

**General Integrated Science**

**Year 12**

**Task 2 – Unit 3**

**Science Inquiry Investigation**

**Measuring and comparing the abiotic factors of two ecosystems/Monitoring an artificial ecosystem**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Task weighting:** 15% of the school mark for this pair of units

**This task will consist of 3 parts:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Part** | **Description** | **Marks** | **Due** |
| **1** | Field notes for Herdsman Lake excursion | \_\_\_\_\_ /19 marks | Monday Week 4 (19 Feb) |
| **2** | In-Class presentation based on artificial ecosystem | \_\_\_\_\_ / 32 marks | Week 9 (26 March) |
| **3** | In-Class validation test based on constructed ecosystem and excursion | \_\_\_\_\_ / 30 marks | Wed Week 10 (11 April) |
| **TOTAL** | | **\_\_\_\_\_\_/81** |  |

**Science Understandings**

**Earth systems/cycles in nature**

* Abiotic Factors, including temperature, pH, salinity, light, water and atmospheric gases impact on the survival of organisms within the environment.

**Biotic Components and Energy Flow**

* Food chains and food webs show the feeding relationships between organisms within a community
* The amount of energy transferred between trophic levels in food chains and food webs diminishes as the trophic level increases
* There is interaction between organisms, biological communities and the abiotic environment in which they live

**Ecosystems and sustainability**

* Human interference is threatening biodiversity through deterioration of ecosystems and diminishing habitat areas



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**Part 2 - In-Class Presentation**

**Constructing an Artificial Ecosystem**

Your task is to use the plants and objects provided to you to create an artificial wetland ecosystem which will be as self-sustaining as possible. Over 8 weeks you will monitor and record observations about the ecosystem and then present your findings to the class in a 5-minute presentation.

**Questions to consider in designing your ecosystem**

Your presentation will need to include the following information. You should make notes on these throughout the monitoring process

1. What non-living factors (abiotic) are present in the ecosystem?

2. What living (biotic) factors are present in the ecosystem?

3. What is the energy source for the ecosystem?

4. Plot the values for the abiotic factors you recorded ( for example- measure the same abioic factors from your excursions and create a graph). Have any changes occurred over the 6-8 weeks? Suggest reasons for these changes

5. Identify what has changed over the period of monitoring the ecosystem and suggest reasons for this change. Have the plants grown? Have other living parts of the ecosystem grown? Has anything not survived your ecosystem?

6. Is there evidence of interaction between the living and non-living parts of your ecosystem?

7. Is there evidence of interaction between the living components of your ecosystem?

8. Draw a food web for the ecosystem. Label the producers and consumers. Which is the highest order consumer?

9. Compare your model to a constructed wetland near the school or where you live, if your wetland was the same size could it have a similar biodiversity? If not, suggest changes you could make to enhance the biodiversity.