

Investigation 8: Moderator comments

Personal engagement	Exploration	Analysis	Evaluation	Communication	Total
x/2	x/6	x/6	x/6	x/4	x/24
1	3	4	4	4	16

Personal engagement

Mark	Descriptor
1	<ul style="list-style-type: none"> The justification given for choosing the research question and/or the topic under investigation does not demonstrate personal significance, interest or curiosity. 1 There is little evidence of personal input and initiative in the designing, implementation or presentation of the investigation. 1

Moderator's comment

Moderator's award	
1	There is little sign of personal engagement. Though there is some degree of curiosity evident in the introduction there is not much to indicate personal input and initiative.

Exploration

Mark	Descriptor
3–4	<ul style="list-style-type: none"> The topic of the investigation is identified and a relevant but not fully focused research question is described. 3 The background information provided for the investigation is mainly appropriate and relevant and aids the understanding of the context of the investigation. 4 The methodology of the investigation is mainly appropriate to address the research question but has limitations since it takes into consideration only some of the significant factors that may influence the relevance, reliability and sufficiency of the collected data. 3 The report shows evidence of some awareness of the significant safety, ethical or environmental issues that are relevant to the methodology of the investigation*. 3

Moderator's comment

Moderator's award	
3	<p>The research question stated is reasonably clear. It ought to include the fact that a simulation is being used.</p> <p>The background information is relevant.</p> <p>The methodology is restricted by the simulation but it is mainly appropriate.</p>

More substantial data collection could be planned for. More runs at different CO₂ levels would have been useful.

No safety ethical or environmental issues.

Analysis

Mark	Descriptor
3–4	<ul style="list-style-type: none">• The report includes relevant but incomplete quantitative and qualitative raw data that could support a simple or partially valid conclusion to the research question. 3/4• Appropriate and sufficient data processing is carried out that could lead to a broadly valid conclusion but there are significant inaccuracies and inconsistencies in the processing. 3• The report shows evidence of some consideration of the impact of measurement uncertainty on the analysis. 4• The processed data is interpreted so that a broadly valid but incomplete or limited conclusion to the research question can be deduced. 4

Moderator's comment

Insufficient raw data is presented to fully support the conclusion. The plateau is not observed though the larger error bars at the higher light levels may suggest that one is starting which a trend line might have suggested.

Moderator's award 4

There is sufficient processing that would lead to a broadly valid conclusion but rates per unit time could have been calculated and a correlation coefficient would have been useful.

There is some consideration of uncertainties through the calculation of the standard deviations and 95% confidence limits.

The data is correctly interpreted, the proportionality is observed.

Evaluation

Mark	Descriptor
3–4	<ul style="list-style-type: none">• Strengths and weaknesses of the investigation, such as limitations of the data and sources of error, are described and provide evidence of some awareness of the methodological issues involved in establishing the conclusion. 4• The student has described some realistic and relevant suggestions for the improvement and extension of the investigation. 3
5–6	<ul style="list-style-type: none">• A conclusion is described and justified which is relevant to the research question and supported by the data presented. 5

- A conclusion is correctly **described and justified** through relevant comparison to the accepted scientific context. 5

Moderator's comment

The conclusion, supported by the data, is described with some justification.

It is compared to the scientific context to some extent.

**Moderator's
award**
4

Some strengths and weaknesses are described; not all the weaknesses that are identified will have a significant impact (for example, intermediate values).

Some logical improvements missed. For example, run again at lower CO₂ levels. The simulation does not take long so results would be relatively easy to obtain.

There is some suggestion that an experiment on a real plant could be performed to see if the model used is realistic.

Communication

Mark

Descriptor

3–4

- The report is well structured and clear: the necessary information on focus, process and outcomes is present and presented in a coherent way. 4
- The report is relevant and concise thereby facilitating a ready understanding of the focus, process and outcomes of the investigation. 4
- The use of subject-specific terminology and conventions is appropriate and correct. Any errors do not hamper understanding. 3

Moderator's comment

**Moderator's
award**
4

The report is well structured and clear.

The style is concise and relevant.

The candidate uses the conventions correctly most of the time except for CO₂. The graphs are correctly presented.