## Stage 1 Biology

## Investigation Folio Task: Science as a Human Endeavour

Biology in the Garden

**Introduction and Purpose of task:**

Science as a Human Endeavour (SHE) explores the interaction between science and society. This interaction may occur in a number of ways. The focus of the interaction between science and society for this task is primarily (*taken from pages 12 and 13 of the subject outline*):

**Influence**

* The acceptance and use of scientific knowledge can be influenced by social, economic, cultural, and ethical considerations.

**Application and Limitation**

* Scientific knowledge, understanding, and inquiry can enable scientists to develop solutions, make discoveries, design action for sustainability, evaluate economic, social, and environmental impacts, offer valid explanations, and make reliable predictions.
* Science informs public debate and is in turn influenced by public debate; at times, there may be complex, unanticipated variables or insufficient data that may limit possible conclusions.

Science has an important role in plant conservation. Plant conservation is an important aspect of maintaining diversity and it can be achieved in different ways. Botanic gardens play a part in plant conservation and preserving natural habitat is another way in which plant species can be protected.

In this task, you will:

* explore the key concepts of science as a human endeavour related to preserving plant species by *either* botanic gardens *or* the preservation of natural habitats
* undertake a search for information (articles, data, or other information) that you could use to support your discussion and justify your conclusions. Record the resources in a reference list
* choose the format of your work: scientific article, expert report, oral presentation, or discuss another alternative with your teacher.

**Part A: Research and Planning**

Choose from one of the alternatives below.

**Option 1.** ***Botanic Gardens Focus***

Prepare a submission for funding for a new botanical garden to preserve plant species. The botanic garden referred to in your submission may relate to a single ecosystem such as a desert, mallee scrub, wetlands or a combination of different ecosystems.

You will need to consider:

* which key concept(s) of SHE you will explore in this task
* the type of ecosystem(s) to be included in the new botanic garden and how this link(s) to the SHE focus that you have chosen
* the biological concepts relevant to the type of ecosystem you have chosen and the types of plants that it could be used to preserve
* the evidence that will help to persuade your audience that funding for the garden is justified
* what format your submission will take.

*Or*

**Option 2**. *Habitat preservation focus*

Prepare a submission to the local council for the preservation of rare and endangered native plant such as a native orchid, a fungus that has special requirements, or a species of tree that has been found in an area that is due to be cleared for a new housing development.

You will need to consider:

* which key concept(s) of SHE you will explore in this task
* the type of species that is threatened by the housing development and the link(s) to the SHE focus that you have chosen
* relevant biology concepts and background information for the submission
* evidence based on the SHE focus you have chosen that will help to persuade the council that preservation of the endangered plant species is justified
* what format your submission will take.

Prepare an outline of your submission based on Option 1 or Option 2. Check with your teacher for advice on your outline before you proceed.

Date Due: \_\_\_\_\_\_\_\_\_\_\_\_

**Part B: Completion of the submission**

This part is completed after Part A has been submitted and feedback provided.

Due Date: \_\_\_\_\_\_\_\_\_\_\_\_\_

Your submission should include:

* an introduction that identifies the reason for your submission and the link(s) to the SHE focus that you have chosen
* relevant biology concepts and background information
* scientific evidence based on the SHE focus you have chosen that will help to persuade your audience to show the interaction between science and society
* a conclusion
* in-text referencing and reference list using appropriate referencing conventions

The rare and endangered species in your submission may be, for example, a very small plant such as. You will need to identify the *type* of plant.

**Assessment Conditions:**

* 3 weeks to complete
* Class time for research and support
* You may submit one draft for feedback. This does not include the feedback on your outline.
* Word Count: maximum of 1000 words for Part B, if written, 6 minutes for an oral presentation, or equivalent if multimodal.

**Assessment Design Criteria**

Knowledge and Application: KA1, 2, 3, 4

**Performance Standards**

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| --- | --- | --- |
|  | Investigation, Analysis and Evaluation | Knowledge and Application |
| A | Critically deconstructs a problem and designs a logical, coherent, and detailed biological investigation.  Obtains, records, and represents data, using appropriate 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. | Demonstrates deep and broad knowledge and understanding of a range of biological concepts.  Applies biological 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 biology coherently, with highly effective use of appropriate terms, conventions, and representations. |
| B | Logically deconstructs a problem and designs a well-considered and clear biological investigation.  Obtains, records, and represents data, using appropriate 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. | Demonstrates some depth and breadth of knowledge and understanding of a range of biological concepts.  Applies biological 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 biology mostly coherently, with effective use of appropriate terms, conventions, and representations. |
| C | Deconstructs a problem and designs a considered and generally clear biological investigation.  Obtains, records, and represents data, using generally appropriate 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. | Demonstrates knowledge and understanding of a general range of biological concepts.  Applies biological concepts generally effectively in new or familiar contexts.  Explores and understands aspects of the interaction between science and society.  Communicates knowledge and understanding of biology generally effectively, using some appropriate terms, conventions, and representations. |
| D | Prepares a basic deconstruction of a problem and an outline of a deconstruction and biological investigation.  Obtains, records, and represents data, using 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. | Demonstrates some basic knowledge and partial understanding of biological concepts.  Applies some biological concepts in familiar contexts.  Partially explores and recognises aspects of the interaction between science and society.  Communicates basic biological information, using some appropriate terms, conventions, and/or representations. |
| E | Attempts a simple deconstruction of a problem and a procedure for a biological investigation.  Attempts to 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. | Demonstrates limited recognition and awareness of biological concepts.  Attempts to apply biological concepts in familiar contexts.  Attempts to explore and identify an aspect of the interaction between science and society.  Attempts to communicate information about biology. |