

Ecological Footprint

Grade

8

Topic: Waste
Grade: 8
Duration: 2 x 45 minutes

Students will discover their own ecological footprint and create a plan for reducing this figure. They will then extend this to the school and community to see how they are doing on this scale.

Curriculum Expectations

- 8s121: Examine how humans use resources from the earth's different water systems and identify the factors involved in managing these resources for sustainability
- 8s139: Evaluate human use of water and the economic and environmental effects of that use
- 8e1: Communicate ideas and information for a variety of purposes (to evaluate information, to compare points of view) and to specific audiences, using forms appropriate for their purpose (e.g., a survey soliciting opinions on an environmental issue) and features appropriate to the form (e.g., focused questions)
- 8e5: Produce pieces of writing using a variety of specific forms (e.g., a script for a play), techniques and resources appropriate to the form and purpose, and materials from other media (e.g., lighting effects)
- 8e6: Produce media texts using writing and materials from other media
- 8e23: Use spreadsheets, computer-generated charts, and graphs for specific purposes (e.g., to convey data) and in appropriate contexts (e.g., research reports)
- 8e33: Make judgements and draw conclusions about ideas in written materials on the basis of evidence
- 8e36: Plan a research project and carry out the research
- 8e56: Use the specialized vocabulary appropriate to the topic in oral presentations
- 8e59: Use tone of voice and body language to clarify meaning during conversations and presentations
- 8e60: Adjust their delivery (e.g., pitch of voice, pace) to suit the size of different groups
- 8e61: Use resource materials (e.g., visual aids) to illustrate ideas in presentations
- 8e67: Create media works of some technical complexity
- 8m91: Systematically collect, organize, and analyse primary data
- 8m94: Evaluate data and draw conclusions from the analysis of data

Background Information

Everybody has an impact on the earth since they consume products and service derived from nature. Their ecological impact relates to the amount of nature they occupy to keep them going. The ecological footprint measures our dependence on nature. A nation depends on ecological capacity to sustain itself. A nation's ecological footprint corresponds to the total land and water area in various ecosystem categories that is claimed by that nation to produce all the resources it consumes, and to absorb all the waste it generates on a continuous basis, using current technology.

The ecological footprint of the average Canadian is 4.8 hectares. This is the total amount of land required for food, housing, transport, consumer goods and services. Energy is a large component of the footprint. At least 2.9 hectares are necessary for the long-term provision of a biological substitute for fossil fuels. Agriculture for food supply and consumer goods makes up 1.1 hectares. Forestry takes up 0.6 hectare to supply the fibre for housing and consumer goods. The built environment takes up 0.2 hectare for housing and transport.

Accountability

Students will appreciate that their behaviour has an impact on the world and they can do something about it.

Teacher Notes

1. Use this scenario approach:

A world famous ecologist is visiting your school as part of the EarthCARE program. She was instrumental in developing the concept of the ecological footprint. She is coming to your school as part of the celebrations for the work your school has done in making a difference in the health of the community. You want to impress her with your research so you prepare a presentation to share with her on her visit to the school.

2. Discuss the concept of the ecological footprint and why it is an important benchmark.
3. Conduct a web search on the concept of the ecological footprint. Discover where and why the concept was first proposed. Develop a method of presenting student work using a variety of media.
4. Find out more about the average Canadian's footprint. Discover the extent of your personal ecological footprint. Consider ways in which this can be reduced. Look at how this can be reduced in your town, throughout the world.
5. Contact your MPP, MP, and local councillors to find out how this concept can be used to help the long-term sustainability plans for your school and community.
6. Determine the ecological footprint of the school community and how it can be minimized. Explore the concept of environmental impact assessment. Use a spreadsheet to manipulate the data to see how different factors affect the results.
7. Explore how special interest groups are using the concept of the ecological footprint. Send email to these groups and gather additional information for your project.
8. Encourage students to monitor environmental news and share their findings with the class. Use an EarthCARE bulletin board or display area to post new environmental news.
9. Create a multi-media presentation to demonstrate how the school has reduced its ecological footprint by reducing the amount of waste and garbage it produces and the amount of energy saved by turning off lights and computers over a period of time. Oral reports can be presented to different groups.
10. This presentation can be part of the EarthCARE celebrations.

Home Extension

Determine the ecological footprint of members of the family. Discuss how this number can be reduced as a family.

Lesson Comments

Teachers, feel free to add in your own comments for this lesson.