Investigation 2: The effect of sunlight on biomass

To view the various elements of this example, please use the icons at the side of the screen.

**Note:** The comments in the annotated examples match the labelling on teacher forms.

Investigation 2: Moderator comments

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| **Personal engagement  x/2** | **Exploration  x/6** | **Analysis  x/6** | **Evaluation  x/6** | **Communication  x/4** | **Total  x/24** |
| 1 | 2 | 3 | 2 | 2 | 10 |

**Personal engagement**

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| **Mark** | **Descriptor** |
| 1 | * The justification given for choosing the research question and/or the topic under investigation does not demonstrate **personal significance, interest or curiosity**. 0 * There is little evidence of **personal input and initiative** in the designing, implementation or presentation of the investigation. 1 |
| **Moderator’s award**  1 | **Moderator’s comment**  There is little sign of personal engagement. Though there is some sign of initiative in designing the investigation it is minimal. |

**Exploration**

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| **Mark** | **Descriptor** |
| 1–2 | * The topic of the investigation is identified and a research question of some relevance is **stated but it is not focused**. 2 * The background information provided for the investigation is **superficial** or of limited relevance and does not aid the understanding of the context of the investigation. 2 * The report shows evidence of limited awareness of the significant **safety**, ethical or environmental issues that are **relevant to the methodology of the investigation**. 1 |
| 3–4 | * 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. |
| **Moderator’s award**  2 | **Moderator’s comment**  The research question is presented though it is not focused. The background presented is relevant but incomplete. There is a method presented that is concise and random sampling is used. There is no consideration of the environmental impact of the investigation and working in the sun could be a safety issue. |

**Analysis**

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| **Mark** | **Descriptor** |
| 1–2 | * The report includes **insufficient relevant** raw data to support a valid conclusion to the research question. 2 * The processed data is incorrectly or insufficiently interpreted so that the conclusion is invalid or very incomplete. 2 |
| 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. 3 |
| **Moderator’s award**  3 | **Moderator’s comment**  There is barely sufficient data to support a valid conclusion. Appropriate processing is carried out but it is hard to follow thus it is difficult to accept the interpretation. For example, it is not clear where the standard deviations used as error bars in the graph come from. The precision of the masses is hard to believe. The graphical analysis is appropriate. |

**Evaluation**

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| **Mark** | **Descriptor** |
| 1–2 | * Strengths and weaknesses of the investigation, such as limitations of the data and sources of error, are **outlined** but are restricted to an **account** of **the practical** or **procedural issues** faced. 1 * The student has **outlined** very few realistic and relevant suggestions for the improvement and extension of the investigation. 1 |
| 3–4 | * A conclusion is **described** which is relevant to the research question and supported by the data presented. 3 * A conclusion is described which makes some relevant comparison to the accepted scientific context. 3 |
| **Moderator’s award**  2 | **Moderator’s comment**  A conclusion is drawn that is relevant and, as far as can be judged, is supported by the data. There are a lot of other factors that have not been considered (or controlled), making it difficult to accept the conclusion. There is an attempt to set the conclusion in a scientific context. Some other factors that may have influenced the investigation are identified. These could have been controlled by more appropriate site selection. Some important factors were not considered (the only one mentioned is irrigation and there are no details). The improvements remain vague (bigger samples, longer drying time, more precise measuring methods). |

**Communication**

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| **Mark** | **Descriptor** |
| 1–2 | * The report is not well structured and is unclear: the necessary information on focus, process and outcomes is missing or is presented in an incoherent or disorganized way. 1 * The understanding of the focus, process and outcomes of the investigation is obscured by the presence of inappropriate or irrelevant information. 2 * There are many errors in the use of subject specific terminology and conventions. 2 |
| **Moderator’s award**  2 | **Moderator’s comment**  The investigation is structured but it is mostly superficial and it is not clear in places; in particular, the processing is difficult to follow. Too many steps are missing. The data are displayed respecting the conventions but the terminology is poorly defined. |