ECOLOGICAL FOOTPRINT: HOW CAN WE TREAD A LITTLE LIGHTER ON THE PLANET?

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Grade 7, Science and Technology

Source: Adapted from Ecological Footprint: How can we tread a little lighter on the planet? Earth Day Canada's EcoKids Program

DESCRIPTION

Students will learn about the ecological footprint and complete the ecological footprint calculator. Students will also have the opportunity to explain to their families the urgency of the issue of consumption, and utilize problem-solving skills to discover ways in which to reduce their ecological footprints together.

CURRICULUM LINKS – SCIENCE & TECHNOLOGY, GRADE 7

Understanding Life Systems – Interactions in the Environment
Overall Expectation: 1
Specific Expectations: 1.1, 1.2

PLANNING NOTES

Materials

- Chalkboard/whiteboard with chalk/markers
- Tape
- Computers with internet access
- *Footprints* (Appendix 1)
- *A Closer Look at Your Ecological Footprint* (Appendix 2)

Learning Skills & Work Habits

Responsibility, independent work, initiative, self-regulation

Prior Learning

Our production and disposal of waste materials (garbage, industrial wastes) impact the balance of local ecosystems by affecting air, water, and land. Sustainability means living our lives within the tolerance of the Earth's ecosystems, and avoiding actions that create environmental problems for future generations.

Recommended Class Time

- 2-3 class periods

TEACHING/LEARNING STRATEGIES

Introduction

1. Review the following terms: consumption and waste and ask students to work together to define them.
   - Consumption: To consume is to expend, to use up, to purchase, to waste, to absorb, or to destroy. Consumption is the act of consuming.
   - Waste: An unusable or unwanted substance or material; to use, consume, or expend thoughtlessly or carelessly; to lose energy, strength, weight, or vigor, to become weak.
2. As a class, discuss the saying **Reduce, Reuse, and Recycle**. Ask students why recycle is the last option on the list, while reduce is the first. How do reducing and reusing impact consumption more effectively than recycling does?
3. As a class, come up with a list of problems with recycling. This can include energy-intensive process, there isn't a strong enough market for recycled products, and continued consumption.

Activity: The Ecological Footprint Activity

4. Draw three planet Earths on the chalkboard or whiteboard.
5. Ask students to make a list of what they need in their daily lives (e.g., air, water, food, shelter).
6. Explain that when we use some of the resources on their lists, a portion of them is also wasted.
7. Distribute footprints from *Footprints* (Appendix 1). Explain that for every five resources on their list, two waste footprints need to be added to the Earth on the chalkboard/whiteboard. For example, a student with ten resources on their list of essentials will get four waste footprints.
8. After counting out their footprints, ask the students to stick them onto the Earth. Once the first Earth is covered in footprints, move on to the second and third Earth to simulate the fact that if we continue consuming the way the average North American does, our Earth will not be able to sustain us and we would actually need three Earths. Discuss the definition below of ecological footprints.

Conclusion

9. Have the students calculate their own ecological footprints using: www.footprintnetwork.org/en/index.php/GFN/page/calgary_footprint_calculator.

   Depending on learning levels, decide which calculator they should complete - the adult version or detailed kid version. If students have trouble completing parts of the quiz because they do not know the information, have them complete it at home so that their parents can help with some of the more difficult questions.
10. After calculating their ecological footprint, ask students to complete *A Closer Look at Your Ecological Footprint* (Appendix 2).
11. Using everyone's completed ecological footprint results, calculate the total footprint for your class and then work together to come up with ways to reduce your classroom's ecological footprint.

Ecological Footprint

An ecological footprint measures the amount of the Earth's surface necessary to produce all the energy and resources that each of us requires to live (food, clothing, housing, transportation) and to absorb all the (indirect and direct) wastes we produce. In other words, the ecological footprint is a measure of our resource use and waste production and its effect on the planet.

EXTENSIONS

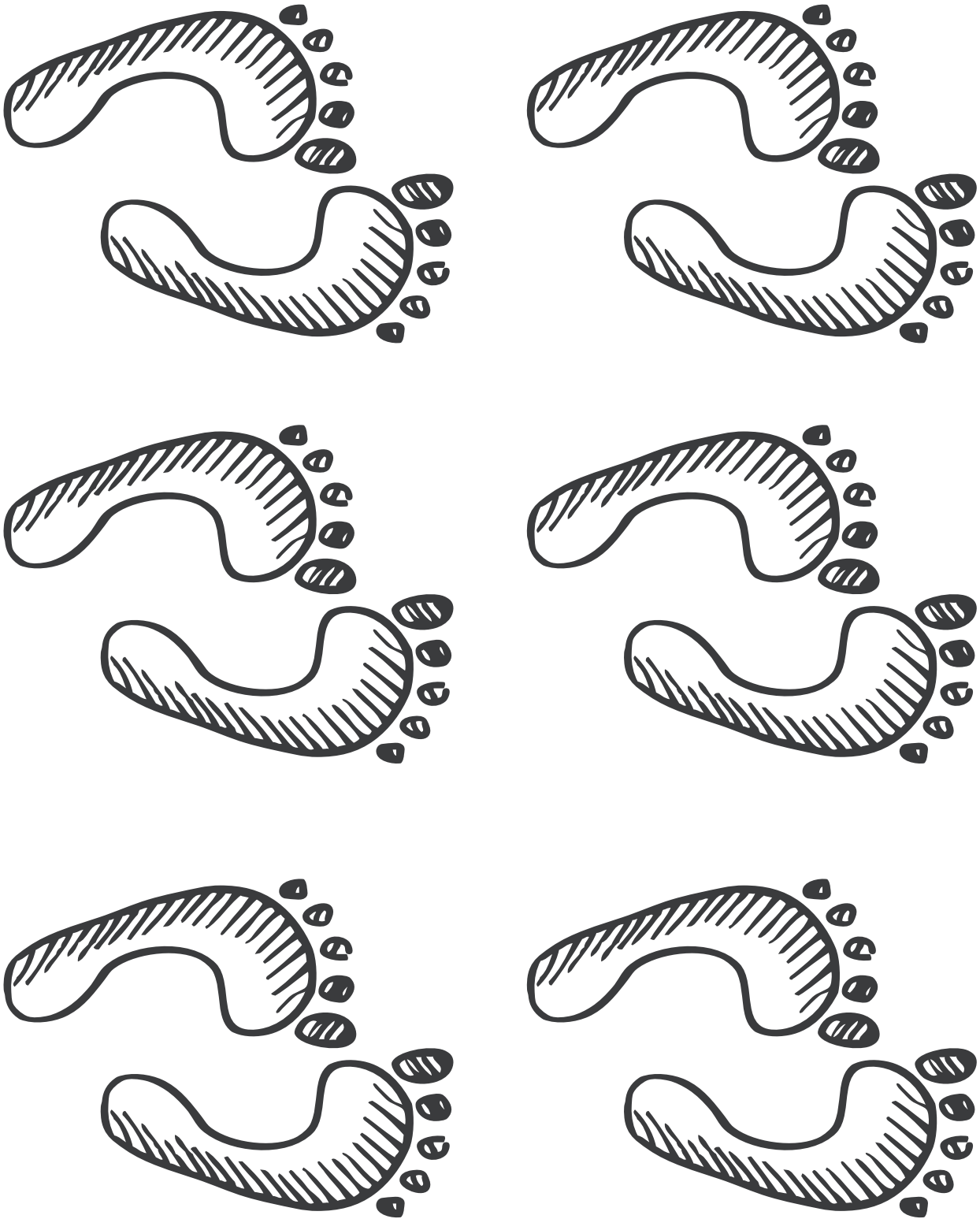
The School Footprint: The ecological footprint exploration could be adapted to become a long-term project. Start off with this lesson and then have the students work in small groups to come up with ways to reduce the school's ecological footprint. Have them write a proposal describing what changes they would like to make. The class could vote on their favourite idea and then work towards accomplishing it throughout the school year. This could include writing letters to the principal to see if they could make certain changes, fundraise, run a school-wide campaign, get the community involved, host an assembly, etc.

The Story of Stuff: Explore the "Story of Stuff" online at www.storyofstuff.org. Their intial video explores the connection between environment and social issues and includes teaching resources that address global consumption issues. Additional videos focus on plastic water bottles, cosmetics, and electronics.

APPENDICES

Appendix 1 – *Footprints*
Appendix 2 – *A Closer Look at Your Ecological Footprint*

FOOTPRINTS



A CLOSER LOOK AT YOUR ECOLOGICAL FOOTPRINT

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Names: _____

Calculate your ecological footprint (ask a person in your family for help with any question you are having trouble answering). Visit: www.footprintnetwork.org and click on Footprint Basics > Personal Footprint > Kids' Version

What were the three areas that had the largest impact? (Hint: use the pie chart to find the largest areas)

_____

_____

_____

What were the three areas that had the smallest impact?

_____

_____

_____

Explain why the areas with the smallest impact were easier to achieve than the ones with the largest impact?

_____

_____

_____

Are there any quick changes you could make to improve on the areas that have the largest impact? List three actions.

_____

_____

_____

What barriers do you face in changing your habits to improve your footprint?

_____

_____

_____

What are two long-term goals that would help improve your footprint and therefore help you to live a more sustainable lifestyle?

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