Curricular Connections Grade 7

Exploring Opimihaw Creek Module

Social Studies 7

Goal: To analyze the dynamic relationships of people with land, environments, events, and ideas as they have affected the past, shape the present, and influence the future. (DR)

DR7.1 Analyze and use various types of maps (that provide differing perspectives and information for differing purposes) in order to situate current issues in Canada, and in a selection of Pacific Rim and northern circumpolar countries.

a. Locate the continents and significant physical features (e.g., landforms, water bodies, climatic zones, vegetation zones) on a world map.

Life Science: Interactions within Ecosystems (IE)

IE7.1 Relate key aspects of Indigenous knowledge to their understanding of ecosystems

a. Gather information about traditional Indigenous practices with respect to the relationships and connections between people and their ecological environment.

b. Examine key aspects of Indigenous knowledge and First Nations and Métis people's practices that contribute to understanding of ecosystems and the interactions of their components.

c. Provide specific examples of Indigenous knowledge in understanding the components of their ecosystems.

d. Describe the ways that traditional Indigenous knowledge about respect and responsibility for the land, self, and others has been transmitted over many years, including the oral tradition.

IE7.2 Observe, illustrate, and analyze living organisms within local ecosystems as part of interconnected food webs, populations, and communities.

a. Illustrate the ecological organization of life within the biosphere, using specific examples of species, populations, communities, ecosystems, and biomes.
b. Provide examples of ecosystems of varying sizes and locations, including their biotic and abiotic components.
c. Conduct a field study to observe, record (using sketches, notes, tables, photographs, and/or video recordings), and identify biotic and abiotic components of a local ecosystem.
d. Show respect for all forms of life when examining ecosystems.
e. Examine the biotic and abiotic components of distant ecosystems using photographs, videos, or online resources.
f. Choose and use appropriate instruments (e.g., magnifying glass, thermometer, light meter, hand-held microscope, and digital camera) safely, effectively, and accurately to observe and illustrate biotic and abiotic components of ecosystems.
g. Compile and display ecological data to illustrate the various interactions that occur among biotic and abiotic components of ecosystems.
h. Identify strengths and weaknesses of different methods of collecting and displaying ecological data (e.g., compare field observations of an ecosystem with observations from a video or television program, compare a food chain with a food web).
i. Classify organisms in a variety of ecosystems as producers, consumers, or decomposers and further classify consumers as herbivores, carnivores, or omnivores.
j. Interpret interdependence within natural systems by constructing food chains and food webs to illustrate the interactions among producers, consumers, and decomposers in a particular ecosystem.
k. Construct a classification key, using appropriate scientific terminology, which will enable classmates to differentiate between producers, consumers, and decomposers.
l. Provide examples of organizations in Canada that support scientific research related to ecosystems (e.g., environmental conservation groups, federal and provincial government departments, agricultural and marine institutes, universities, and colleges).

IE7.3 Evaluate biogeochemical cycles (water, carbon, and nitrogen) as representations of energy flow and the cycling of matter through ecosystems.

a. Illustrate how energy is supplied to and flows through a food web using the concept of ecological pyramids (e.g., pyramid of energy, pyramid of numbers, and pyramid of biomass).
b. Model the carbon, nitrogen, and water cycles to illustrate how matter cycles through ecosystems.
c. Analyze the strengths and limitations of models in science generally, and then apply these criteria to evaluate the efficacy of a student model of a biogeochemical cycle.
d. Explain the role of decomposers in recycling matter in an ecosystem.
e. Describe examples of how scientists collect evidence, search for patterns and relationships in data, and propose explanations to further the development of scientific knowledge about energy and matter flow in ecosystems.
f. Design and conduct an experiment to investigate the conditions essential for the growth of plants (e.g., determine whether nutrients in soil are sufficient to support plant growth, determine the influence of sunlight or other forms of light on plant growth).
g. Consider observations and ideas from a variety of sources during investigations and before drawing conclusions related to biogeochemical cycles.
h. Describe how energy passes through ecosystems during the processes of photosynthesis and cellular respiration.
i. Identify and evaluate potential impacts on energy flow and the cycling of matter by the removal of one or more living organisms from a specific ecosystem
j. Provide examples of scientific knowledge that have resulted in the development of technologies designed to assist in managing aspects of ecosystems (e.g., understanding the effect of nitrogen, phosphorus, and potassium on plant growth led to the production of specific formulations of fertilizers, knowledge of how micro-organisms help break down matter led to the development of composting bins).

IE7.4 Analyze how ecosystems change in response to natural and human influences, and propose actions to reduce the impact of human behaviour on a specific ecosystem.

a. Identify evidence of ecological succession in ecosystems, using the concepts of pioneer species, climax community, primary succession, and secondary succession, and by identifying changes in plant and animal life in the ecosystem.
b. Propose ecological questions to investigate arising from practical problems and issues (e.g., "What is the impact of clearing land for farming?", "How could a community prolong the life of its landfill site?", "How could a community reduce the amount of garbage it produces?", "What is the impact of a sports field being constructed in a particular location?").
c. Predict what a specific ecosystem (e.g., clear-cut forest, abandoned sports field, abandoned farm yard, abandoned rail line, ditch, driveway, or sidewalk) will look like in the future (e.g., 5, 10, and 25 years) based on characteristics of the area and long-term changes observed in similar ecosystems.
d. Identify and refine questions and problems related to the effects of natural or human influences on a particular ecosystem.
e. Select and synthesize information from various sources to develop a response to specific questions related to natural or human influences on a particular ecosystem.
f. Propose a course of action or defend a given position on a local ecological issue or problem related to natural or human influences on a particular ecosystem, taking into account scientific, societal, technological, and environmental factors.
g. Be sensitive and responsible in maintaining a balance between human needs and a sustainable environment by considering both immediate and long-term effects of their course of action or stated position.
h. Provide specific examples to illustrate that scientific and technological activities related to ecosystems take place in a variety of individual or group settings, locally and globally, and by men and women from a variety of cultural backgrounds (e.g., individual and community gardening, impact studies done by environmental engineers, and research done by teams of international scientists).