



DRIVEN TO SUSTAIN

Driven to Sustain

Educational Resource Material: Teacher's Guide

What is Driven to Sustain?

Mission: To create awareness and inspire individuals to realize their personal power in forming individualized choice and a role in nature."

Synopsis: We are working to raise individual awareness of our planet's current environmental situation and how YOU as an individual control its future.

Face it; the majority of the western civilization population has one role in society: consumer. You (among billions of others) are the driving force for governments and corporations. You "vote" them into power through elections and by purchasing products that determine the market. We are reaching a critical point in time when you as an individual must decide if you are a part of the solution or against it.

Daily, the average consumer is bombarded by environmental issues in the media. One buzz word, "global warming," is repeated countless times, over and over along with the pressure for you to do something about it. The solution to global warming is then conveniently presented to you in the form of a product. The solution to global warming is not in a product, not within your governments hands, nor is it a developing technology. The solution to global warming and all other connected environmental issues depend on your behaviour. We hope to capture your attention. In turn you will save money, act towards a solution for a healthier planet, and live a healthier mental and physical existence.

How will we possibly reach so many people? A massive public display, of course. Cloe and I plan on breaking the current world record for "Longest Journey by Car on Alternative Fuel." Waste Vegetable Oil (WVO) will power our vehicle across Canada, the US, and possibly Mexico. Once we have captured attention in masses we will deliver our message on sustainability through public discussion, lectures in schools, radio and television media broadcasting, newspaper and magazine publications, websites, podcasts, internet broadcasting, video documentary and possibly a TV series. We are preparing to drive more than forty-five thousand kilometres by car on alternative fuel using WVO to surpass the current world record of 38,137 kilometres.

Objective: To drive 45,000 Km using waste vegetable oil as fuel.

To educators, we offer an opportunity to engage students in a real-world exploration of critical issues relating to the environment and sustainability. Join us.

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Education Program Guide

How can you and your students get involved? There are several opportunities.

ELEMENTARY TEACHERS:

Participate in our inquiry journal letter-writing project.

Connect with Tyson and Cloe, the faces and minds behind this historic feat. Your students can write to the founders of Driven to Sustain and drivers of the van and ask questions, and Tyson and Cloe will write back with informative and age-appropriate personal letters to your class!

Intrigued? See our guiding questions on **page 4**. Send your students' work to education@driventosustain.com

OR:

Track the Driven to Sustain team using the GPS tracking tool on their website. Virtually visit some of the biggest and most influential movers and shakers in sustainable living and energy across North America.

Interested? Visit www.driventosustain.com and check out Blog, Video and GPS Tracking.

SECONDARY TEACHERS:

Motivate your students to consider the five essential questions of the Driven to Sustain project using the interactive, thematically-based assessment framework developed by the **Sierra Club** to meet the needs of learners across the secondary curriculum.

Interested? Engage your students by introducing them to the Sustainable High Schools Project. You can find all three sections [here](#).

CURRICULUM CONNECTIONS

We have attached cross-curricular expectations met through this initiative specific to the Junior and Intermediate grades in Ontario. See page 6 for this. As this is a nationwide project, our ability to target the specific curricular needs of all provincial and territorial ministries of education is limited. Environmental education is a valuable curricular area and is recognised by most educational bodies. We hope that you find our resources to be effective “ways in” to your curriculum.

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Educational Resource Material: Elementary Inquiry Project

This lesson is best integrated into a unit on environmental education. Students will need to understand basic concepts in environmental preservation.

Introduction:

1. Assess previous knowledge.

Activity 1: Method: think/pair/share

- a. Ask students : Who do you know that is doing something to help our earth? What are they doing? Encourage students to think about both small- and large-scale actions.
- b. Give students one minute to compile a list.
- c. When students have made their list, have them partner up with the student beside them, to share their knowledge and experience for one minute.
- d. Ask partners to write five people from their lists on the board.
- e. Read through the list, and have students raise their hands when their people are called. Ask students to share with the class what the people they recorded are doing to help the earth.

Activity 2: Method: large group discussion

- a. Show students a copy of the Guinness World Records. Survey the class to see who has ever seen it before. Explain and share some examples.

2. Connect to student experiences.

Activity 3: Method: Journal-writing

Ask students to respond to the following question (writing volume and other expectations are of course level-dependent):

“If your name was in the Guinness Book of World Records, what accomplishment would you want to have been recognised for?”

Continued on next page...

3. Introduce new context and information.

Show students the introductory video available on the LEARN sub-site of www.driventosustain.ca. Explain to students that Tyson and Cloe are two young Canadians who are trying to set a world record for the longest drive using waste fuel. The video will do the rest of the explaining!

4. Connect and conclude.

Ask students to write five questions each that they have for Tyson and Cloe. Explain to them that they will be given the chance to write to them and hear back about their trip.

Make sure you send home the following permission slip to parents and guardians before writing.

Following this introductory lesson, your class will begin a weekly letter-writing program with Tyson and Cloe. The age, level, and language ability of your class will determine how you choose to participate. We welcome all letters on the following topics:

- *What we are doing*
- *Where we are going*
- *Why we are doing this*
- *How we will accomplish our goal*
- *Who we are*
- *What other people we are visiting along our journey are doing to promote a sustainable future*



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[your school's letterhead]

[date]

Dear Parents and Guardians,

Your son/daughter/ward's class has the unique opportunity to participate in a letter-writing program with two young Canadians who are attempting to break a world record for the longest trip made by a vehicle using alternative fuel. This inquiry project will supplement daily learning about the earth, environmental stewardship and sustainability. We always want to ensure that our students have the permission of their parents/guardians before initiating projects that involve contacts with adults outside of the regular school environment. We are asking for your consideration of this project and permission for your child/ward to participate. All letters incoming and outgoing will be read for suitability by the classroom teacher.

Please call me at [your school phone number] should you have any questions or concerns, and visit www.driventosustain.ca for more information about this exciting project.

Yours in education,

[your signature]

[your name]

Please detach and return to the school by [date].

Student's name

has my permission to participate in the letter-writing program with Driven to Sustain.

Signature of parent or guardian

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Educational Resource Material: Curriculum Connections

Grade 4

Science and Technology (2007)

UNDERSTANDING LIFE SYSTEMS: HABITATS AND COMMUNITIES

1 analyse the effects of human activities on habitats and communities

1.1 analyse the positive and negative impacts of human interactions with natural habitats and communities (e.g., human dependence on natural materials), taking different perspectives into account (e.g., the perspectives of a housing developer, a family in need of housing, an ecologist), and evaluate ways of minimizing the negative impacts

1.2 identify reasons for the depletion or extinction of a plant or animal species (e.g., hunting, disease, invasive species, changes in or destruction of its habitat), evaluate the impacts on the rest of the natural community, and propose possible actions for preventing such depletions or extinctions from happening

1.3 demonstrate an understanding of habitats and communities and the relationships among the plants and animals that live in them

describe ways in which humans are dependent on natural habitats and communities (e.g., for water, medicine, flood control in wetlands, leisure activities)

CANADA AND WORLD CONNECTIONS: CANADA'S PROVINCES, TERRITORIES, AND REGIONS

The specific expectations in this strand clarify the connection between the strand and environmental education: students learn how natural systems influence human systems and activities, including cultural activities.

- name and locate the various physical regions, provinces, and territories of Canada and identify the chief natural resources of each

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MEDIA LITERACY

1.3 express opinions about ideas, issues, and/or experiences presented in media texts, and give evidence from the texts to support their opinions (e.g., “I think this documentary about lions is one-sided because it only shows them as predators”; . . .)

2.1 identify elements and characteristics of some media forms (e.g., . . . a television nature program: outdoor setting, wildlife “actors”, voice-over narration, background music; . . .)



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Grade 5

UNDERSTANDING MATTER AND ENERGY: PROPERTIES OF AND CHANGES IN MATTER

1 evaluate the social and environmental impacts of processes used to make everyday products

1.1 evaluate the environmental impacts of processes that change one product into another product through physical or chemical changes

1.2 assess the social and environmental impact of using processes that rely on chemical changes to produce consumer products, taking different perspectives into account (e.g., the perspectives of food manufacturers, consumers, landfill operators, people concerned about the environment), and make a case for maintaining the current level of use of the product or for reducing it

UNDERSTANDING EARTH AND SPACE SYSTEMS: CONSERVATION OF ENERGY AND RESOURCES

1 analyse the immediate and long-term effects of energy and resource use on society and the environment, and evaluate options for conserving energy and resources

1.1 analyse the long-term impacts on society and the environment of human uses of energy and natural resources, and suggest ways to reduce these impacts (e.g., turning off the faucet while brushing teeth or washing and rinsing dishes conserves water; reusing or recycling products, or using fewer products, conserves natural resources and energy)

1.2 evaluate the effects of various technologies on energy consumption (e.g., improving our home's insulation allows us to conserve heat and reduce energy consumption;

aerodynamic design can improve the energy efficiency of cars and buses; household appliances designed to make our lives easier use large amounts of energy; some cars and recreational vehicles use energy less efficiently than others), and propose ways in which individuals can improve energy conservation

3 demonstrate an understanding of the various forms and sources of energy and the ways in which energy can be transformed and conserved

3.2 identify renewable and non-renewable sources of energy (e.g., renewable: sun, wind, ocean waves and tides, wood; non-renewable: fossil fuels such as coal and natural gas)



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Grade 6

UNDERSTANDING MATTER AND ENERGY: ELECTRICITY AND ELECTRICAL DEVICES

1 evaluate the impact of the use of electricity on both the way we live and the environment

1.1 assess the short- and long-term environmental effects of the different ways in which electricity is generated in Canada (e.g., hydro, thermal, nuclear, wind, solar), including the effect of each method on natural resources and living things in the environment

1.2 assess opportunities for reducing electricity consumption at home or at school that could affect the use of non-renewable resources in a positive way or reduce the impact of electricity generation on the environment



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Grade 7

Science and Technology (2007)

UNDERSTANDING LIFE SYSTEMS: INTERACTIONS IN THE ENVIRONMENT

1 assess the impacts of human activities and technologies on the environment, and evaluate ways of controlling these impacts

1.1 assess the impact of selected technologies on the environment

1.2 analyse the costs and benefits of selected strategies for protecting the environment

2 investigate interactions within the environment, and identify factors that affect the balance between different components of an ecosystem

2.2 design and construct a model ecosystem (e.g., a composter, a classroom terrarium, a greenhouse), and use it to investigate interactions between the biotic and abiotic components in an ecosystem

3 demonstrate an understanding of interactions between and among biotic and abiotic elements in the environment

3.1 demonstrate an understanding of an ecosystem (e.g., a log, a pond, a forest) as a system of interactions between living organisms and their environment

3.2 identify biotic and abiotic elements in an ecosystem, and describe the interactions between them (e.g., between hours of sunlight and the growth of plants in a pond; between a termite colony and a decaying log; between the soil, plants, and animals in a forest)

3.3 describe the roles and interactions of producers, consumers, and decomposers within an ecosystem (e.g., Plants are producers in ponds. They take energy from the sun and

produce food, oxygen, and shelter for the other pond life. Black bears are consumers in forests. They eat fruits, berries, and other consumers. By eating other consumers, they help to keep a balance in the forest community. Bacteria and fungi are decomposers. They help to maintain healthy soil by breaking down organic materials such as manure, bone, spider silk, and bark. Earthworms then ingest the decaying matter, take needed nutrients from it, and return those nutrients to the soil through their castings.)

3.5 describe how matter is cycled within the environment and explain how it promotes sustainability (e.g., bears carry salmon into the forest, where the remains decompose and add nutrients to the soil, thus supporting plant growth; through crop rotation, nutrients for future crops are created from the decomposition of the waste matter of previous crops)

3.7 explain why an ecosystem is limited in the number of living things (e.g., plants and animals, including humans) that it can support

3.8 describe ways in which human activities and technologies alter balances and interactions in the environment (e.g., clear-cutting a forest, overusing motorized water vehicles, managing wolf-killings in Yukon)

3.9 describe Aboriginal perspectives on sustainability and describe ways in which they can be used in habitat and wildlife management (e.g., the partnership between the Anishinabek Nation and the Ministry of Natural Resources for managing natural resources in Ontario)

UNDERSTANDING EARTH AND SPACE SYSTEMS: HEAT IN THE ENVIRONMENT

1 assess the costs and benefits of technologies that reduce heat loss or heat-related impacts on the environment

1.1 assess the social and environmental benefits of technologies that reduce heat loss or transfer (e.g., insulated clothing, building insulation, green roofs, energy-efficient buildings)

1.2 assess the environmental and economic impacts of using conventional (e.g., fossil fuel, nuclear) and alternative forms of energy (e.g., geothermal, solar, wind, wave, biofuel)

3 demonstrate an understanding of heat as a form of energy that is associated with the movement of particles and is essential to many processes within the earth's systems

3.7 describe the role of radiation in heating and cooling the earth, and explain how greenhouse gases affect the transmission of radiated heat through the atmosphere (e.g., The earth is warmed by absorbing radiation from the sun. It cools by radiating thermal energy back to space. Greenhouse gases absorb some of the radiation that the earth emits to space and

reradiate it back to the earth's surface. If the quantity of greenhouse gases in the atmosphere increases, they absorb more outgoing radiation, and the earth becomes warmer.)

3.8 identify common sources of greenhouse gases (e.g., carbon dioxide comes from plant and animal respiration and the burning of fossil fuels; methane comes from wetlands, grazing livestock, termites, fossil fuel extraction, and landfills; nitrous oxide comes from soils and nitrogen fertilizers), and describe ways of reducing emissions of these gases

Natural Resources

- describe how humans acquire, manage, and use natural resources, and identify factors that affect the importance of those resources
- use a variety of resources and tools to gather, process, and communicate geographic information about the distribution, use, and importance of natural resources
- describe positive and negative ways in which human activity can affect resource sustainability and the health of the environment

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Grade 8

UNDERSTANDING EARTH AND SPACE SYSTEMS: WATER SYSTEMS

1 assess the impact of human activities and technologies on the sustainability of water resources

1.1 evaluate personal water consumption, compare it with personal water consumption in other countries, and propose a plan of action to reduce personal water consumption to help address water sustainability issues

UNDERSTANDING EARTH AND SPACE SYSTEMS: WATER SYSTEMS (cont.)

1.2 assess how various media sources (e.g., Canadian Geographic; the science section in newspapers; Internet websites; local, national, and international news on television and radio) address issues related to the impact of human activities on the long-term sustainability of local, national, or international water systems identify factors (e.g., annual precipitation, temperature, climate change) that affect the size of glaciers and polar ice-caps, and describe the effects of these changes on local and global water systems

MEDIA LITERACY

1.3 evaluate the effectiveness of the presentation and treatment of ideas, information, themes, opinions, issues, and/or experiences in media texts (e.g., . . . as a class, evaluate the media's coverage of a social or environmental issue over a two-week period)

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Educational Resource Material: Essential Questions

The following questions are meant to engage your students in critical inquiry as they move through the activities and projects offered in this resource. Consider posting them on the wall of your classroom, posing them to students as problems to be solved, or using them to guide your own curriculum development.

1. What is sustainability?
2. What is a carbon footprint and how can we minimize ours?
3. Who are the movers and shakers of environmental sustainability and what are they doing to help our earth?
4. How can we learn and grow as a species worldwide to protect our natural resources?
5. What is the value of the earth?



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Bring environmental and sustainability education to life with your students by connecting it to their lives and their communities in their time. Start now.
