# Logbook checkpoints

Max: 30

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Research**  Sources | No sources used or indicated  **0** | Select sources that provide limited information about the chosen topic  **1** | | Selects a few sources that provide some information and evidence on the chosen topic  **2** | Selects a few sources that provide some information and evidence on the chosen topic  **3** | Selects a range of reliable sources that are relevant and useful to the chosen topic  **4** | | Selects a range of reliable sources that are relevant and useful to the chosen topic  **5** |
| **Research**  Notes | No notes provided  **0** | | Make notes that are presented in some order  **1** | | Make notes that contain some links to the research questions, using an appropriate retrieval and/or note-making framework  **2** | | Make notes that are relevant to the research questions, using an appropriate retrieval and/or note-making framework  **3** | |
| **Research**  Hypotheses | No hypothesis or question provided  **0** | | | Formulate a question and/or hypothesis that may not be testable, speciﬁc, relevant or written in the correct format  **1** | | Formulates a speciﬁc and relevant testable question and/or hypothesis, using the correct format  **2** | | |
| **Planning the Investigation**  Plan | No plan provided  **0** | | Presents a plan to collect appropriate data  **1** | | Presents a clear plan, which lacks some detail, to collect valid and reliable data  **2** | | Presents a clear and logical plan to collect valid and reliable data  **3** | |
| **Planning the Investigation**  Risk Assessment | No risk assessment completed  **0** | | Completes a risk assessment, which lacks some detail  **1** | | Completes a detailed risk assessment using an appropriate framework, which lacks some detail  **2** | | Completes a detailed risk assessment using an appropriate framework  **3** | |
| **Conducting the investigation**  Observations | No observations recorded  **0** | | Records limited or inadequate observations and/or raw data  **1** | | Records observations, including raw data  **2** | | Records observations, including raw data, clearly and logically in an appropriate format  **3** | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Processing and analyzing data**  patterns, trends and evidence | No evidence of processing data  **0** | | Provides evidence of processing data to show patterns and relationships  **1** | | Provides evidence of processing data to show patterns and relationships, and analyzing data to describe the patterns and relationships  **2** | |
| **Drawing conclusions**  Conclusions | No conclusions  **0** | Provides evidence of making simple conclusions not supported by evidence and/or related to the question/hypothesis being tested  **1** | | Provides evidence of using data to make and justify conclusions that relate to the question/hypothesis being tested  **2** | | Provides evidence of using data to make and justify conclusions that relate to the question/hypothesis being tested and recognises limitations of the conclusion  **3** |
| **Evaluating evidence**  accuracy, reliability, validity | No evaluation  **0** | | Provides evidence of identifying and describing diﬃculties experienced in conducting the investigation  **1** | | Provides evidence of evaluating the accuracy, reliability and validity of procedures and data  **2** | |
| **Evaluating evidence**  improvements | No improvements provided  **0** | | Suggests general improvements  **1** | | Suggest improvements to the design of the investigation  **2** | |
| **Logbook use**  logbook information recorded | Logbook incomplete  **0** | | Logbook used appropriately and mostly kept up to date  **1** | | Logbook used appropriately and kept up to date, including table of contents, page numbers and dates  **2** | |

# Draft materials and method

Max: 5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Materials**  lists of equipment | No materials provided  **0** | | Provides a complete list of all materials required for the investigation, with quantities  **1** | |
| **Method**  procedure of investigation | No method provided  **0** | With support modiﬁes a procedure to collect appropriate data  **1** | Selects and/or modiﬁes procedures that can be followed to collect appropriate data  **2** | Selects and/or modiﬁes procedures to collect valid and reliable data  **3** |
| **Data collection**  recording data | No data collection provided  **0** | | Outlines a format for recording observations, including raw data  **1** | |

Safety and ethical considerations Max: 10

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Working safely and effectively**  student work individually and in groups | Does not work safely or effectively  **0** | Acts safely most of the time and works with limited effectiveness individually and in groups  **1** | | Acts safely and works with a degree of effectiveness in both individually and in groups, most of the time  **2** | | Acts safely and works with a degree of effectiveness both individually and in groups  **3** | | Acts safely and works effectively both individually and in groups when conducting the investigation  **4** |
| **Risk Assessment**  assess and manage risks | No risk assessment conducted  **0** | | Manages ethical considerations to ensure the safe collection of data  **1** | | Assesses and manages ethical considerations to ensure the safe collection of data  **2** | | Assesses and manages ethical considerations, in detail, to ensure the safe collection of data  **3** | |
| **Standard operating procedures**  directions of what to do | No standard operating procedures provided  **0** | | Follows directions for the safe use of equipment and techniques to collect data with some precision, accuracy and consistency  **1** | | Uses standard operating procedures with some precision, accuracy and consistency to collect data  **2** | | Uses standard operating procedures with precision, accuracy and consistency to ensure the safe collection of valid and reliable data  **3** | |

Group contributions Max 5

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Group work**  completion of tasks | Does not complete tasks  **0** | Completes some required tasks to a satisfactory level, with most tasks incomplete or poorly completed  **1** | | Completes most required tasks to a satisfactory level, with some tasks incomplete or poorly completed  **2** | | Completes all required tasks to a satisfactory level  **3** |
| **Group work**  understanding of investigation | Has no understanding of the investigation  **0** | | Demonstrates a minimal understanding of the investigation and investigation process  **1** | | Demonstrates an appropriate understanding of the investigation and investigation process  **2** | |

Poster presentation Max: 15

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Presentation**  general presentation | No poster produced  **0** | Provides an explanation of scientiﬁc ideas, the investigation and investigation process, using everyday language, and demonstrating some understanding of the investigation | | | Provides a general explanation of scientiﬁc ideas, the investigation and investigation process, using some scientiﬁc language, and demonstrating some understanding of the investigation | | Provides a general explanation of scientiﬁc ideas, the investigation and investigation process, using some correct scientiﬁc language, conventions, and representations, and demonstrating some understanding of the investigation  **3** | | | Clearly, concisely and accurately explains scientiﬁc ideas, the investigation and investigation process, using correct scientiﬁc language, conventions and representations, and demonstrating a thorough understanding of the investigation  **4** |
|  | **1** | | | **2** | |
| **Audience response** | Does not answer questions  **0** | | | Responds to audience questions  **1** | | | | Responds appropriately to audience questions  **2** | | |
| responds to questions |
|  | | | | | | | | | |
| **Poster**  summary | No summary provided  **0** | Provides a general summary of the investigation  **1** | | | Provides a general summary of the investigation that includes the purpose of the investigation, a brief outline of the method and conclusions  **2** | | Provides a summary of the investigation that includes the purpose of the investigation, a brief outline of the method and conclusions  **3** | | | Succinctly provides a summary of the investigation that includes the purpose of the investigation, a brief outline of the method and conclusions  **4** |
| **Poster**  written information | No scientiﬁc language  **0** | | Presents written information using correct everyday language and representations  **1** | | | Presents written information using some correct scientiﬁc language, conventions and representations  **2** | | | Clearly and concisely presents written information using correct scientiﬁc language, conventions and representations  **3** | |

|  |  |  |  |
| --- | --- | --- | --- |
| **Poster**  presentation of information | Written information is absent  **0** | Displays written information that is not all legible and/or visible from the required distance  **1** | Displays written information that is legible and visible from the required distance  **2** |

# Written report Max: 35

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Abstract**  summary of investigation | No abstract provided  **0** | | Writes a general summary of the investigation  **1** | | | Writes a summary of the investigation that includes the purpose of the investigation, a brief outline of the method and conclusions  **2** | | | Succinctly writes a summary of the investigation that includes the purpose of the investigation, a brief outline of the method and conclusions  **3** | |  |
| **Introduction**  Introduction of written report | No introduction provided  **0** | | Writes a general introduction that summarizes the background information related to the investigation using correct everyday language  **1** | | | Writes a general introduction that summarizes the background information related to the investigation using some correct scientiﬁc language, conventions and representations  **2** | | | Succinctly writes an introduction that summarizes the background information related to the investigation using correct scientiﬁc language, conventions and representations  **3** | |  |
| **Introduction**  Hypothesis / Question | No hypothesis / question provided  **0** | | | Attempts to write a testable question and/ or hypothesis  **1** | | | | Writes a testable question and/or hypothesis  **2** | | |  |
| **Materials and method**  Materials list | No materials list provided  **0** | | Provides a list of all materials required for the investigation, which may be incomplete, without quantities  **1** | | | Provides an incomplete list of all materials required for the investigation, with quantities  **2** | | | Provides a complete list of all materials required for the investigation, with quantities  **3** | |  |
| **Materials and methods**  Method / procedure | No method or procedure provided  **0** | With support modiﬁes a procedure to collect appropriate data  **1** | | | Selects and/or modiﬁes procedures that can be followed to collect appropriate data  **2** | | Selects and/or modiﬁes procedures to provide plan to collect valid and reliable data, which may lack some detail  **3** | | | Selects and/or modiﬁes procedures to provide a clear and logical plan to collect valid and reliable data  **4** |  |
|  | | | | | | | | | | |  |
| **Results**  data collected and organised | No data provided  **0** | | Presents data to show patterns and relationships and if applicable, plots data in a graph  **1** | | | Presents data to show patterns and relationships, including recording raw data; and if applicable, carries out simple processing of raw data and plots data in an appropriate graph  **2** | | | Organises data logically in appropriate formats to show patterns and relationships, including recording raw data in an appropriate format; and if applicable, carries out simple processing of raw data and plots data in an appropriate graph  **3** | |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Discussion** | No patterns and relationships discussed  0 | Describes the patterns and relationships  **1** | | | Describes the patterns and relationships using data collected  **2** | | Describes the patterns and relationships using data collected and identifies errors and limitations in data  **3** |
| Patterns and relationships |
| **Discussion**  evaluation of investigation | No evaluation of investigation provided  **0** | Evaluates the investigation by identifying diﬃculties experienced when conducting the investigation  **1** | | | Evaluates the investigation by describing diﬃculties experienced when conducting the investigation  **2** | | Evaluates the investigation discussing the relevance, accuracy, validity and reliability of the data  **3** |
| **Discussion** | No improvements or suggestions provided | | **0** | Suggests general improvements to the investigation  **1** | | Suggests general improvements to the investigation  **2** | |
| Improvements / suggestions |
| **Conclusion** | No conclusion provided  **0** | Makes a conclusion and doesn’t relate conclusion to the question and/or hypothesis being tested  **1** | | | Makes a conclusion and relates conclusion to the question and/or hypothesis being tested  **2** | | Makes a conclusion and relates conclusion to the question and/or hypothesis being tested and recognises limitations of conclusions.  3 |
| Conclusion in relation to hypothesis |
| **Bibliography**  List of resources | No Bibliography  **0** | | | Provides a bibliography that includes inaccuracies or is inconsistent with school protocols  **1** | | Provides a bibliography that is consistent with school protocols  **2** | |

|  |  |  |  |
| --- | --- | --- | --- |
| **Communication**  Scientiﬁc language and communication | No understanding of investigation or relevant terminology  **0** | Communicates understandings and investigation ﬁndings using appropriate genre conventions  **1** | Communicates understandings and investigation ﬁndings using concise use of scientiﬁc language and representations  **2** |