Stage 1 Biology
Science as a Human Endeavour

Author: Simone Burzacott-Gorman

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STAGE 1 Biology - Science as a Human Endeavour Task Sheet

PURPOSE

In this task you will investigate an aspect of contemporary Biology (Research conducted on the RV Investigator: CSIRO Marine Research Vessel) with a particular emphasis on the interaction between society and science.

You will need to select and explore a recent discovery, innovation, issue or advancement on RV Investigator. You will analyse and synthesise information from a range of sources to explain the science relevant to the focus of your investigation, show its connections to science as a human endeavor and develop and justify your own conclusions. You will present your research findings and conclusions as a scientific journal which must include the use of scientific terminology*.

Your research, findings and outcome should have a focus on at least one of the key concepts of Science as a Human Endeavour in the following diagram.

(Diagram created by Simone Burzacott-Gorman, Wilderness School after SACE Stage 2 Biology Subject Outline 2019: https://www.sace.sa.edu.au/web/biology/overview)

*Scientific knowledge, understanding and inquiry can enable scientists to develop solutions, make discoveries, design action for sustainability, evaluate economic, social, cultural and environmental impacts, offer valid explanations and make reliable predictions.

The use of scientific knowledge may have beneficial or unexpected consequences; this requires monitoring, assessment and evaluation of risk and provides opportunities for innovation.

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.
Part A: Inspiration Springboard


Not all the blogs are centralised on the Investigator page – refine your articles search by reviewing separate voyages

- [https://research.csiro.au/educator-on-board/](https://research.csiro.au/educator-on-board/)
- [https://research.csiro.au/educator-on-board/category/voyage-in2017_v05/](https://research.csiro.au/educator-on-board/category/voyage-in2017_v05/)
- [https://research.csiro.au/educator-on-board/category/in2018-t02/](https://research.csiro.au/educator-on-board/category/in2018-t02/)


Consider the technology, ethics, benefit to humans, costs, environmental concerns etc. of this topic of interest. Keep the 4 SHE concepts at the forefront of your mind.

3. Link your chosen focus to one or two of the key concepts of SHE. Use the diagram template to record links between the article and SHE areas. NOTE: This will be difficult when the topic and statement don’t have a clear relationship

Part B: Refinement of Chosen Focus

4. Search for articles, data or other information that you could use to support your discussion. Collected references should enable you to provide a comprehensive and detailed report, with highly relevant biology.

5. Record the resources in a reference list using Harvard Referencing, for future reference.

Part C: Scientific Communication

Your report must include:

- an introduction, to identify the focus of the investigation and the key concepts of science as a human endeavour that it links to (approx. 100 words)
- relevant biology concepts or background (this should support your report but not be the focus) (approx. 100 words)
- an explanation of how the focus of the investigation illustrates the interaction between science and society
- a discussion of the potential impact or application of the focus of the investigation, e.g. further development, effect on quality of life, environmental implications, economic and/or social impact, influence on human activities, etc.
- a conclusion (approx. 100 words)
- citations and referencing.

Assessment Conditions:
Students may submit one draft of the final scientific communication for feedback.

Word Count: maximum of 1500 words for Part C.
Assessment Design Criteria to be Assessed:

<table>
<thead>
<tr>
<th>Assessment Type: Science as a Human Endeavour</th>
<th>Assessment Conditions</th>
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<tbody>
<tr>
<td><strong>Science as a Human Endeavour Task</strong></td>
<td>4 weeks to complete. Class time provided for research and support.</td>
</tr>
<tr>
<td>In this task you will investigate and demonstrate a comprehensive understanding of science as a human endeavour in Biology related to any of the topics in Stage 1 Biology. The focus of this task is to explore an aspect of contemporary Biology with a particular emphasis on the interaction between society and, for example, the application and use of biological knowledge, the influence and development of new technologies, or the design of solutions to problems. You will use and acknowledge a variety of relevant sources to find data and information to support your chosen topic. You may choose to present your research findings as either an article in a scientific journal, as a written report providing an expert’s point of view, an analysis of a new development in a field or a concern about a development that has economic, social, environmental or political implications on any aspect related to any topic in the Stage 1 Biology science understandings. Your research, findings and outcome should have a focus on at least two of the key concepts of Science as a Human Endeavour.</td>
<td>Students may submit one draft of the final scientific communication for feedback. This does not include the checkpoints and plan. Verification of student work will occur throughout the task. Word Count: maximum of 1500 words for Part C or 10 minutes for an oral presentation.</td>
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<table>
<thead>
<tr>
<th>SPECIFIC FEATURES</th>
<th>COMMENT</th>
<th>Grade</th>
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<tbody>
<tr>
<td>IAE 3 Analysis, Analysis and interpretation of data and other evidence to formulate and justify conclusions</td>
<td></td>
<td></td>
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<tr>
<td>KA 1 Demonstration of knowledge and understanding of biological concepts</td>
<td></td>
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<tr>
<td>KA 3 Critical exploration and understanding in depth of the interaction between science and society.</td>
<td></td>
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<tr>
<td>KA 4 Communication of knowledge and understanding of biological concepts and information, using appropriate terms, conventions and representations</td>
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<tr>
<td>SPECIFIC FEATURES</td>
<td>A</td>
<td>B</td>
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<tr>
<td><strong>IAE 1</strong> Deconstruction of a problem and design of a biological investigation</td>
<td>Critically deconstructs a problem and designs a logical, coherent, and detailed biological investigation.</td>
<td>Logically deconstructs a problem and designs a well-considered and clear biological investigation.</td>
</tr>
<tr>
<td><strong>IAE 2</strong> Obtaining, recording and representation of data, using appropriate conventions and formats</td>
<td>Obtains, records and represents data, using appropriate conventions and formats accurately and highly effectively</td>
<td>Obtains, records and represents data, using appropriate conventions and formats mostly accurately and effectively</td>
</tr>
<tr>
<td><strong>IAE 3</strong> Analysis and interpretation of data and other evidence to formulate and justify conclusions</td>
<td>Systematically analyses and interprets data and evidence to formulate logical conclusions with detailed justification</td>
<td>Logically analyses and interprets data and evidence to formulate suitable conclusions with reasonable justification</td>
</tr>
<tr>
<td><strong>IAE 4</strong> Evaluation of procedures and their effect on data</td>
<td>Critically and logically evaluates procedures and their effect on data</td>
<td>Logically evaluates procedures and their effect on data</td>
</tr>
<tr>
<td><strong>KA 1</strong> Demonstration of knowledge and understanding of biological concepts</td>
<td>Demonstrates deep and broad knowledge and understanding of a range of biological concepts</td>
<td>Demonstrates some depth and breadth of knowledge and understanding of a general range of biological concepts</td>
</tr>
<tr>
<td><strong>KA 2</strong> Application of biological concepts in new and familiar contexts</td>
<td>Applies biological concepts highly effectively in new and familiar contexts.</td>
<td>Applies biological concepts mostly effectively in new and familiar contexts.</td>
</tr>
<tr>
<td><strong>KA 3</strong> Exploration and understanding of the interaction between science and society</td>
<td>Critically explores and understands in depth the interaction between science and society</td>
<td>Logically explores and understands in some depth the interaction between science and society</td>
</tr>
<tr>
<td><strong>KA 4</strong> Communication of knowledge and understanding of biological concepts and information, using appropriate terms, conventions and representations</td>
<td>Communicates knowledge and understanding of biology coherently, with highly effective use of appropriate terms, conventions and representations</td>
<td>Communicates knowledge and understanding of biology mostly coherently, with effective use of appropriate terms, conventions and representations</td>
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</tbody>
</table>

(After: SACE Stage 2 Biology Performance Standards 2019
https://www.sace.sa.edu.au/web/biology/overview)
References:


*Canva has good templates for this* [https://www.canva.com/](https://www.canva.com/)

Users need to sign up with a Google account or an email address.