VCE Units 3 and 4 Environmental Science: Performance descriptors

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| **VCE ENVIRONMENTAL SCIENCE**  **SCHOOL-ASSESSED COURSEWORK** | | | | | | | |
| **Assessment task: ‘Application of Earth systems thinking in the evaluation of a response to an environmental scenario, case study, 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 aim, question, problem or issue that will be explored through Earth systems thinking. | * Identifies the scientific concepts (biodiversity, environmental management, climate change or energy) involved in the environmental scenario, case study, issue or challenge. | * Describes how Earth systems thinking relates to the environmental scenario, case study, issue or challenge. | * Explains how Earth systems thinking will be applied to evaluate a response to the environmental scenario, case study, issue or challenge. | * Discusses further information that could be collated to evaluate a response to the environmental scenario, case study, issue or challenge. |
| ***Generate, collate and record data*** | | * Selects relevant data * Uses a labelled arrow to represent a link within one of Earth’s systems. | * Represents data in a useful format * Uses a flow chart to show a process within one of Earth’s systems. | * Shows trends in data * Uses a graphic organiser to compare processes within Earth’s four systems. | * Explains trends in data * Uses a graphic organiser to represent relationships across Earth’s four systems. | * Discusses how data relates to Earth systems thinking * Uses a graphic organiser to show the cause-and-effect of action on Earth’s four systems. |
| ***Analyse, evaluate and communicate scientific ideas*** | | * Defines a scientific model * Constructs representations of Earth’s four systems: atmosphere, biosphere, hydrosphere and lithosphere * Identifies a limitation in modelling a link within an Earth system. | * Outlines how a model is useful in simplifying complex ideas * Constructs a simple model to show the connections between Earth’s four systems * Identifies a limitation in modelling links between Earth’s systems. | * Explains why models are used to represent Earth’s systems * Discusses Earth’s four systems functioning as an integrated whole rather than as a sum of its parts * Describes the difference between a model of Earth’s systems and Earth systems thinking. | * Explain the relationship between Earth’s systems and the scenario, case study, issue or challenge * Constructs a model of Earth’s systems that includes information relevant to the scenario, case study, issue or challenge * Explains how the modelling of Earth’s systems facilitates Earth systems thinking. | * Explains the connections between Earth’s systems with reference to their evaluation of a response to a scenario, case study, issue or challenge * Constructs a model of Earth’s systems that includes information relevant to their evaluation * Discusses limitations of Earth systems thinking. |
| * Responds to a proposed environmental activity that will affect Earth systems * Provides an evaluation of a response to the environmental scenario, case study, issue or challenge about an Earth system | * Identifies how Earth systems will be affected by a proposed environmental activity * Describes how Earth systems are involved in their evaluation of a response to the environmental scenario, case study, issue or challenge. | * Compares strengths and weaknesses of a proposed environmental activity on Earth systems * Explains why Earth systems should be considered in evaluating a response to the scenario, case study, issue or challenge. | * Analyses the short-term effects of a proposed environmental activity on Earth systems * Supports an evaluation of a response to the environmental scenario, case study, issue or challenge using Earth systems thinking. | * Evaluates the long-term effects of a proposed environmental activity on Earth systems * Reflects on how their own value system impacted on their evaluation of a response to an environmental scenario, case study, issue or challenge. |
| * States how sustainability principles relate to the scenario, case study, issue or challenge * Defines ecological integrity. | * Explains why sustainability principles are important in analysing the scenario, case study, issue or challenge * Outlines how ecological integrity is supported by the response to the scenario, case study, issue or challenge. | * Analyses the scenario, case study, issue or challenge in terms of sustainability principles * Explains how ecological integrity is sustained by the response to the scenario, case study, issue or challenge. | * Evaluates the scenario, case study, issue or challenge in terms sustainability principles * Suggests a short-term challenge to sustaining ecological integrity. | * Discusses how sustainability principles may apply to the scenario, case study, issue or challenge in future years * Predicts long-term challenges to sustaining ecological integrity. |
| * Defines scientific evidence * Identifies sociocultural, economic, political, legal and/or ethical factors relevant to the scenario, case study, issue or challenge * Lists relevant points in evaluating a response to an environmental scenario, case study, issue or challenge. | * Defines non-scientific evidence * Describes how sociocultural, economic, political, legal and/or ethical factors relate to the scenario, case study, issue or challenge * Identifies key knowledge, evidence and aspects of Earth systems thinking in evaluating a response to an environmental scenario, case study, issue or challenge. | * Distinguishes between scientific and non-scientific evidence * Explains why sociocultural, economic, political, legal and/or ethical factors are important in analysing the scenario, case study, issue or challenge * Uses relevant knowledge, evidence and application of Earth systems thinking in evaluating a response to an environmental scenario, case study, issue or challenge. | * Explains why judgements or decisions may not always be based on scientific evidence * Explains how sociocultural, economic, political, legal and/or ethical factors relate to Earth systems thinking * Explains the relationship between knowledge, evidence and Earth systems thinking in evaluating a response to an environmental scenario, case study, issue or challenge. | * Explains why non-scientific evidence may be important in making a judgement or decision * Discusses why sociocultural, economic, political, legal and/or ethical factors are important in Earth systems thinking * Synthesises knowledge, evidence and Earth systems thinking in evaluating a response to an environmental scenario, case study, issue or challenge. |