VCE Units 3 and 4 Environmental Science: Performance descriptors

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| **VCE ENVIRONMENTAL SCIENCE**  **SCHOOL-ASSESSED COURSEWORK** | | | | | | | |
| **Assessment task: ‘Designed or practical response to a real or theoretical environmental issue or challenge’** | | | | | | | |
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| ***Unit: <insert>***  ***Outcome: <insert no.>***  ***<insert outcome statement>*** |  | | **DESCRIPTOR: typical performance in each range** | | | | |
| **Key Science Skills** | | **Increasing levels of performance** | | | | |
| ***Develop aims and questions, formulate hypotheses and make predictions*** | | * States the environmental issue or challenge which requires a designed or practical response * Identifies a possible outcome of the investigation. | * Describes the scientific concepts (biodiversity, environmental management, climate change or energy) relevant to the issue or challenge. * Lists possible alternative outcomes of the investigation. | * Summarises the key aspects of the issue or challenge that will be addressed by the designed or practical response. * Describes factors that may affect the outcomes of the investigation. | * Explains the approach taken to develop a designed or practical response to the issue or challenge. * Discusses how different factors may affect the outcome of the investigation. | * Supports a designed or practical approach by referring to relevant background research * Predicts the most likely outcome of the investigation based on prior knowledge. |
| ***Plan and conduct investigations*** | | * Describes the development of a product, process or system relevant to a practical response to an environmental issue or challenge * Develops a design brief relevant to the issue or challenge. | * Supports the development of a product, process or system methodology with relevant background information * Breaks up the design brief into smaller tasks. | * Explains how the product, process or system will provide a response to an environmental issue or challenge * Documents preliminary testing data. | * Discusses the use of criteria in determining the effectiveness of the product, process or system needs in responding to the environmental issue or challenge * Modifies design based on preliminary data. | * Develops relevant criteria to evaluate the product, process or system * Presents a final product, process or system based on feedback. |
| ***Generate, collate and record data*** | | * Classifies data as primary or secondary. | * Distinguishes between qualitative and quantitative data. | * Discusses the data relevant to their investigation. | * Explains how data will be analysed to address the investigation question. | * Defends the type and amount of data required to be generated to address the investigation question. |
| ***Analyse and evaluate data and investigation methods*** | | * Summarises data * Distinguishes between the investigation methodology and method used in the selected investigation. | * Selects relevant data for analysis * States whether the investigation methodology and method led to valid data being generated. | * Identifies trends or patterns in data * Discusses how effectively the investigation methodology and method enabled valid data to be generated. | * Makes a claim based on data * Discusses how effectively the investigation methodology and method enabled a valid conclusion to be drawn. | * Evaluates the quality of data * Compares the strengths and weaknesses of the selected methodology and method used to draw a conclusion. |
| ***Construct evidence-based arguments and draw conclusions*** | | * Describes the current situation in relation to the environmental issue or challenge * Lists advantages and disadvantages of different options as a response to an environmental issue or challenge * States a conclusion * States a limitation of conclusions. | * Outlines possible consequences if no action is taken in relation to the environmental issue or challenge * Compares advantages and disadvantages of different options as a response to an environmental issue or challenge * Uses data to support a conclusion * Describes limitations of conclusions. | * Explains the importance of their response to the environmental issue or challenge * Ranks different decision options, explaining the criteria used to make decisions to identify viable options * Connects aims, data, and conclusions * Explains limitations of conclusions. | * Discusses the possible consequences of their response to the environmental issue or challenge over time * Compares possible ‘worst case’ and ‘best case’ scenarios in adopting different options * Explains assumptions made in data interpretation * Discusses experimental validity. | * Suggests further research to refine the designed or practical response to an environmental issue or challenge * Justifies a preferred option in responding to an issue or challenge * Discusses assumptions made in drawing conclusions * Identifies further evidence required to draw a valid conclusion. |
| ***Analyse, evaluate and communicate scientific ideas*** | | * Identifies the science concepts (biodiversity, environmental management, climate change or energy) involved in a designed or practical response to an environmental issue or challenge * Identifies the sustainability principles relevant to the environmental issue or challenge * Uses data to support a response to the environmental issue or challenge. | * Describes the science concepts (biodiversity, environmental management, climate change or energy) involved in a designed or practical response to an environmental issue or challenge * Describes how sustainability principles are involved in the environmental issue or challenge * Translates analysed data into a summary statement relevant to a response to the environmental issue or challenge. | * Makes links between science concepts (biodiversity, environmental management, climate change or energy) central to the designed or practical response to an environmental issue or challenge * Explains how sustainability principles have been taken into account in developing a response to the environmental issue or challenge * Explains the use of data in developing a response to the issue or challenge. | * Explains the relationships between different concepts (biodiversity, environmental management, climate change or energy) involved in developing a designed or practical response to an environmental issue or challenge * Proposes short-term solutions in responding to an environmental issue or challenge in terms of sustainability principles * Explains how their designed or practical response addresses the issue or challenge. | * Discusses the importance of the relationships between different concepts (biodiversity, environmental management, climate change or energy) involved in developing a designed or practical response to an environmental issue or challenge * Proposes long-term solutions in responding to an environmental issue or challenge in terms of sustainability principles * Discusses how further data may be generated to evaluate the response to the issue or challenge. |
| * Uses a provided scientific report template * Sketches a response to the issue or challenge. | * Adheres to conventions of scientific report writing * Labels a sketch of a designed or practical response. | * Communicates relevant information in a scientific report. * Highlights distinctive features of the designed or practical response. | * Modifies scientific report template to improve cohesion of communication * Discusses alternative designs that were considered. | * Modifies scientific report template to include critical investigation information. * Defends choices made in determining a final design. |