

2022

Year 11 Integrated Science – Unit 1 Biological & Earth Systems

Task 4: Competition Investigation

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| **Assessment Type:** |  | Name: |  |
| Investigation |  |
| **Duration & Conditions:**  See section notes |  | Teacher: |  |
|  |  |  |  |
| **Assessment weighting:**  12.5% of year mark |  | Date: |  |

|  |  |
| --- | --- |
| **Section** | Marks |
| **Part One: Research** |  |
| **Part Three: Conduct Experiment & Scientific Report** |  |
| **Total Mark** |  |

I acknowledge that all the information contained in this task is my own work and not taken from other sources. If other sources have been used, they have been acknowledged in my references.

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(Student Signature)

Please see SEQTA for Teacher feedback and comments

**AIM:** To plan and conduct an investigation into the competition for space between plants of the same species.

# **ASSESSMENT BREAKDOWN:**

You will have six (6) lessons over three (3) weeks to complete this assessment. Please see below weekly breakdown for each part of the assessment.

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| --- | --- | --- |
| Term & Week | Assessment section | Lessons |
| T2 Week 1 | Part 1: Research  Part 2: Plan | 1 lesson  1 lesson |
| T2 Week 2 | Part 3: Conduct & Scientific Report | 2 lessons |
| T2 Week 3 | Part 3: Conduct & Scientific Report | 2 lessons |

# **PART ONE:** Research

Use appropriate resources to research and provide an example of the below range of biological relationships that occur between organisms in an ecosystem. Include reference list of information sources, using APA referencing style. (DO NOT USE WIKIPEDIA).

|  |  |
| --- | --- |
| * Competition | * Mutualism |
| * Commensalism | * Parasitism |

# **PART TWO:** Plan experiment

Use your knowledge of scientific method to design an experiment which investigates competition between individual cat mint plants *(Nepeta catara)*.

You will need to identify the below experiment components:

* Aim and hypothesis
* Independent, dependent and controlled variables
* Suitable control/experimental group and experimental layout

# **PART THREE:** Conduct Experiment & Scientific Report

You need to carry out your experiment, then complete a scientific report which combines research and experimental findings.

Your report needs to include the following components:

* Introduction – Background information and outline the reasons for your investigation. Finish with aim and hypothesis of your experiment
* Material – List and quantity of materials used to conduct experiment
* Method – Set of instructional steps that someone else could follow to replicate the experiment
* Results – Present all observations and measurements in full written sentences as well as tables and graphs where appropriate.
* Discussion – Discuss your results with reference to your hypothesis and background research. Attempt to identify and explain any of the trends your results may (or may not) show. Explain any problems that arose, as well as any potential improvements that could be made.
* References – Reference list of researched sources to be included, using APA referencing style. (DO NOT USE WIKIPEDIA)

# **TO BE SUBMITTED:**

* Part 1 Typed Research
* Part 3 Typed Scientific Report.

# **PART ONE:** Research

**COMPETITION:**

**MUTUALISATION:**

**COMMENSALISM:**

**PARASITISM:**

# **PART THREE:** Scientific Report

**INTRODUCTION:**

Aim:

Variables:

Independent variable:

Dependent variable:

Controlled variables:

Hypothesis:

**EXPERIMENT:**

Materials:

|  |  |
| --- | --- |
|  |  |

**METHOD:**

**DISCUSSION:** No results were collected for this practical.

If results had been collected from this experiment, what influence could the competition of space have on the growth of the seedlings?

What problems did you experience in this experiment?

What improvements/changes could be made if you did the experiment again?

**REFERENCES:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Criteria** | | **0 marks** | **1 mark** | **2 marks** | **3 marks** | **4 marks** |
| **Part One: Research** | **Competition** | No information provided about competition. | Competition is described briefly. No example included | Competition is described briefly. An example is included, but without a clear description | Competition is described in detail. An appropriate example is included with an explanation. | Competition is described in detail and compared to other symbiotic relationships. An appropriate example is included with an explanation. |
| **Mutualism** | No information provided about mutualism. | Mutualism is described briefly. No example included | Mutualism is described briefly. An example is included, but without a clear description | Mutualism is described in detail. An appropriate example is included with an explanation. | Mutualism is described in detail and compared to other symbiotic relationships. An appropriate example is included with an explanation. |
| **Commensalism** | No information provided about commensalism. | Commensalism is described briefly. No example included | Commensalism is described briefly. An example is included, but without a clear description | Commensalism is described in detail. An appropriate example is included with an explanation. | Commensalism is described in detail and compared to other symbiotic relationships. An appropriate example is included with an explanation. |
| **Parasitism** | No information provided about parasitism. | Parasitism is described briefly. No example included | Parasitism is described briefly. An example is included, but without a clear description | Parasitism is described in detail. An appropriate example is included with an explanation. | Parasitism is described in detail and compared to other symbiotic relationships. An appropriate example is included with an explanation. |
| **Referencing** | No bibliography or references included. | Basic bibliography included. | Reference list included, using correct referencing styles and formatting. |  |  |

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| **Criteria** | | **0 marks** | **1 mark** | **2 marks** | **3 marks** | **4 marks** |
| **Part Two: Planning** | **Aim & Hypothesis** | No aim or hypothesis included | With guidance, constructs a hypothesis, within a context that has been provided. | With guidance, constructs an aim and hypothesis that includes dependent and independent variables, within a context that has been provided. | Constructs an aim and testable hypothesis that includes dependent and independent variables. | Constructs aim and testable hypothesis that states the relationships between the dependent and interdependent variables. |
| **Variables** | No variables included | With prompting, identifies possible variables for experiment | Identifies possible variables for experiment. | Identifies independent, dependent and controlled variables for experiment. | Identifies and details independent, dependent and controlled variables of experiment. |
| **Experimental layout & control / experimental groups** | No experimental design or control groups created. In-class practical not completed. | Experimental design is not used during in-class practical. | Experimental design and control groups not logically organised but used during in-class practical. | Experimental design and control groups logically organised and used during in-class practical. | Experimental design and control groups are thoughtfully and logically organised and used during in-class practical. |
| **Experiment conducted** | Experiment not conducted | Experiment not conducted efficiently. | Experiment conducted. | Experiment conducted effectively and efficiently. |  |

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| **Criteria** | | **0 marks** | **1 mark** | **2 marks** | **3 marks** |
| **Part Three: Conduct Experiment & Scientific Report** | **Method** | Method is incomplete or not included. | Method is unclear and/or incomplete and not used for in-class practical. | Method is unclear but complete and is used for in-class practical. | Method is clear and complete and is used for in-class practical. |
| **Experimental diagrams** | No experimental diagram included. | Diagram is included but unclear or unlabelled. | Includes clear, correctly labelled diagram of equipment. |  |
| **Results** | No results included | Results table completed. Results are not explained in text, graph is missing or incomplete. | Results table completed. Results are briefly explained in text. Graph included but incomplete. | Results table completed. Results are explained in text using clear and concise language. Appropriate and completed graph included. |
| **Discussion** | No discussion included | Trends in data are briefly explained. No connection made to hypothesis or background information. | Trends in the data are identified and explained with references to hypothesis and background research. |  |
| **Referencing** | No bibliography or references included. | Basic bibliography included. | Reference list included, using correct referencing styles and formatting. |  |
| **Sequencing & Formatting** | Report is not typed or in a sequential order or formatted. | Report is typed and in sequential order but has not been formatted appropriately. | Report has been typed and is in sequential order. It has also been formatted correctly. |  |