**Science as a Human Endeavour Task: Society and Water Quality**

**Student\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Water is an essential for all life. Human development is closely linked to water quality and availability.

Water treatment process such as filtration, flocculation, and chlorination, have been developed in response to consumer demand in developing countries as well as waste water treatment for recycling and re-use. The provision of safe and accessible water as well as the safe treatment of waste water remains a challenge for many developing countries as they do not always have the resources to adapt water management strategies used in developed countries.

You are required to investigate a contemporary example of howscientists have developed new understanding and insights, or produced innovative solutions for the provision of safe and accessible water. You need to address one or more of the “*Science as a Human Endeavour”* ideas in the subject outline.

The focus of your investigation should be on increasing water sustainability through the development of water treatment and/or management processes in a chosen society and how this benefits individuals, the community and the environment.

Examples could include:

* The options for improving water availability for a community in a particular developing country or community.
* Impacts of large dam projects on natural environments and the costs and benefits for ca community. (E.g. The 3 Gorges Dam in China, or the Aswan High Dam in Egypt.)
* The potential for ground water development in a particular local community.
* The options available for urban communities to manage urban waterways (E.G. one of Adelaide’s urban waterways.)
* The potential of wetlands to manage surface water quality in a particular location.
* The development of desalination processes and issues associated with a desalination plant.
* Health issues associated with water management and ways that scientific discoveries can mitigate problems.

You need to construct a question related to the focus of your investigation to guide your Research and Planning. For Example, ‘*Are developments such as major dams on the Niger River a recipe for environmental and ecological problems?’* Or ‘*Are wetlands the best option for improving water quality in a particular city?’*

**Report**

**Part A**

* Negotiate your selected water issue and focus question.
* Select information from a variety of sources. Record of your sources of information.

**Part B Report**

The report should include:

* an introduction outlining the earth and environmental science affecting the water based issue, the nature of the society affected, and the challenge faced to bring about change for improved water management.
* an investigable question
* the science concepts, models or theories involved in the issue
* a summary of relevant data and evidence revealed by each student’s research
* an analysis of social, economic, cultural, and ethical considerations affecting the implementation of scientific knowledge
* justified conclusion
* appropriate acknowledgement of sources in-text and in a bibliography

**Assessment Conditions**

Students work individually to research background information in order to design an investigation and prepare individual reports. The task is completed in 2 weeks.

The report should be a maximum of 1000 words, if written or a maximum of 6 minutes for an oral presentation or the equivalent in multimodal form.

**Performance Standards for Stage 1 Earth and Environmental Science**

|  |  |  |
| --- | --- | --- |
|  | Investigation, Analysis, and Evaluation | Knowledge and Application |
| A | Designs a logical and coherent earth and environmental science investigation with detailed justification.  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 effects on data. | Demonstrates deep and broad knowledge and understanding of a range of earth and environmental science concepts.  Develops and applies earth and environmental science 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 earth and environmental science coherently with highly effective use of appropriate terms, conventions, and representations. |
| B | Designs a well-considered and clear earth and environmental science investigation with reasonable justification.  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 effects on data. | Demonstrates some depth and breadth of knowledge and understanding of a range of earth and environmental science concepts.  Develops and applies earth and environmental science 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 earth and environmental science mostly coherently with effective use of appropriate terms, conventions, and representations. |
| C | Designs a considered and generally clear earth and environmental science investigation with some justification.  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 effects on data. | Demonstrates knowledge and understanding of a general range of earth and environmental science concepts.  Develops and applies earth and environmental science concepts generally effectively in new or familiar contexts.  Explores and understands aspects of the interaction between science and society.  Communicates knowledge and understanding of earth and environmental science generally effectively, using some appropriate terms, conventions, and representations. |
| D | Prepares the outline of an earth and environmental science 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 earth and environmental science concepts.  Develops and applies some earth and environmental science concepts in familiar contexts.  Partially explores and recognises aspects of the interaction between science and society  Communicates basic earth and environmental science information, using some appropriate terms, conventions, and/or representations. |
| E | Identifies a simple procedure for an earth and environmental science 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 earth and environmental science concepts.  Attempts to develop and apply earth and environmental science concepts in familiar contexts.  Attempts to explore and identify an aspect of the interaction between science and society  Attempts to communicate information about earth and environmental science. |