**Stage 1 Scientific Studies: Collaborative Inquiry**

**Glass/Mug Storage**

Different people have different ideas about how drinking glasses or mugs should be hygienically stored. Some people believe they should be stored upright, others that they should be face down. Some mugs are stored on hooks and others in boxes.

In this task, you will work in a small group to deconstruct the problem, then design and conduct an investigation to make a recommendation about how drinking containers should be stored.

**Part A**

As a group, you will need to:

* deconstruct the problem to determine factors that need to be considered and the most appropriate method for investigation
* formulate investigable questions, hypotheses, or proposed solution
* identify the variables
* select and test or trial, and using appropriate equipment, apparatus, and techniques
* determine what measurements will be required and how they will be made.

*Individually* you will need to maintain a personal journal in which you record:

* the deconstruction of the problem, the initial thinking and ideas
* evidence of your contribution to the project with supporting documentation on the application of your collaborative skills (this may include, for example, minutes of group meetings)
* the group design
* representation(s) of the data collected by the group
* preliminary analysis and interpretation of the results/outcome
* connections between results and scientific concepts.

The journal can be no more than eight A4 pages if written or the equivalent in multimodal form.

Pages should be single-sided A4 with minimum font size 10. Page reduction, such as two A4 pages reduced to fit on one A4 page is not acceptable.

**Part B**

Your *group* will collaborate to undertake the testing of your hypothesis or proposed solution.

**Part C**

You will *individually* evaluate the collaborative inquiry. This evaluation should include:

* a summary of the design and hypothesis
* an evaluation of the procedures and results/outcome
* an evaluation of the effectiveness of collaboration and its impact on results/outcomes
* a conclusion with justification and the consideration of possible limitations.

When thinking about the effectiveness of the collaboration within your group, you may wish to consider:

* what went well because of collaboration (with reasons)?
* what aspect of the collaboration would you change (and why)?
* what problem the group needed to solve and how the group went about solving the problem?

You may choose to:

* record the evaluation
* prepare a multimodal presentation

The pitch, defence, or justification should be a maximum of 3 minutes per student if oral or the equivalent if multimodal and can include, for example, a recorded conversation with their teacher and/or other students, an oral or multimodal equivalent.

**Assessment conditions**

If you are submitting your evidence electronically, use the following naming protocol:

*SACE registration number-2STU20-AT1-collaborative inquiry journal*

*SACE registration number-2STU20-AT1-collaborative inquiry evaluation*

**Assessment Design Criteria**

Your report will be assessed against the following Performance Standards

* Investigation, Analysis, and Evaluation: IAE 1, 2, 3, 4, 5

Performance Standards for Stage 1 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. |