Stage 2 Scientific Studies: Assessment Type 3: Individual Inquiry

**External Assessment – Individual Inquiry (30%)**

***“Water for the people”***

The purpose of this task is to work individually to conduct a science investigation or engineering design related to an area you have studied and produce a report that explain your findings.

**Task**

This task follows on from the ‘Individual Inquiry Design Proposal’ that you have already completed during Assessment Type 1. Your teacher should have already provided you with some feedback. The task is broken down into three phases:

**Phase 1: Proposal improvements**

* Use your original design proposal and, using your teacher’s feedback, make improvements or changes as needed.
* Ensure you record the changes or improvements you make to your engineering design solution.

**Phase 2: Conduct your practical**

* Carry out your practical or implement your designed solution, test it and (time permitting) improve it.
* It is important that you record your efforts, results and your improvements well. Detailed written notes, mobile phone photos, video and audio notes are examples of ways to record your efforts. The more detailed your records the easier it will be for you to produce a comprehensive final scientific report.

**Phase 3: Final report (this is sent away for assessment)**

You must present an individual practical report that:

1. introduces your investigation and provides the basis for doing it
2. summarises the design of your investigation or model(s), identifying any modifications made to the procedure because of feedback from your teacher,
3. presents relevant data conventionally,
4. analyses all data obtained,
5. evaluates the method or model(s) used, and
6. draws a justified conclusion and considers the limitations of the investigation

If the results are unexpected, you should discuss the reasons for these results as part of your evaluation.

**Assessment conditions**

* The word limit is 1500 words (if written) or 9 minutes if in oral form (or equivalent in multimodal form) for the **introduction, analysis of results, evaluation of procedures, and conclusion with justification sections of the report.**
* **The final report will be submitted electronically**. You must submit your full report electronically using the following naming protocol:

*SACE registration number-2STU20-AT3-individual inquiry*

* If you are doing an oral presentation it will be necessary to record it for assessment.
* Any accompanying PowerPoint slides or such will also need to accompany the video file. You are responsible for ensuring your final report is submittable in electronic format – communicate/negotiate any needs, such as video recording, with your teacher.

**Assessment Design Criteria**

Your report will be assessed against the following Performance Standards

* Investigation, Analysis, and Evaluation: IAE 2, 3, 4
* Knowledge and Application: KA 1, 4

**Considerations**

* TheIndividual Inquiry is a project done individually; the practical component and scientific report are individual efforts. You are not permitted to work with your classmates on **any** aspect of this task.
* Your final report (not including the design proposal) will be assessed externally, not by a teacher from your school. This person won’t know you personally or the effort you have gone to.
* The quality of your communication will have a direct reflection on your grade. Your report is the only evidence the external assessor will have of your efforts in the engineering design process and your understanding of the scientific method.
* Additional detail such as pictures and diagrams will enhance your report and help communicate your progress.
* Hard work needs to be put into the practical phase and the final report – a report slim on detail will be unlikely to achieve decent grades.

**Performance Standards for Stage 2 Scientific Studies**

| - | **Investigation, Analysis, and Evaluation** | **Knowledge and Application** |
| --- | --- | --- |
| **A** | **Critically** deconstructs a problem and designs a **logical**, **coherent**, and **detailed** scientific investigation using a scientific method and/or engineering design process.  Obtains, records, and represents data, using **appropriate** procedures, conventions and formats **accurately** and **highly** **effectively**.  **Systematically** analyses and interprets data and evidence to formulate **logical** conclusions with **detailed** justification.  **Critically** and **logically** evaluates procedures and their effect on data.  **Critically** and **perceptively** evaluates the effectiveness of collaboration and its impact on results/outcomes. | Demonstrates **deep and broad** knowledge and understanding of a **range** of science inquiry skills and scientific concepts.  Applies science inquiry skills and scientific concepts **highly** **effectively** in new **and** familiar contexts.  **Critically** explores and understands in **depth** the interaction between science and society.  Communicates knowledge and understanding of science concepts coherently, with **highly effective** use of **appropriate** terms, conventions, and representations. |
| **B** | **Logically** deconstructs a problem and designs a **well**-**considered** and **clear** scientific investigation using a scientific method and/or engineering design process.  Obtains, records, and represents data, using **appropriate** procedures, conventions and formats **mostly** **accurately** and **effectively**.  **Logically** analyses and interprets data and evidence to formulate **suitable** conclusions with **reasonable** justification.  **Logically** evaluates procedures and their effect on data.  **Critically** evaluates the effectiveness of collaboration and its impact on results/outcomes. | Demonstrates **some depth and breadth** of knowledge and understanding of a **range** of science inquiry skills and scientific concepts.  Applies science inquiry skills and scientific concepts **mostly effectively** in new **and** familiar contexts.  **Logically** explores and understands in **some depth** the interaction between science and society.  Communicates knowledge and understanding of science concepts with **mostly coherent and effective** use of appropriate terms, conventions, and representations. |
| **C** | Deconstructs a problem and designs a **considered** and **generally** **clear** scientific investigation using a scientific method and/or engineering design process.  Obtains, records, and represents data, using **generally** **appropriate** procedures, conventions and formats with **some** **errors** but **generally accurately and effectively**.  Undertakes **some** analysis and interpretation of data and evidence to formulate **generally appropriate** conclusions with **some** justification.  Evaluates procedures and **some** of their effect on data.  Evaluates the effectiveness of collaboration and its impact on results/outcomes. | Demonstrates knowledge and understanding of a **general range** of science inquiry skills and scientific concepts.  Applies science inquiry skills and scientific concepts **generally effectively** in new **or** familiar contexts.  Explores and understands **aspects** of the interaction between science and society.  Communicates knowledge and understanding of science concepts with **generally effective** use of appropriate terms, conventions, and representations. |
| **D** | Prepares a **basic** deconstruction of a problem and an **outline** of a scientific investigation using a scientific method and/or engineering design process.  Obtains, records, and represents data, using procedures, conventions, and formats **inconsistently**, with **occasional accuracy and effectiveness.**  **Describes** data and undertakes some **basic** interpretation to formulate a **basic** conclusion.  **Attempts** to evaluate procedures or **suggest** an effect on data.  **Attempts** to evaluate the effectiveness of collaboration and its impact on results/outcomes. | Demonstrates **some basic** knowledge and **partial** understanding of science inquiry skills and scientific concepts.  Applies **some** science inquiry skills and scientific concepts in **familiar** contexts.  **Partially** explores and **recognises** aspects of the interaction between science and society.  Communicates basic scientific information, using **some** appropriate terms, conventions, **and/or** representations. |
| **E** | **Attempts** a **simple** deconstruction of a problem and a procedure for a scientific investigation using a scientific method and/or engineering design process.  **Attempts** to use **some** procedures and record and represent some data, with **limited** accuracy or effectiveness.  **Attempts** to **describe** results **and/or** interpret data to formulate a basic conclusion.  **Acknowledges** that procedures affect data.  **Acknowledges** the effectiveness of collaboration and its impact on results/outcomes. | Demonstrates **limited** recognition and **awareness** of science inquiry skills **and/or** scientific concepts.  **Attempts** to apply science inquiry skills **and/or** scientific concepts in **familiar** contexts.  **Attempts** to explore and identify **an aspect** of the interaction between science and society.  **Attempts** to communicate **information** about science. |