. <p>The research question is clearly stated but only partially focused</p> <ul style="list-style-type: none">- The research question is clear but the discussion in the essay is only partially focused and connected to the research question. <p>Methodology of the research is mostly complete</p> <ul style="list-style-type: none">- Source(s) and/or method(s) to be used are generally relevant and appropriate given the topic and research question.- There is some evidence that their selection(s) was informed. <p>If the topic or research question is deemed inappropriate for the subject in which the essay is registered no more than four marks can be awarded for this criterion.</p>
5–6	<p>The topic is communicated accurately and effectively</p> <ul style="list-style-type: none">- Identification and explanation of the research topic is effectively communicated; the purpose and focus of the research is clear and appropriate. <p>The research question is clearly stated and focused</p> <ul style="list-style-type: none">- The research question is clear and addresses an issue of research that is appropriately connected to the discussion in the essay. <p>Methodology of the research is complete</p> <ul style="list-style-type: none">- An appropriate range of relevant source(s) and/or method(s) have been applied in relation to the topic and research question.- There is evidence of effective and informed selection of sources and/or methods.

Criterion B: Knowledge and understanding

This criterion assesses the extent to which the research relates to the subject area/discipline used to explore the research question, or in the case of the world studies extended essay, the issue addressed and the two disciplinary perspectives applied, and additionally the way in which this knowledge and understanding is demonstrated through the use of appropriate terminology and concepts.

(Strands: Context, Subject-specific terminology and concepts)

The EE must demonstrate an effective understanding of the place of the research question in a broader environmental systems and societies context. For example, in an essay on the effects of a specific human activity on the environment, the student may use repeated measurements on the ground, satellite images or maps.

Students should show clear and perceptive links between their own study and the body of theoretical knowledge associated with the subject. The literature cited should predominantly come from acknowledged scientific sources and be applied effectively to support the student's argument.

Students need to show fluency in the use of appropriate environment-related terminology and avoid excessive use of jargon. Any technical terms that are used should be clearly explained. The student must demonstrate an understanding of these terms by using them appropriately within the text.

There should be a clear step-by-step and logical argument linking the raw data to the final conclusions.

Students should maintain a consistent linguistic style throughout the essay.

Students are expected to use appropriate scientific and systems terminology, as employed in the *Environmental systems and societies guide*.

Criterion B: Knowledge and understanding. *The Assessment Criteria*

Level	Descriptor
0	The work does not reach a standard outlined by the descriptors below.
1–2	<p>Knowledge and understanding is limited.</p> <ul style="list-style-type: none">- The selection of source material has limited relevance and is only partially appropriate to the research question.- Knowledge of the topic/discipline(s)/issue is anecdotal, unstructured and mostly descriptive with sources not effectively being used. <p>Use of terminology and concepts is unclear and limited.</p> <ul style="list-style-type: none">- Subject-specific terminology and/or concepts are either missing or inaccurate, demonstrating limited knowledge and understanding.
3–4	<p>Knowledge and understanding is good.</p> <ul style="list-style-type: none">- The selection of source material is mostly relevant and appropriate to the research question.- Knowledge of the topic/discipline(s)/issue is clear; there is an understanding of the sources used but their application is only partially effective. <p>Use of terminology and concepts is adequate.</p> <ul style="list-style-type: none">- The use of subject-specific terminology and concepts is mostly accurate, demonstrating an appropriate level of knowledge and understanding. <p>If the topic or research question is deemed inappropriate for the subject in which the essay is registered no more than four marks can be awarded for this criterion.</p>
5–6	<p>Knowledge and understanding is excellent.</p> <ul style="list-style-type: none">- The selection of source materials is clearly relevant and appropriate to the research question.- Knowledge of the topic/discipline(s)/issue is clear and coherent and sources are used effectively and with understanding. <p>Use of terminology and concepts is good.</p> <ul style="list-style-type: none">- The use of subject-specific terminology and concepts is accurate and consistent, demonstrating effective knowledge and understanding.

Criterion C: Critical thinking

This criterion assesses the extent to which critical-thinking skills have been used to analyse and evaluate the research undertaken.

(Strands: Research, Analysis and Discussion and evaluation)

Students can carry out their research using:

- data taken from literature sources
- data they have collected themselves.

Their research must be consistently relevant to the research question.

Students can demonstrate analytical skills in the selection, manipulation and presentation of any quantitative or qualitative data that they collect. These skills are well displayed in graphical representations, mathematical manipulations or flow diagrams.

Analytical skills may also be evident in the student's ability to:

- select specific data from sources
- identify the data's relevance and relationships to one another
- reorganize the data to support an effective verbal argument.

Evaluative skills will be apparent in the students' reflections on the reliability and validity of the data gathered, and their subsequent interpretations.

Students should not select essays in which ideas are presented as a simple list of the pros and cons of the topic followed by an overall summary as this shows a lack of true analysis. For example, essays comparing two different sources of energy tend to be largely descriptive in nature with no real argument. These do not provide any evidence of analytical skills and will therefore be compromised under this assessment criterion.

Students can include their person opinions but must substantiate them with available evidence.

Students must evaluate their own research, particularly in terms of unresolved issues and further research questions that may be generated by their study.

Criterion C: Critical thinking. *The Assessment Criteria*

Level	Descriptor
0	The work does not reach a standard outlined by the descriptors below.
1–3	<p>The research is limited.</p> <ul style="list-style-type: none">- The research presented is limited and its application is not clearly relevant to the RQ. <p>Analysis is limited.</p> <ul style="list-style-type: none">- There is limited analysis.- Where there are conclusions to individual points of analysis these are limited and not consistent with the evidence. <p>Discussion/evaluation is limited.</p> <ul style="list-style-type: none">- An argument is outlined but this is limited, incomplete, descriptive or narrative in nature.- The construction of an argument is unclear and/or incoherent in structure hindering understanding.- Where there is a final conclusion, it is limited and not consistent with the arguments/evidence presented.- There is an attempt to evaluate the research, but this is superficial. <p>If the topic or research question is deemed inappropriate for the subject in which the essay is registered no more than three marks can be awarded for this criterion.</p>
4–6	<p>The research is adequate.</p> <ul style="list-style-type: none">- Some research presented is appropriate and its application is partially relevant to the Research question. <p>Analysis is adequate.</p> <ul style="list-style-type: none">- There is analysis but this is only partially relevant to the research question; the inclusion of irrelevant research detracts from the quality of the argument.- Any conclusions to individual points of analysis are only partially supported by the evidence. <p>Discussion/evaluation is adequate.</p> <ul style="list-style-type: none">- An argument explains the research but the reasoning contains inconsistencies.- The argument may lack clarity and coherence but this does not significantly hinder understanding.- Where there is a final or summative conclusion, this is only partially consistent with the arguments/evidence presented.- The research has been evaluated but not critically.

7-9	<p>The research is good.</p> <ul style="list-style-type: none"> - The majority of the research is appropriate and its application is clearly relevant to the research question. <p>Analysis is good.</p> <ul style="list-style-type: none"> - The research is analysed in a way that is clearly relevant to the research question; the inclusion of less relevant research rarely detracts from the quality of the overall analysis. - Conclusions to individual points of analysis are supported by the evidence but there are some minor inconsistencies. <p>Discussion/evaluation is good.</p> <ul style="list-style-type: none"> - An effective reasoned argument is developed from the research, with a conclusion supported by the evidence presented. - This reasoned argument is clearly structured and coherent and supported by a final or summative conclusion; minor inconsistencies may hinder the strength of the overall argument. - The research has been evaluated, and this is partially critical.
10-12	<p>The research is excellent.</p> <ul style="list-style-type: none"> - The research is appropriate to the research question and its application is consistently relevant. <p>Analysis is excellent.</p> <ul style="list-style-type: none"> - The research is analysed effectively and clearly focused on the research question; the inclusion of less relevant research does not significantly detract from the quality of the overall analysis. - Conclusions to individual points of analysis are effectively supported by the evidence. <p>Discussion/evaluation is excellent.</p> <ul style="list-style-type: none"> - An effective and focused reasoned argument is developed from the research with a conclusion reflective of the evidence presented. - This reasoned argument is well structured and coherent; any minor inconsistencies do not hinder the strength of the overall argument or the final or summative conclusion. - The research has been critically evaluated.

Criterion D: Presentation

This criterion assesses the extent to which the presentation follows the standard format expected for academic writing and the extent to which this aids effective communication.

(Strands: Structure, Layout)

This criterion relates to the extent to which the essay conforms to accepted academic standards in relation to how research papers should be presented. It also relates to how well these elements support the reading, understanding and evaluation of the essay.

Students should provide a section and subsection structure to their essays, with appropriate informative headings.

Any charts, images or tables from literature sources included in the essay must be carefully selected labelled and referenced. They should only be used if they are directly relevant to the research question, contribute towards the understanding of the argument and are of a good graphic quality.

Large tables of raw data collected by the student are best included in an appendix, where they should be carefully labelled. Tables of processed data should be designed to clearly display the information in the most appropriate form. Graphs or charts drawn from the analysed data should be selected to highlight only the most pertinent aspects related to the argument. Too many graphs, charts and tables will distract from the overall quality of the communication. Only processed data that is central to the argument of the essay should be included in the body of the essay, as close as possible to its first reference. Tables should enhance a written explanation; they should not themselves include significant bodies of text. If they do, then these words must be included in the word count.

If an experimental method is long and complex, students may place the protocol in an appendix and just include a summary of the methods in the body of the essay. Students who choose this option must ensure that the summary contains all elements that contribute to the quality of the investigation, since appendices are not an essential section of the EE and examiners are not required to read them. In other words, any important information that contributes to the evaluation of the method must be in the body of the essay and not the appendix.

For experiments where numerical results are calculated from data obtained by changing one of the variables, it is generally good practice to show one example of the calculation in the main body of the essay. The remainder can be displayed in tabular or graphical form.

Any material that is not original must be carefully acknowledged, with specific attention paid to the acknowledgment and referencing of quotes and ideas. This acknowledgment and referencing is applicable to audiovisual, material, text, graphs and data published in print and electronic sources. If the referencing does not meet the minimum standard as indicated in the guide (name of author, date of publication, title of source and page numbers as applicable), and is not consistently applied, work will be considered as a case of possible academic misconduct.

A bibliography is essential and has to be presented in a standard format. Title page, table of contents, page numbers, etc must contribute to the quality of presentation.

The essay must not exceed 4,000 words of narrative. Students should be aware that examiners will not read beyond the 4,000-word limit, nor assess any material presented thereafter. Graphs, figures, calculations, diagrams, formulas and equations are not included in the word count.

Criterion D: Presentation. *The Assessment Criteria*

Level	Descriptor
0	The work does not reach a standard outlined by the descriptors below.
1–2	<p>Presentation is acceptable.</p> <ul style="list-style-type: none">- The structure of the essay is generally appropriate in terms of the expected conventions for the topic, argument and subject in which the essay is registered.- Some layout considerations may be missing or applied incorrectly.- Weaknesses in the structure and/or layout do not significantly impact the reading, understanding or evaluation of the extended essay.
3–4	<p>Presentation is good.</p> <ul style="list-style-type: none">- The structure of the essay clearly is appropriate in terms of the expected conventions for the topic, the argument and subject in which the essay is registered.- Layout considerations are present and applied correctly.- The structure and layout support the reading, understanding and evaluation of the extended essay.

Criterion E: Engagement

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student's *Reflections on planning and progress form*.

(Strands: Reflections on planning and progress)

This criterion assesses the student's engagement with their research focus and the research process. It will be applied by the examiner at the end of the assessment of the essay, and is based solely on the candidate's reflections as detailed on the RPPF, with the supervisory comments and extended essay itself as context.

Students are expected to provide reflections on the decision-making and planning process undertaken in completing the essay. Students must demonstrate how they arrived at a topic as well as the methods and approach used. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process and the skills and understandings developed.

For example, students may reflect on:

- the approach and strategies they chose, and their relative success
- the *Approaches to learning* skills they have developed and their effect on the student as a learner
- how their conceptual understandings have developed or changed as a result of their research
- challenges they faced in their research and how they overcame these
- questions that emerged as a result of their research
- what they would do differently if they were to undertake the research again.

Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical and reflective thinking that goes beyond simply describing the procedures that have been followed.

The reflections must provide the examiner with an insight into student thinking, creativity and originality within the research process. The student voice must be clearly present and demonstrate the learning that has taken place.

Criterion E: Engagement. *The Assessment Criteria*

Level	Descriptor
0	The work does not reach a standard outlined by the descriptors below.
1–2	Engagement is limited. <ul style="list-style-type: none">- Reflections on decision-making and planning are mostly descriptive.- These reflections communicate a limited degree of personal engagement with the research focus and/or research process.
3–4	Engagement is good. <ul style="list-style-type: none">- Reflections on decision-making and planning are analytical and include reference to conceptual understanding and skill development.- These reflections communicate a moderate degree of personal engagement with the research focus and process of research, demonstrating some intellectual initiative.
5–6	Engagement is excellent. <ul style="list-style-type: none">- Reflections on decision-making and planning are evaluative and include reference to the student’s capacity to consider actions and ideas in response to setbacks experienced in the research process.- These reflections communicate a high degree of intellectual and personal engagement with the research focus and process of research, demonstrating authenticity, intellectual initiative and/or creative approach in the student voice.