Interactions in the Environment

Course of Study

(Please note: This timetable is flexible and subject to change)

PART 1 - **Big Ideas**: Ecosystems are made up of biotic (living) and abiotic (non-living) elements, which depend on each other to survive. *(Overall expectations 2 and 3)*

Overall Expectation(s): Relationships in an Ecosystem - Demonstrate an understanding of interactions between and among biotic and abiotic elements in the environment (7s3).

Learning Objectives: Writing Focus: Explanatory Writing

1. Introduction to Intermediate Science – Rules and Routines, notebooks and expectations, format of lessons, Review of Scientific Method (Lab #1)
2. Ecosystems – Students demonstrate an understanding of an Ecosystem as a system of interactions between biotic (living) and abiotic (non-living) organisms and their environment (7s11).
3. Biotic and Abiotic Interactions -Students demonstrate an understanding of biotic and abiotic elements in an ecosystem, and describe the interactions between them (7s12).

PART 2 - **Big Ideas**: Ecosystems are made up of biotic (living) and abiotic (non-living) elements, which depend on each other to survive. *(Overall expectations 2 and 3)*; Ecosystems are in a constant state of change. The changes may be caused by nature or by human intervention. *(Overall expectations 1 and 2)*

Overall Expectation(s): Energy Flow - Investigate interactions within the environment, and identify factors that affect the balance between different components of an ecosystem (7s2).

Writing Focus: Report Writing

Learning Objectives:

1. Producer, Consumer (herbivores/carnivores/omnivores), Decomposers - Students demonstrate an understanding of the roles and interactions of producers, consumers, and decomposers within an ecosystem (7s13). Investigate Food Chains/Webs.
2. Predator-Prey Game – Explore the roles and interactions of producers, consumers, and decomposers. Students demonstrate an understanding of why an ecosystem is limited in the number of living things that it can support (7s17).
3. Transfer of Energy – Students demonstrate an understanding of the transfer of energy in a food chain and explain the effects of elimination of any part of the chain (7s14). (Lab #2). Describe how matter is cycled within the environment and explain how it promotes sustainability (7s15).
4. Summative Activity #1 - **Model Ecosystem Project - St**udents are to create a model Ecosystem and an Explanatory Writing piece to demonstrate an understanding of interactions between and among biotic and abiotic elements in the environment (7s7).
   - Part A – The Ecosystem
     - Students create a model ecosystem
   - Part B – Interactions in the Ecosystem
     - Students use the model ecosystem to illustrate a food chain/web
   - Part C – Explanation Writing Piece
     - Students compose an Explanatory piece to describe the ecosystem and food web.

PART 3 - **Big Ideas**: Ecosystems are in a constant state of change. The changes may be caused by nature or by human intervention. *(Overall expectations 1 and 2);* Human activities have the potential to alter the environment. Humans must be aware of these impacts and try to control them. *(Overall expectations 1)*

Overall Expectation(s): Environmental Monitoring and Sustainability in an Ecosystem **-** Investigate interactions within the environment, and identify factors that affect the balance between different components of an ecosystem (7s2); Assess the impacts of human activities and technologies on the environment, and evaluate ways of controlling these impacts (7s1).

Learning Objectives: Writing Focus: Expository Writing

1. Why Ecosystems Change - Students demonstrate an understanding between primary succession and secondary succession (7s16). Changes in food web affect all living things in that ecosystem Bioinvasion (invasive), Competition, Sustainability
2. Succession (Primary, Secondary) - Investigate occurrences that affect the balance within a local ecosystem (7s8). Students demonstrate an understanding if Aboriginal perspectives on sustainability and describe ways in which they can be used in habitat and wildlife management (7s19). Discuss technologies and their impact on the environment. i.e. Pesticides can be deadly, they enter and move through an ecosystem)
3. Summative Activity #2 - **Balance in an Ecosystem** - Students use Report Writing to demonstrate an understanding of the interactions within the environment, and identify factors that affects the balance between different components of an ecosystem.
    Part D – Secondary Succession in the Ecosystem
    - Students investigates some of the factors that affect the balance between different components in their model ecosystem
4. Students explore personal Ecological Footprint - Describe ways in which human activities and technologies alter balances and interactions in the environment (7s18) and assess the impact of selected technologies on the environment (7s4). Analyse the costs and benefits of selected strategies for protecting the environment (7s5).
5. Summative Activity #3 - **Reducing My Ecological Footprint** - Students are to assess the impacts of human activities and technologies on the environment, and evaluate ways of controlling these impacts using Expository Writing. Reduce your Eco footprint – graph before and after.
    Part A – My Ecological Footprint
    - Students measure their Ecological Footprint and create a table to display results

    Part B – Graph my Ecological Footprint
    - Students create a graph to represent the components of their Carbon Footprint (What you use, What you throw away, Home and School, What you use, & Transportation)

    Part C – Reduce my Ecological Footprint
    - Students create a list of ten ways to reduce the size of their Carbon footprint.

    Part D – Expository Writing Piece
    - Students compose an Explanatory piece explains assess the impacts of human activities and technologies on the environment, and evaluates ways of controlling these impacts.

    Part E – Steps to Success – Best Foot Forward - Reduce your Footprint
    - Students create a footprint that illustrates one way they have reduced their Carbon footprint

Ongoing Specific Expectation(s):

7s6	2.1 follow established safety procedures for investigating ecosystems (e.g., stay with a partner, wash hands after investigating an ecosystem)
7s9	2.4 use appropriate science and technology vocabulary, including sustainability, biotic, ecosystem, community, population, and producer, in oral and written communication
7s10	2.5 use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes (e.g., design a multimedia presentation explaining the interrelationships between biotic and abiotic components in a specific ecosystem)