

# Stage 1 Biology

# Science as a Human Endeavour

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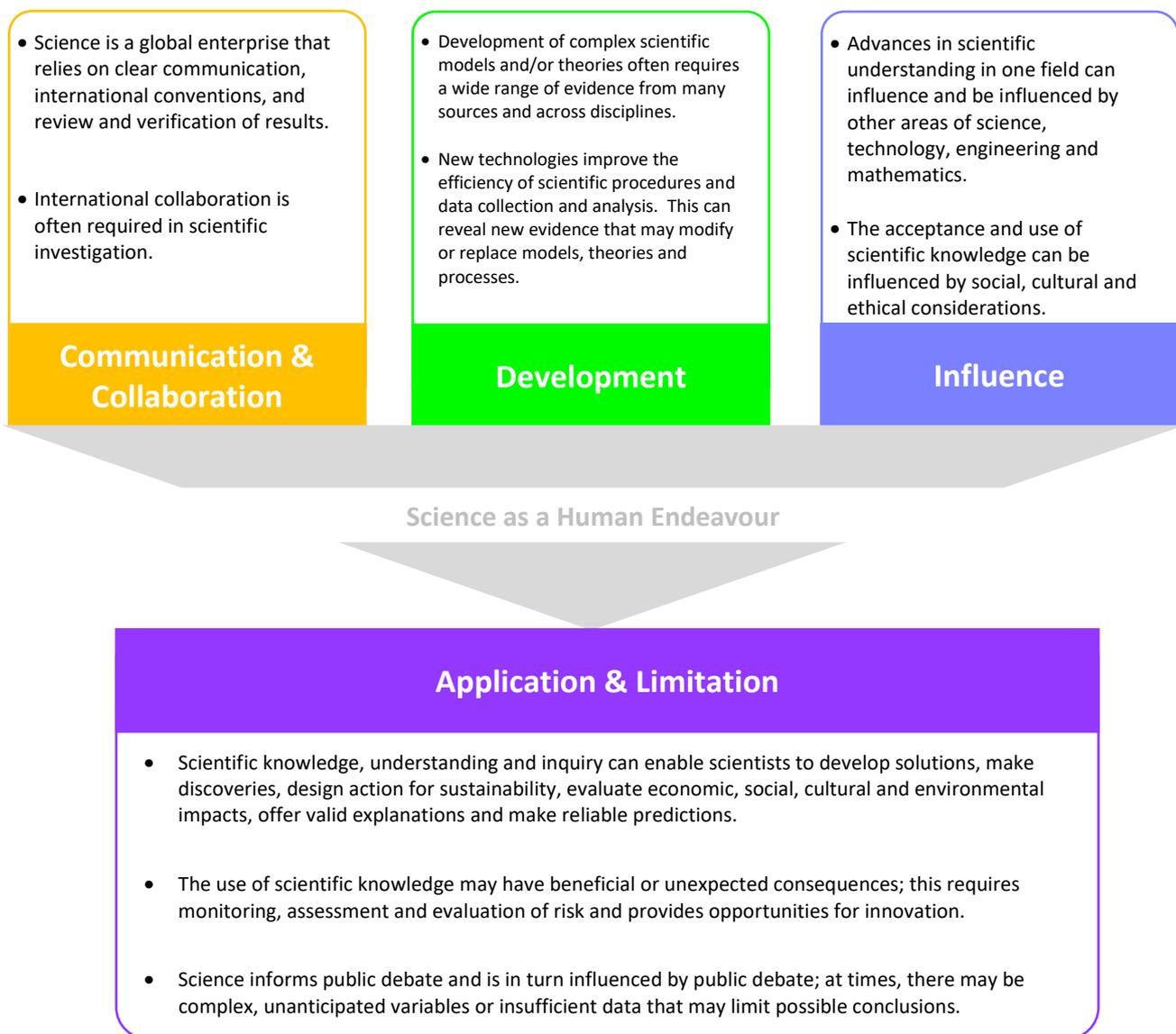
## STAGE 1 Biology - Science as a Human Endeavour Task Sheet

### 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.



## **Part A: Inspiration Springboard**

1. Use the CSIRO RV *Investigator* Website as a spring board for finding a contemporary biological research project <https://www.csiro.au/en/Research/Facilities/Marine-National-Facility/RV-Investigator>

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/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/>

2. Use the Lib Guide: <https://libguides.wilderness.com.au/12BioSHE/task> to find supporting published articles

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.**

<b>SACE NUMBER:</b>		<b>SCHOOL NUMBER 308</b>	
<b>Assessment Type: Science as a Human Endeavour</b>		<b>Assessment Conditions</b>	
<p><b>Science as a Human Endeavour Task</b></p> <p><i>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.</i></p> <p><i>You will use and acknowledge a variety of relevant sources to find data and information to support your chosen topic.</i></p> <p><i>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.</i></p> <p><i>Your research, findings and outcome should have a focus on at least two of the key concepts of Science as a Human Endeavour.</i></p>		<p>4 weeks to complete. Class time provided for research and support.</p> <p>Students may submit one draft of the final scientific communication for feedback. This does not include the checkpoints and plan.</p> <p>Verification of student work will occur throughout the task.</p> <p>Word Count: maximum of 1500 words for Part C or 10 minutes for an oral presentation.</p>	

### Assessment Design Criteria to be Assessed:

SPECIFIC FEATURES			COMMENT	Grade
Investigation, Analysis & Evaluation	IAE 3	Analysis and interpretation of data and other evidence to formulate and justify conclusions		
Knowledge & Application	KA 1	Demonstration of knowledge and understanding of biological concepts		
	KA 3	Critical exploration and understanding in depth of the interaction between science and society.		
	KA 4	Communication of knowledge and understanding of biological concepts and information, using appropriate terms, conventions and representations		

SPECIFIC FEATURES		A	B	C	D	E	
Investigation, Analysis and Evaluation	IAE 1	<b>Deconstruction of a problem and design of a biological investigation</b>	Critically deconstructs a problem and designs a logical, coherent, and detailed biological investigation.	Logically deconstructs a problem and designs a well-considered and clear biological investigation.	Deconstructs a problem and designs a considered and generally clear biological investigation.	Prepares a basic deconstruction of a problem and an outline of a biological investigation.	Attempts a simple deconstruction of a problem and a procedure for a biological investigation.
	IAE 2	<b>Obtaining, recording and representation of data, using appropriate conventions and formats</b>	Obtains, records and represents data, using appropriate conventions and formats accurately and highly effectively	Obtains, records and represents data, using appropriate conventions and formats mostly accurately and effectively	Obtains, records and represents data, using generally appropriate conventions and formats with some errors but generally accurately and effectively	Obtains, records and represents data, using conventions and formats inconsistently, with occasional accuracy and effectiveness	Attempts to record and represent some data, with limited accuracy or effectiveness
	IAE 3	<b>Analysis and interpretation of data and other evidence to formulate and justify conclusions</b>	Systematically analyses and interprets data and evidence to formulate logical conclusions with detailed justification	Logically analyses and interprets data and evidence to formulate suitable conclusions with reasonable justification	Undertakes some analysis and interpretation of data and evidence to formulate generally appropriate conclusions with some justification	Describes data and undertakes some basic interpretation to formulate a basic conclusion	Attempts to describes results and/or interpret data to formulate a basic conclusion
	IAE 4	<b>Evaluation of procedures and their effect on data</b>	Critically and logically evaluates procedures and their effect on data	Logically evaluates procedures and their effect on data	Evaluates procedures and some of their effect on data	Attempts to evaluate procedures or suggest an effect on data	Acknowledges that procedures affect data
Knowledge and Application	KA 1	<b>Demonstration of knowledge and understanding of biological concepts</b>	Demonstrates deep and broad knowledge and understanding of a range of biological concepts	Demonstrates some depth and breadth of knowledge and understanding of a range of biological concepts	Demonstrates knowledge and understanding of a general range of biological concepts	Demonstrates some basic knowledge and partial understanding of biological concepts	Demonstrates limited recognition and awareness of biological concepts
	KA 2	<b>Application of biological concepts in new and familiar contexts</b>	Applies biological concepts highly effectively in new and familiar contexts.	Applies biological concepts mostly effectively in new and familiar contexts.	Applies biological concepts generally effectively in new or familiar contexts.	Applies some biological concepts in familiar contexts.	Attempts to apply biological concepts in familiar contexts.
	KA 3	<b>Exploration and understanding of the interaction between science and society</b>	Critically explores and understands in depth the interaction between science and society	Logically explores and understands in some depth the interaction between science and society	Explores and understands aspects of the interaction between science and society	Partially explores and recognises aspects of the interaction between science and society	Attempts to explore and identify an aspect of the interaction between science and society
	KA 4	<b>Communication of knowledge and understanding of biological concepts and information, using appropriate terms, conventions and representations</b>	Communicates knowledge and understanding of biology coherently, with highly effective use of appropriate terms, conventions and representations	Communicates knowledge and understanding of biology mostly coherently, with effective use of appropriate terms, conventions and representations	Communicates knowledge and understanding of biology generally effectively using some appropriate terms, conventions and representations	Communicates basic biological information, using some appropriate terms, conventions and/or representations	Attempts to communicate information about biology

## **References:**

- CSIRO 2019, *Educator on Board the RV Investigator*, Educator on Board, viewed 17<sup>th</sup> December 2019: <https://research.csiro.au/educator-on-board/>
- CSIRO 2019, *IN2017\_T01: Natural iron fertilisation of oceans around Australia*, Educator on Board, viewed 17<sup>th</sup> December 2019: [https://research.csiro.au/educator-on-board/category/voyage-in2017\\_v05/](https://research.csiro.au/educator-on-board/category/voyage-in2017_v05/)
- CSIRO 2019, *IN2018\_T02: Brisbane – Hobart Transit*, Educator on Board, viewed 17<sup>th</sup> December 2019: <https://research.csiro.au/educator-on-board/category/in2018-t02/>
- CSIRO 2019, *Research vessel: Investigator*, Marine National Facility, viewed 17<sup>th</sup> December 2019: <https://www.csiro.au/en/Research/Facilities/MNF/RV-Investigator>
- Wilderness School 2019, *Science – Year 12: Biology SHE: The Task...* Wilderness School Libguides, viewed 17<sup>th</sup> December 2019: <https://libguides.wilderness.com.au/12BioSHE/task>

\*Canva has good templates for this <https://www.canva.com/>  
Users need to sign up with a Google account or an email address.