

Grade 9: LIFE IN OUR ECOZONE

Students develop ecosystem models to explore the challenges of establishing sustainable economic activities within an ecozone.

CURRICULUM CONNECTIONS

Related Outcomes

This lesson will contribute to the student's ability to

- identify and describe science and technology based careers related to environmental sciences and studies;
- work collaboratively on problems and use appropriate language and formats to communicate ideas, procedures, and results;
- work as a member of a team in assessing and addressing problems;
- defend a given position on an issue or problem, based on their findings.

Related Coursework

This lesson works well in classes studying

- careers related to environmental science and studies;
- the impact of human activity on the environment;
- economic development and local culture and economy;
- local history, geography, and public policy;
- environmental factors influencing economic activity.

PREPARATION

Learning Objectives

During this lesson, students will

- describe the relationship between ecozones and ecosystems by investigating the Ecozone section of the Aboriginal EnviroCareers website/CD ROM;
- identify the main physical and economic characteristics of the ecozone and ecosystem in which they live by investigating the Aboriginal EnviroCareers website/CD ROM;
- explore the impact of various economic activities on an ecosystem by researching and selecting the most environmentally sustainable activity for their ecosystem given the characteristics of that ecosystem;
- explore related environmental occupations by incorporating the skills and expertise of various EnviroCareers into their economic activity plans for their ecosystems using the EnviroCareer profiles provided;
- communicate the interconnected nature of ecosystems by planning, building and presenting a model of the ecosystem in which they live.

Total Time 3 x 70 minute classes; 210 minutes total class time

Material Required

- Overhead projector, several different coloured overhead markers and a transparency of a map of Canada
- Handout from the Ecozone section of the Aboriginal EnviroCareers website/CD ROM on the ecozone in which your school is located (print or copy one for each student)

For each group:

- Copies of the EnviroConcerns handouts for the economic activities for your ecozone (Print one of each activity per group)
- EnviroCareer profiles for the occupations listed in the EnviroConcerns for each economic activity (Enough copies so several groups can share or exchange the profiles as they need them)
- Model building materials: 50 x 50 cm of corrugated card board; modeling clay or play dough (one package); acrylic paints of appropriate colours (green, blue, brown, black, yellow); dry moss (one package); water soluble glue (one bottle); drawing paper (5 sheets for each group of 3-4 students); and pencils (one for each student)



Day 1
15 minutes



1. **Introduction: Understanding Ecozones and Ecosystems in Canada** (*Discussion*)
 - 1.1 Ask students to review ecozone information on Aboriginal EnviroCareers website/CD ROM prior to class and be prepared to:
 - a. Describe relationship between ecozones and ecosystems.
 - b. Identify the ecozone in which they live.
 - c. Detail two characteristics of its physical environment.
 - d. Identify at least two neighbouring ecozones.
 - 1.2 Distribute the handout on your ecozone. Using the Map of Canada transparency, trace the areas covered by each ecozone.
 - 1.3 Ask students to share the findings of their review:
 - a. "How would you describe the relationship between ecozones and ecosystems—like pieces of a puzzle or like individual pieces that stand alone?"
 - b. "What ecozones surround ours?"
 - c. "Tell me two of the main physical characteristics of our ecozone?"
 - 1.4 Introduce the main activity:
 - a. "In a small group, you will build a model of the ecosystem in which we live. Your model must show the key characteristics distinguishing this ecosystem from others and the economic activity you think best fits within the ecosystem. Each group will present its model, describe its chosen economic activity, and explain why it thinks this activity is the most suitable for our ecosystem."
2. **Main Activity: Planning, Constructing, and Presenting** (*Model Building*)

Research and planning the ecosystem model

 - 2.1 Divide class into groups of three or four and explain the activity further:

"To complete this assignment, you will:

 - a. Research the strengths and weaknesses of a specific ecosystem in our ecozone.
 - b. Identify an appropriate sustainable economic activity based on your findings.
 - c. Research and identify the EnviroCareers related to your chosen economic activity.
 - d. Plan a design for and build a model of the ecosystem that shows
 - key characteristics/features of the ecosystem (lakes, rivers, forests);
 - an economic activity that is appropriate for the area and a description of related EnviroCareers;



- 1.1 Additional websites to support student review:
 - Ecozones of Canada, State of the Environment Infobase website:
www.ec.gc.ca/soer-ree
 - The Green Lane, Environment Canada website: www.ec.gc.ca
- 1.2 Print and label the ecozone map from the Aboriginal EnviroCareers website/CD ROM if you need an answer key.
- 2.1.c For example, from the information on ecotourism guides, students might identify that an extensive knowledge of their home ecozone is needed if they create an economic activity related to ecotourism.
- 2.1.a Additional research resources include:
 - My EnviroConcerns from the Aboriginal Envirocareers website/CD ROM related to the economic activity they select
 - Additional resources identified in point 1.1 in the teacher's notes
 - Sustaining the Environment and Resources for Canadians, Government of Canada website:
www.environmentandresources.gc.ca
 - The library
- 2.5 Clear a safe space in the classroom to store the models so they can dry/set once they're completed.

55 minutes



20 minutes



- strategies you will implement to address the impact of the economic activity in relation to strengths and weaknesses of ecosystem.”
- e. “Present your model to the class. Your presentation should
 - describe the key features of your ecosystem;
 - explain why your chosen economic activity is the most economic activity in relation to strengths and weaknesses compatible activity for the ecosystem;
 - describe the EnviroCareers that influenced your selection economic activity in relation to strengths and weaknesses of this economic activity and/or the way in which the group economic activity in relation to strengths and weaknesses incorporated the activity into the ecosystem.”

2.2 Inform students that they have:

- a. Fifty minutes plus homework to research their ecosystems and economic activity and plan their models.
- b. One full class (70 minutes) to build their models.
- c. Ten to fifteen minutes to present their models to the large group on (presentation date).

2.3 Direct students to review the economic activities for their ecozone and the related EnviroCareers. Review the additional resources such as websites, etc. students may use in their research.

2.4 Distribute drawing paper and pencils to each group so they can draw a plan of their models. Provide remaining class time for student to complete their research and planning. If necessary, groups should complete this phase for homework.

Constructing the models

2.5. Distribute model-building supplies to the groups. Assist students as necessary.

Presenting the Ecosystem Model

2.6 Provide students with 15 minutes to tidy up their models and prepare for their presentations.

2.7 Invite each group to present their model.

3. Closure and Evaluation: Drawing Conclusions (Discussion)

- 3.1 Discuss the following questions to debrief the activity:
 - a. “Which model do you think has the least amount of risk associated with it? Why?”
 - b. “Which model do you think has the greatest amount of risk associate with it? What suggestions do you have to reduce this risk?”
 - c. “Which EnviroCareers influenced your plans the most? In what ways?”
 - d. “Which EnviroCareers did you find most interesting? Why?”



Use a standard group work and presentation evaluation rubric.

As well, be sure to evaluate students’ abilities to

- justify the economic activity selected using their model to convey the important points;
- explain how various EnviroCareers might influence economic development within a given ecosystem.

Day 2
70 minutes

Day 3
60 minutes

15 minutes



SUGGESTIONS FOR ADAPTATION

- For Grades 11 or 12, have the class debate which economic activity and/or group's strategy for developing that activity is the most environmentally sustainable within their ecosystem. Alternatively, have groups role-play EnviroCareers practitioners presenting their development strategy and model to community leaders who will decide which approach to implement within the community.