Notice of Assessment Task
Year 11 Earth & Environmental Science
Depth Study – Human Impacts & Soil Erosion

Date of initial notification:	**Date of submission of task:**
Thursday 27 February 2025 Week 5, Term 1	Wednesday 19 March 2025 Week 8, Term 1

Teacher:	**Task Number:**
Reilly	1

Time Allowed:	**Weighting of task:**
3 weeks	40%

Course Component/Focus area/topic/module:
Module 4: Human Impacts

Task Description

You are to **undertake a Depth Study** to investigate soil erosion prevention and analyse the efficacy of the method(s) used. This will contribute to mandatory depth study hours required by NESA.

When undertaking the Depth Study you will:

PART A:

- complete **research and inquiry** by answering the guided questions in the space provided.
- record any sources used in Harvard style of referencing.

PART B:

- complete a **first-hand Investigation** by conducting an experiment.
- complete the scaffold for the investigation process through the Google Form provided on Google Classroom.

PART C:

- create a **Scientific Poster**.
- complete a short informal presentation to share the findings from their **first-hand Investigation**.

You will also be required to:

- use a **logbook** throughout the Depth Study to record your ideas, thoughts, actions, modifications, reasoning, and notes.
- maintain a **record of the hours** spent and the task being completed during that time on the document provided.

Instructions

- Ensure your name, class, and teacher is clearly labelled.
- All work submitted must be original and completed individually.
  (NOTE: Any work deemed to be plagiarised will be treated as a non-serious attempt and dealt an appropriate consequence in accordance with the school and faculty policy)
- The final task can be submitted via hardcopy or through Google Classroom on the due date.

Outcomes/Competencies to be assessed in this task:

EES11-1	develops and evaluates questions and hypotheses for scientific investigation
EES11-2	designs and evaluates investigations in order to obtain primary and secondary data and information
EES11-4	selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media
EES11-7	communicates scientific understanding using suitable language and terminology for a specific audience or purpose
EES11-11	describes human impact on the Earth in relation to hydrological processes, geological processes and biological changes

Feedback: How will I receive feedback on this task?

☐ Written ☐ Individual

Depth Study – Human Impacts & Soil Erosion

INTRODUCTION

Soil erosion refers to the erosion of the top layer of dirt known as topsoil, the fertile material vital to life. The rate of soil erosion depends on many factors, including the soil's makeup, vegetation, and the intensity of wind and rain. Because our own activities can also influence the speed of soil erosion, we have the power (and the responsibility) to solve one of the planet's greatest environmental challenges.

Half of the topsoil on the planet has been lost in the last 150 years. The effects of soil erosion go beyond the loss of fertile land. It has led to increased pollution and sedimentation in streams and rivers, clogging these waterways and causing declines in fish and other species. And degraded lands are also often less able to hold onto water, which can worsen flooding. Sustainable land use can help to reduce the impacts of agriculture and livestock, preventing soil degradation and erosion and the loss of valuable land to desertification.

In this Depth Study you are required to complete and submit the following:

- A **physical** logbook
- **PART A:** *Research and Inquiry*
- **PART B:** *First-Hand Investigation*
- **PART C:** *Communication of Findings*

Logbook

- You will be provided with a small exercise book to use as your logbook.
- You must keep a logbook that keeps a record of your ideas, thoughts, actions, modifications, reasoning, notes etc.
- Logbooks will be checked for progress during:
    - Week 6, Term 1
    - Week 7, Term 1
- The teacher will record if your logbook is satisfactory or unsatisfactory.
- Completed logbook needs to be submitted by the due date along with the rest of the Depth Study.

- *If you are absent on the day that the task is due, you MUST see your teacher the next day (not your next lesson) that you are present at school to show your medical certificate or produce a misadventure form (refer to your Assessment Booklet for a copy of the form).*
- *Exemptions and extensions for any other reason will only be determined at the discretion of the Head Teacher, and only in extenuating circumstances. You must advise the Head Teacher as soon as possible if you know you are unable to submit the task on the due date.*
- *All appeals must be lodged within 48hrs of receipt of the task. Students who may consider an appeal are not permitted to take their task home. The original task cannot be altered in any way prior to the appeal process.* See Assessment booklet for details.

PART A: Research and Inquiry

Working Scientifically Skill: Questioning and Predicting
Developing, proposing and evaluating inquiry questions and hypotheses challenges students to identify an issue that can be investigated scientifically by gathering primary and secondary-sourced data. Students develop inquiry question(s) that require research to aid in constructing a reasonable and informed hypothesis and modify this hypothesis to reflect new evidence.

Inquiry Platform: How does human use of land affect soil?

1. Choose one method to prevent soil erosion and construct possible research questions.

_____

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_____

Final Research Question: _____

Teacher Check:

2. Create a hypothesis. What do you believe the logical answer to your question to be?

For example:

a. QUESTION - Do all types of ground cover reduce soil erosion?

a. HYPOTHESIS - Ground cover that includes plants with many roots will reduce soil erosion more than other types of ground cover.

Hypothesis: _____

_____

3. Research your answer to your research question.

a) What terms will you need to look up? What smaller questions will you enter into a search?

_____

_____

_____

b) What sources will you accept as credible?

_____

_____

c) How will you ensure your information is reliable?

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d) Write down the information you find during your research to answer your research question.

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References: ……

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4. Amend the hypothesis based on the evidence you have gathered.

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PART B: First-Hand Investigation

Working Scientifically Skill: Planning Investigations
Students justify the selection of equipment, resources chosen and design of an investigation. They ensure that all risks are assessed, and appropriate materials are sourced. Variables are to be identified as independent, dependent and controlled to ensure a valid procedure is developed that will allow for the reliable collection of data. Investigations should include strategies that ensure controlled variables are kept constant and an experimental control is used as appropriate.

Working Scientifically Skill: Processing Data and Information
Students use the most appropriate and meaningful methods to organise and analyse data. They process data from primary and secondary sources, including both qualitative and quantitative data and information.

Knowledge and Understanding
Students conduct a practical investigation into soil erosion prevention and analyse the efficacy of the method(s) used.

You will design a **first-hand investigation** to test a method that can be used to prevent soil erosion. You will also be required to evaluate the effectiveness of your chosen method.

You will work in GROUPS of TWO or THREE to conduct the investigation. All other components will be completed and submitted INDIVIDUALLY.

You will need to include, prepare and perform:

- The procedure/s to be followed
- Equipment requirements
- A risk assessment
- Your controls and variables
- The type and amount of data to be collected
- Experimental results, graph and conclusion.

Note: you will need to have your plan checked by your teacher before conducting your experiment.

You must complete the scaffold for the investigation process through the *Google Form* provided on *Google Classroom*. You must complete the scaffold and report on your investigation **individually**.

PART C: Communication of Findings

Working Scientifically Skill: Communicating

Students use qualitative and quantitative information gained from investigations using primary and secondary sources and select a suitable for of communication. They also appropriately apply and use scientific language that is suitable for the context.

You will create a **Scientific Poster** to communicate the findings from your first-hand Investigation. You will create your poster on ONE slide using PowerPoint/Google Slides that includes your experimental methodology, results and conclusions. Photos of your experiment can also be included to illustrate your experiment.

Refer to the template below as a guide as to how to set out your poster.

You will also communicate your findings in a **short informal presentation**. The PowerPoint slide on which your poster was made will be projected on the board alongside you.

Why a scientific poster?

A scientific poster is a summary of one's research that is presented in a visually engaging manner. Posters are presented as a means of short and quick scientific communications at conferences and scientific meetings. An effective poster is the one that focuses on a single message and conveys it through a concise and artistically attractive manner. This communication intends to provide tips on creating an effective poster to young scientists.

Bavdekar SB, Vyas S, Anand V. Creating Posters for Effective Scientific Communication. J Assoc Physicians India. 2017 Aug;65(8):82-88.

Title (40 point type): informative, short, mention of the study design and findings

Add author names and information.

What we learned

Here's the place for your message.

- What do you want to tell the viewer about your research and why is it important?
- Make sure your findings are simple and clearly stated.
- Focus the viewer's attention more completely on what it is you are trying to communication about your research.

Introduction

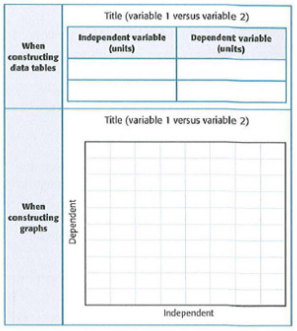
- Introduction should be 1-3 bullet points on relevant background information.
- Font size 14 point type

Methods

- Basic information about materials and method.
- Font size 14 point.
- Controls and Variables.
- Accuracy and validity.

Results

- Findings presented in the form of tables/figures.
- Highlights of key findings; bulleted text relating findings back to initial aim and hypothesis
- Study strengths and limitations.
- Font size 14 point.



Conclusions

- Some key points you want your audience to know.
- What's next: You might want to point to where the research can go in the future.

Objectives

- Bulleted list.
- Font size 14 point type.
- Research question, aim and hypothesis.

References

- Harvard style referencing.
- Font size 8-10 point type.

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Timeline

<table>
<tr><td>Lessons</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr>
<tr><td colspan="2">PART A:
Research and Inquiry</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td colspan="3">PART B:
First-Hand Investigation</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td colspan="2">PART C:
Communication of Findings
(Scientific Poster)</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>PART C:
Communication of Findings
(short informal presentation)</td></tr>
<tr><td colspan="8">Maintaining Logbook and Record of Hours</td></tr>
</table>

11EES Depth Study – Human Impacts & Soil Erosion

Record of Hours

Date	Time	Activity Completed	Student Sign	Teacher Sign

MARKING CRITERIA

11EES Depth Study – Human Impacts & Soil Erosion

Outcomes	Elementary	Basic	Sound	Thorough	Extensive	MARKS
EES11-1 Questioning and predicting develops and evaluates questions and hypotheses for scientific investigation	- Research questions are unclear or absent. - Final research question unclear or absent. - Hypothesis is unclear or absent. - Information from research is unclear or absent. - No references included.	- Basic list of possible research questions. - Final research question provided. - Basic hypothesis provided. - Includes some relevant information from research. - No references included.	- Clear list of possible research questions. - Final research question clearly provided. - Clear hypothesis linked to the research question. - Some references included.	- Comprehensive list of possible research questions. - Final research question clearly provided. - Logical and testable hypothesis - References included in correct format.	- Extensive list of possible research questions. - Final research question clearly provided. - Sophisticated, testable hypothesis. - References included in correct format.	
	1 mark	*2 marks*	*3 marks*	*4 marks*	*5 marks*	
EES11-2 Planning Investigations designs and evaluates investigations in order to obtain primary and secondary data and information	- Experimental design is incomplete or lacks logical structure. - Minimal attempt to control variables.	- Experimental design includes independent and dependent variables but lacks detail. - Some attempt to control variables.	- Experimental design includes most variables and allows for valid testing. - Adequate control of variables.	- Well-detailed experimental design with all variables clearly identified and controlled.	- Comprehensive and innovative experimental design that ensures accuracy, reliability, and validity. - All variables are effectively controlled.	
	1 mark	*2 marks*	*3 marks*	*4 marks*	*5 marks*	
EES11-4 Processing data and information selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media	- Requires extensive teacher assistance to determine type of data collected and method in which to record it. - Requires extensive teacher assistance to record data - Requires extensive teacher assistance to construct table and graph	- Basic data used (Qualitative/ Quantitative) - Recorded data in an organised, sequential and appropriate format. - Includes table(s) and graph(s) with some required conventions.	- Some data used (Qualitative/ Quantitative) - Recorded data in an organised, sequential and appropriate format - Recorded table(s) and graph(s) with some required conventions.	- Range of data used (Qualitative/ Quantitative) - Recorded data in an organised, sequential and appropriate format. - Recorded table(s) and graph(s) with most required conventions.	- Diverse range of data used (Qualitative/ Quantitative) - Recorded data in a highly organised, sequential and appropriate format. - Recorded table(s) and graph(s) with all required conventions.	
	(1-2 marks)	*(3-4 marks)*	*(5-6 marks)*	*(7-8 marks)*	*(9-10 marks)*	
EES11-11 Knowledge and Understanding describes human impact on the Earth in relation to hydrological processes, geological processes and biological changes	- States findings from experiment. - Any relevant information regarding the effectiveness of the chosen method used to prevent soil erosion.	- States findings from experiment and attempts to compare findings to another study into the effects of soil erosion. - Any relevant information regarding the effectiveness of the chosen method used to prevent soil erosion.	- Some evaluation of findings from experiment in comparison to another study into the effects of soil erosion. - Clear evaluation of the effectiveness of the chosen method used to prevent soil erosion.	- Thorough evaluation of findings from experiment in comparison to another study into the effects of soil erosion. - Thorough evaluation of the effectiveness of the chosen method used to prevent soil erosion.	- Extensive evaluation of findings from experiment in comparison to another study into the effects of soil erosion. - Extensive evaluation of the effectiveness of the chosen method used to prevent soil erosion.	
	(1-2 marks)	*(3-4 marks)*	*(5-6 marks)*	*(7-8 marks)*	*(9-10 marks)*	
EES11-7 Communicating communicates scientific understanding using suitable language and terminology for a specific audience or purpose	- Limited use of scientific and appropriate terminology - Presentation style not appropriate for audience or purpose in scientific poster	- Uses basic scientific terminology with limited information. - Uses an appropriate presentation style in scientific poster.	- Uses language that is mostly clear and relevant with accurate scientific terminology and information. - Uses an informative and mostly easy to read presentation style in scientific poster.	- Uses language that is mostly clear and precise with accurate and relevant scientific terminology and information. - Uses an informative and easy to read presentation style in scientific poster.	- Consistently uses language that is clear and precise including accurate relevant scientific terminology and information - Uses an eloquent, concise, informative presentation style in scientific poster.	
	(1-2 marks)	*(3-4 marks)*	*(5-6 marks)*	*(7-8 marks)*	*(9-10 marks)*	
TOTAL	***/40***	***GRADE***		***PERCENTAGE***	***%***	**RANK**

COMMENT: