

Using Inquiry in Social Studies Lessons to Target Environmental Education and Stewardship

Grade 7 Lesson Series Geographic Inquiry Model

Formulate
Questions

Gather and
Organize

Interpret and
Analyse

Evaluate and
Draw Conclusions

Communicate

Introduction: Geographical Significance Surrounding the Stories of Stuff

Students explore and analyze the elaborate process of product development through sourcing, extraction, production, consumption and disposal from a geographical perspective. Knowledge building emerges as students investigate the origins of various articles of clothing through the development and final processes as documented in the online film, *The Story of Stuff*, directed by Louis Fox and created by Annie Leonard. Engaging collaboration results in student generated “stories” of products as well as analysis of geographical strengths and weaknesses within these “stories”.

Considerations for Planning

Prior to this lesson, students will need:

- experience working in groups;
- experience building consensus;
- experience finding the main idea and supporting details in media texts; and,
- experience using an atlas.

Resources and Materials

atlas, use of available technologies, i.e., computers, internet, projector/screen, large world map, post-it notes, word wall, reflective journal, chart paper, markers

BLM 1.1 – The Story of Stuff

BLM 1.2 – Exit Card

How does this lesson link to Environmental Education?

Standards for Environmental Education in the Curriculum (2008); suggests that students should be given the opportunity “to become environmentally literate; apply their acquired knowledge, perspectives, skills and practices in real-life situations; and, become environmentally responsible citizens who are aware of the global implications of local action”. In this lesson, students begin to analyze the processes of extraction, production, consumption and disposal of consumer products from a geographical perspective.

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Critical Thinking Lessons in Geography which target Environmental Education Perspectives and Sustainability

Lesson 1: Where does our “Stuff” come from?

In this lesson, students explore the mini documentary the ‘Story of Stuff’ by Annie Leonard in order to understand where the “stuff” that they consume and ultimately dispose of comes from. Issues related to the production, consumption, and disposal of “stuff” that they use on a regular basis will be explored, with a focus on the environmental consequences of how they use these products.

Learning Goals:

By the end of this lesson students will understand, know and be able to:

- Appreciate that the “stuff” they have comes from the Earth
- Understand the impact that the consumption and disposal of stuff has on the Earth
- Develop a basic understanding of the cycle of consumption and resource use

Big Ideas:

The “stuff” we use and consume comes from Earth and our consumption of “stuff” impacts the health of Earth and others

Framing Questions/Guided Inquiry:

Question #1: Where does the everyday “stuff” we consume come from?

Question #2: What are the social, economic and ecological impacts of the way that we consume and dispose of “stuff”?

Question #3: How can we reduce the negative impacts of the consumption and disposal of “stuff”?

How does this Lesson Link to Environmental Education ?

Students will develop knowledge and understanding concerning their role in the use of Earth’s resources. Students will develop an awareness of the environmental impact of their use and disposal of products, and learn to evaluate alternative plans of action as part of becoming environmentally active and responsible citizens.

Geography Curriculum Expectations and Inquiry Skills

Grade 7 Geography: Natural Resources Around the World: Use and Sustainability

- B.1 Application: analyze aspects of the extraction/harvesting and use of natural resources in different regions of the world, and assess ways of preserving these resources; FOCUS ON: Interrelationships.
- B.1.1 Analyze the interrelationships between the location/accessibility, mode of extraction/harvesting, and use of various natural resources. FOCUS ON: Interrelationships.
- B.1.2 Analyze natural resource extraction/harvesting and use in specific regions of the world

- B.2 Inquiry: use the geographic inquiry process to investigate the impact of the extraction/harvesting and/or use of natural resources around the world from a geographic perspective.
- B.2.3 analyse and construct maps as part of their investigation, with a particular focus on exploring the spatial boundaries of and, where applicable, patterns relating to their topic LESSON 1
- B.3 Understanding Geographic Context: demonstrate an understanding of the sources and use of different types of natural resources and some of the effects of the extraction/harvesting and use of these resources.
FOCUS ON: Spatial Significance; Geographic Perspective.
- B.3.3 identify significant short- and long-term effects of natural resource extraction/harvesting and use on people and the environment

Expectations across Subject Areas

Language : Media Literacy

- Overall Expectation 1: Demonstrate an understanding of a variety of media texts
- Specific Expectation:

Language : Oral Visual Communication

- Overall Expectation 1: Listen in order to understand and respond appropriately in a variety of situations for a variety of purposes

Prior Knowledge and Skills

Prior to this lesson, students will have:

- Experience working in groups
- Experience with consensus building
- Finding the main idea and supporting details

Relevant Terminology

- Manufacturing
- Ecology
- Economy
- Environment
- Society
- Consumption

Materials and Supports

- Atlas, Connection to Internet, Projector and screen, Computer, Students need paper and writing tools

BLM

BLM 1.1 – “The Story of Stuff”

BLM 1.2 – “Exit Card”

Minds On :

Small group work - What are you wearing? (10 – 15 minutes)

- If students are not already in groups, organize students into groups of 3 or 4
- Give each group some Post-It notes
- Have each student look at two pieces of clothing they are wearing (t-shirt, jumper, sneakers, jeans, etc.) and find out where those items were made by locating tags on the clothing
- With their group, have students look up the countries where their clothing comes from in the Atlas. Then have each student in the group pick one country to write on a Post-It that is different from the other group members.
- Once groups are done, go around to each group and have each group share their countries by placing the post-it's on a map displayed in the front of the class (You can use a pull down map or a projection of a map on a screen). Subsequent groups cannot share the same country as any previous groups.

Discussion Questions – Wrap-up:

- Why do you think that the “stuff” we are wearing right now was made in other countries?
- What impact do you think consuming “stuff” from different countries has on the environment?

Record responses on chart paper.

Assessment Tools and Strategies:

Assessment for Learning:

- Observation of student responses during class and small group discussions Question?

Action: The Story of Stuff

Whole class - Video Screening: The Story of Stuff Documentary (30 minutes)

- Go to <http://www.storyofstuff.org/movies-all/story-of-stuff/> to access the mini Documentary “The Story of Stuff” (you can also find it on YouTube).
- Read the brief description of the Mini Doc to students.
 - Have the students quickly brainstorm and share what information they think will be in the Mini Doc
- Using BLM 1.1 “The Story of Stuff”. Ask students to record 3 Ws (things that really “wow” them) while watching the video and to be ready to share those moments with their group and class
- Play the video
- Finish the viewing by giving the students a minute to make sure they have completed their 3 Ws
- Before moving onto Consolidation and sharing the 3Ws, read to them the motivation behind “The Story of Stuff” Mini – Doc at <http://www.storyofstuff.org/about/about-the-project/>

Assessment Tools and Strategies:

Assessment for Learning:

- Observe student responses and note prior knowledge and issues of interest to them that are activated by the video.
- Make sure students are completing the 3ws portion of BLM 1.1

Consolidation and Debrief

Small Group and Whole Class Activity: Wow! Moment Sharing (5 minutes)

- Ask students to return to the groups they were in during the Mind's On activity, "What am I wearing?"
 - In those groups have students take turns sharing their 3Ws
 - Instruct each group that when they are finished, to pick one Wow moment to share with the class. They must state the Wow moment and explain why they chose that particular moment and what they think the significance is
- If there is time, allow groups to share additional moments
- Have students complete BLM 1.2 "Exit Card"

Assessment Tools and Strategies:

Assessment for Learning:

- Observe students and note understanding during post-documentary discussion
- Make sure that students complete BLM 1.2 at the end of the class
- Note if student responses in BLM 1.2 demonstrate an understanding of the video to consider re-teaching if necessary

Assessment as Learning:

- Exit Card: Students reflect on their understanding by using BLM 1.2

Further Opportunities for Learning

Project/activity which supports cross curricular learning and utilizes critical thinking Activity

- research on the Story of Stuff project and other related projects
- research related to clothing manufacture

Related Resources and References

Websites

- Ministry of Education <http://www.edu.gov.on.ca/eng/teachers/enviroed/education.html>
- The Story of Stuff Project <http://www.storyofstuff.org/>

References

Cooper, Damian. (2007). *Talk About Assessment: Strategies and Tools to Improve Learning*. Toronto, Ontario: Nelson-Thomson Canada Ltd.

Leonard, Annie. The Story of Stuff Project <http://www.storyofstuff.org/>

Critical Thinking Lessons in Geography which target Environmental Education Perspectives and Sustainability

Lesson 2: How Big is Your Footprint?

Students will learn about the concept of the Ecological Footprint as a way to understand how each person puts a demand on Earth via their use of resources which make up the “stuff” we consume. Students will gain an appreciation of how the Earth is finite and that the demands of humans cannot exceed the ability of Earth to sustain itself. They will subsequently determine their own Ecological Footprint and evaluate the impact that it has on Earth’s sustainability.

Learning Goals:

Students will understand, know and be able to:

- Understand that each person exacts a toll on the environment via their consumption practices and actions
- Understand the concept of an Ecological Footprint
- Link the cycle of consumption and resource use back to the size of their Ecological Footprint

Big Ideas:

Earth’s resources are finite

Every time that a person uses a resource, it exacts a toll on the environment

A person’s impact on the environment can be understood in terms of their Ecological Footprint

Framing Questions/Guided Inquiry:

Question #1: What is an Ecological Footprint, and how can I determine my own?

Question #2: What impact does my use of Earth’s resources have on the environment?

Question #3: How does my Ecological Footprint link to the cycle of consumption?

How does this Lesson Link to Environmental Education ?

Students begin to make connections that allow them to understand their fundamental connections to each other, to the world around them, and to all living things. They can make connections between their actions and consumption decisions and the subsequent impact that they have on the environment.

Social Studies Curriculum Expectations and Inquiry Skills

Grade 7 Geography: Natural Resources Around the World: Use and Sustainability

- B.2 Inquiry: use the geographic inquiry process to investigate the impact of the extraction/harvesting and/or use of natural resources around the world from a geographic perspective; FOCUS ON: Geographic Perspective
- B2.5 Evaluate evidence and draw conclusions about the impact of natural resource extraction/harvesting and/or use around the world

- B.3 Understanding Geographic Context: demonstrate an understanding of the sources and use of different types of natural resources and some of the effects of the extraction/harvesting and use of these resources. FOCUS ON: Spatial Significance; Geographic Perspective.
- B.3.2 describe ways in which elements of the natural environment are used to meet people’s needs and wants

Expectations across Subject Areas

Science and Technology:

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

Language: Oral Visual Communication

- Expectation 1.5 develop and explain interpretations of oral texts using stated and implied ideas from the texts to support their interpretation (Focus on: Making Inferences)

Prior Knowledge and Skills

Prior to this lesson, students will have:

- Ecology [through the science curriculum]
- Analysis of Media Text
- Developing the main idea with supporting details

Relevant Terminology

- Ecology
- Sustainability
- Hectare
- Finite
- Infinite
- Equity

Materials and Supports

- Apple & Knife (Teacher Only)
- Connection to Internet
- Projector and screen
- Computer
- Access to a computer lab or multiple computers for students to go online
- Access to park our large field
- Students need paper and writing instrument

BLM

BLM 2.1 – “Ecological Footprint”

BLM 2.2 – “My Ecological Footprint”

BLM 2.3 – “Ecological Footprint Teacher Resource”

Minds On :

Demonstration and discussion: The Earth as an Apple (10 minutes)

- Set-up an area where you can safely cut up an apple while students watch (to use after sharing)
- Hand back student's exit cards. Have students share some of their responses on their exit card
- Once students are finished sharing discuss:
 - In what ways can a person impact the Earth through consumption?
 - Do you think there is a limit to which each individual can consume from the earth?
- Now have students gather around you so that they can all see the apple on the desk
- Show students the apple and tell the students that the apple represents Earth
- Give students 60 seconds to say how the earth is like an apple? (Students could come up with a variety of answers –it is spherical, it has a core, they both have worms)
- State that all the “stuff” that we use/have – food, clothing, electronic devices – comes from the earth
- Again, tell them that the apple represents the earth, then:
 1. Carefully cut the apple into quarters and then set aside $\frac{3}{4}$ - explain that these 3 pieces represent the oceans.
 2. Explain that the remaining $\frac{1}{4}$ represents land
 3. Now carefully take the $\frac{1}{4}$ that remains and slice it in half. Take the $\frac{1}{8}$ (the half you just cut) and put it aside and tell students that it represents land that is inhospitable to humans.
 4. Now carefully slice the $\frac{1}{8}$ you are left with into 4 sections.
 5. Set 3 of these pieces aside and tell students they represent land that cannot produce food or land where people live but do not use for agriculture
 6. Tell them that the fraction of apple that remains is $\frac{1}{32}$.
 7. Now peel off the skin and explain to students that this tiny peeling represents the very thin earth's crust upon which humankind exists. All of the food that feeds the globe is grown on this.

Discussion: Wrap-up

- Given that all humans depend on this small percentage of farming land to feed us, what sort of problems might this cause? Record students' responses on chart paper. Possible students responses may include:
 - resource scarcity
 - resources running out over time
 - greed as a motivator for the use of resources
 - inequity between those who use the resources and those who do not
 - a resulting lack of diversity

Assessment Tools and Strategies:

Discussion: observe student responses for possible responses listed above. Feel free to add your responses, but explain to students why you are adding them

Assessment for Learning:

- Assessment Tool : observation of student responses

Action: Part 1 and 2

Part 1: Whole Class/Small Group - Ecological Footprint (50 minutes)

- Distribute BLM 2.1 “Ecological Footprint”
- Introduce students to the concept of an Ecological Footprint by visiting the Ecovoyageurs website at: <http://www.ecovoyageurs.ca/en/page.cgi?stage=footprint/whatis>
 - This link will lead you to a definition/explanation of an Ecological Footprint
 - Within the definition you will find 3 links that you can look at to investigate the concepts further
 - On the left side of the website you can also find a link “What Makes an Eco-Footprint” that will explain the components of an Ecological Footprint. (There are 5 – Water, Transportation, Waste, Energy, Food)
 - Have students write down a definition for Ecological Footprint in the appropriate section of BLM 2.1
 - Have students discuss, in pairs, what examples of each component might be, and record their answers in BLM 2.1
 - Ask students to share their examples with the whole class

Part 2: Whole Class: Just How Big is a Hectare? (50 minutes)

- Explain that an Ecological Footprint is measured in Hectares.
- Take students on a walk to a nearby park, field, or your own school yard. (Make sure it is large enough to demonstrate the approximate size of a hectare.)
- At a field, have students gather around you, review the basic definition of an Ecological Footprint and review what they are measured in.
- Option: Have students guess what 1 Hectare looks like (you can let various groups try to demonstrate the size by making a square with 4 students as the corners, or it can be a verbal discussion).
- Pick 4 students who you will send out to be the 4 vertices of the hectare, and assign a cardinal direction to each of them (north, east, south, and west)
- Tell the 4 students to take 70 large paces in their direction, and then to stop and turn and face the group
- When each of the four students have stopped and turned to face the group, explain to the group that this now represents the approximate size of a hectare.
- Remind them again of the definition.
- Ask them how many hectares they think the average person in Canada requires to sustain their lifestyle.
- Let them guess – then disclose the amount of hectares the average Canadian uses is 7.6

Part 3: Individual Activity: Measuring My Own Ecological Footprint (15 - minutes)

- In a computer lab – each student will require a computer.
- Using one the following websites have students work through the surveys to measure their Ecological Footprint
 - <http://www.myfootprint.org/>
 - <http://www.earthday.org/> click on footprint calculator at the top of the page
 - http://www.ecovoyageurs.ca/en/page.cgi?tplat=footprint_wide&stage=footprint/calc
- On BLM 2.2 “My Ecological Footprint”, have students record their results

Assessment Tools and Strategies:

Assessment for Learning:

- Assessment Tool: BLM 2.2. Monitor student work and conduct student-teacher conferences to check for understanding.

Consolidation and Debrief

Class, Small Group, and Individual Activity (10 minutes)

- Tell students that everything that we do or consume that uses a resources is part of our Ecological Footprint
- Ask students to look at BLM 2.2
- In pairs have students discuss their own Ecological Footprint with each other. Ask students to consider the 5 components of their footprint and to record an example of something that they use in each category
- Have students switch partners. Instruct students in their new groups to discuss ways that they can reduce their use of each example. They can record their responses on BLM 2.2
- Allow time for students to share some examples with the whole class

Assessment Tools and Strategies:

Assessment for Learning:

- Assessment Tool : BLM 2.2 and student-teacher conferencing

Assessment as Learning:

- Assessment Tool : students work in pairs to discuss and reflect on each other's responses

Further Opportunities for Learning

Project/activity which supports cross curricular learning and utilizes critical thinking Activity

Students calculate their own ecological footprint, using skills related to mathematical problem solving.

Related Resources and References

Websites

- Ministry of Education <http://www.edu.gov.on.ca/eng/teachers/enviroed/education.html>
- The Story of Stuff Project <http://www.storyofstuff.org/>
- Ecovoyageurs <http://www.ecovoyageurs.ca/en/index.shtml>

References

Cooper, Damian. (2007). *Talk About Assessment: Strategies and Tools to Improve Learning*. Toronto, Ontario: Nelson-Thomson Canada Ltd.

Critical Thinking Lessons in Geography which target Environmental Education Perspectives and Sustainability

Lesson 3

In this lesson students will look at the dynamics of Earth's population reaching 7 billion people in 2012 and start to think about the repercussions that this population puts on the planet. Students will then continue to explore ways to reduce their Ecological Footprint.

Learning Goals:

Students will understand, know and be able to:

- Understand the impact of an increasing population on the availability of resources
- Determine the inequity of unequal Ecological Footprints and the consequences of those inequities

Big Ideas:

As the population of Earth increases, there are fewer and fewer resources available.

By reducing some of our wants, we are better able to help others meet their needs and preserve natural resources

Framing Questions/Guided Inquiry:

Question #1: What impact does a growing population of 7 billion have on the availability of natural resources?

Question #2: To what extent are the finite resources of Earth distributed equitably?

Question #3: What are the consequences of an inequitable distribution of resources?

How does this Lesson Link to Environmental Education ?

Students learn that there are implications to unabated resource use and consumerism. They discover that their individual consumption choices and lifestyles impact the earth, and also create inequalities around the globe. They begin to understand the underlying causes, the multiple dimensions, and the dynamic nature of issues concerning the use of resources.

Social Studies Curriculum Expectations and Inquiry Skills

Grade 7 Geography: Natural Resources Around the World: Use and Sustainability

- B.1 Application: analyze aspects of the extraction/harvesting and use of natural resources in different regions of the world, and assess ways of preserving these resources; FOCUS ON: Interrelationships.
- B.1.1 Analyze the interrelationships between the location/accessibility, mode of extraction/harvesting, and use of various natural resources. FOCUS ON: Interrelationships.
- B.2 Inquiry: use the geographic inquiry process to investigate the impact of the extraction/harvesting and/or use of natural resources around the world from a geographic perspective.

- B.2.1 Formulate questions to guide an investigation into the impact of the extraction/harvesting and/or use of natural resources around the world from a geographic perspective.
- B.3 Understanding Geographic Context: demonstrate an understanding of the sources and use of different types of natural resources and some of the effects of the extraction/harvesting and use of these resources.
FOCUS ON: Spatial Significance; Geographic Perspective.
- B.3.2 Describe ways in which elements of the natural environment are used to meet people's needs and wants.

Expectations across Subject Areas

Language: Media Literacy

- Overall Expectation 1 demonstrate an understanding of a variety of media texts

Physical Education and Health: Movement Competence: Skills, Concepts, and Strategies

- Overall Expectation B1 perform movement skills, demonstrating an understanding of the basic requirements of the skills and applying movement concepts as appropriate, as they engage in a variety of physical activities

Mathematics: Number Sense and Numeration.

- 7.14 Solve multi-step problems arising from real-life contexts and involving whole numbers and decimals, using a variety of tools (e.g., concrete materials, drawings, calculators) and strategies (e.g., estimation, algorithms)

Prior Knowledge and Skills

Prior to this lesson, students will have:

- Skills in mathematical problem solving
- Skills in conducting research using internet sites

Relevant Terminology

- Needs vs. wants
- Ecological footprint
- Sustainability
- Inequity

Materials and Supports

- Connection to Internet
- Projector and screen
- Computer
- Students need paper (graph) and writing instrument
- Hula Hoops
- Pylon
- Tape or sticky tap
- Chart Paper

BLM

BLM 3.1 – “7 Billion”

BLM 3.2 – “Sorry, No Room Reflection”

BLM 3.3 – “Sorry, No Room Teacher Resource”

BLM 3.4 – “Ideas about How to Reduce my Wants”

Minds On :?

Whole Class – Video Screening: 7 Billion People (7 Minutes)

- Ask students to look at BLM 2.2 and think about the size of their own Ecological Footprint. Then pose the question: If my footprint is that large, how large is the footprint made by all of us?

- Explain to students that National Geographic has been doing a series on the fact that the population of the earth reached 7 billion in 2012

- Show students the National Geographic video, “7 Billion”. You can find it on YouTube or at:

<http://ngm.nationalgeographic.com/7-billion>

- Distribute BLM 3.1 “7 Billion”. Ask students to think about the following questions as they watch the video:

- What are some of the trends or changes in the human population?
- What are some of the challenges that these trends or changes cause?
- What are some interesting outcomes of having 7 Billion people?

- After the video ask students to share some of their ideas with the class, and record their ideas on the board or on chart paper

Assessment Tools and Strategies:

Assessment for Learning:

- Assessment Tool : BLM 3.1. Some things to look for:

- Quantifiable and qualitative trends (eg. increasing population, urbanization, longer average life span, inequitable distribution of resources)

Action: Part 1, 2 & 3

Part 1: How Many Pizzas Is That? (40 minutes)

- Have students work in groups of 3 or 4 to determine the following:

- The Ecological Footprint for the entire population of 7 billion
- The number of Earths required to meet the current demands of 7 billion people

- Invite students to use manipulables, graphs, and diagrams to communicate their answers. Ask students to record their responses on chart paper, and remind them that they will need to present their work to the whole class. Tell students to make use of the following data:

- The average of their own Ecological Footprints (measured in Hectares)

- The world population of 7 billion
- The available amount of productive land of 17 billion hectares

- Have students post their responses on the board. Allow students to briefly explain how they came up with their answer

Part 2: Is it Fair? (50 minutes)

- Take the students outside to a field or local park (about 20-30 m)
- Distribute several Hula Hoops throughout the field. There should be about one hoop for every 3 students in your classroom. The Hula Hoops represent the natural resources available for all of the Earth's inhabitants. Distinguish about 90% of the Hula Hoops with a special marking (red tape, or a different colour)
- Tell students that they are Earth's inhabitants (human or non-human) and that the Hula Hoops are Earth's resources. The object of the game is for them to get into the Hula Hoop before anyone else – only 3 students can be in any one hula hoop. Remind them that if they don't make it into a Hula Hoop safely, they don't survive
- Blow the whistle and start.
- Once they are safely in their hoops ask them: 'Did everyone make it safely? Isn't the planet Earth a wonderful place? Lots of space and food and water for everyone.'
- Let them run to the other end and into the Hula Hoops, one more time.
- Now it is time for them to come back again. This time, remove few hula hoops, and tell them, *"Some people in Canada, have decided that we need more cars for transportation. The main road needs to be bigger to make room for all of the new cars. Unfortunately, they had to take out the little woodland that bordered the road"*. Blow your whistle. Some of the students will not find room. They need to sit off. As they leave the playing field say, *"Many animals are no longer able to survive"*.
- Repeat the game one or two times
- With the remaining students, count them off from 1 to 10
- Tell the remaining students: *"The top 10% of the population consume about 80% of Earth's resources. In this round, all of the marked Hula Hoops (about 80%) can only be taken by those who are number 10."*
- Play the game one more time
- Direct all of the students to stand in a circle. Then ask your students how it felt when they were left out.
- When students return to the classroom, have them complete BLM 3.2 "Sorry, No Room Reflection"

NOTE: this activity is based on the game, "Sorry, No Room", found at the Ecovoyageurs website.

Part 3: Needs vs. Wants (50 minutes)

- On the board create a T-Chart with one column with the title Needs and one column with the title Wants
- In groups of 4 have students come up to the board and place their piece of paper with an item on it on either the needs or wants side. (If you use large pieces of sticky-notes on chart paper, you can keep it)
- Once all students have placed their items on the T-Chart, begin a conversation about why students chose to put what where. If a student feels that something needs to be moved, they can move it but must provide a reasonable explanation about why it should be moved.

Assessment Tools and Strategies:

Assessment for Learning:

- Assessment Tool: Observation; if possible, record student conversations

Assessment as Learning:

- Assessment Tool: students have an opportunity to share their ideas with each other

Consolidation and Debrief

Less is More (30 minutes)

Small Groups

- Ask students to discuss which 'wants' they think they could either do without or use differently so as to reduce their 'ecological footprint'
- Have students develop criteria for something to be a 'need' as opposed to a want. Begin with small groups, and then take up the suggestions as a whole class, putting them into categories. Have the class name the categories and use them as the criteria. (Sample criteria: health, basic needs, self-improvement, social/communication, transportation, etc.)
- As a class, redistribute the needs and wants according to the class criteria
- Direct students to choose one of the 'wants' (eg. a product, or perhaps a particular use of a product) as a topic of research, and have them brainstorm with their group some ways that they might use that product less or replace it with something else that produces a smaller ecological footprint. They can record ideas on BLM 3.4 "Ideas of How to Reduce Wants"
- collect BLM 3.4 for the next class

Assessment Tools and Strategies:

Assessment for Learning:

- Assessment Tool: BLM 3.4. Look for appropriate application of the criteria of needs vs. wants, and encourage students to develop their plans through student-teacher conferences

Assessment as Learning:

- Assessment Tool: sharing and brainstorming in small groups, esp. regarding the topic of research, and developing criteria as a class

Further Opportunities for Learning

Mathematical problem solving is used to determine the amount of 'Earths' required to maintain current world consumption. Students then create a plan to reduce consumption and promote sustainability.

Related Resources and References

Websites

- Ministry of Education
- The Story of Stuff Project <http://www.storyofstuff.org/>

References

Cooper, Damian. (2007). *Talk About Assessment: Strategies and Tools to Improve Learning*. Toronto, Ontario: Nelson-Thomson Canada Ltd.

Critical Thinking Lessons in Geography which target Environmental Education Perspectives and Sustainability

Lesson 4: Culminating Activity

In the culminating activity students conduct research about the production, distribution, consumption, and disposal of a product of their choice and the ecological footprint that each stage of the product's 'story' produces. Students then develop an action plan, along the lines of reducing wants, to minimize or eliminate negative impacts on the environment. Students choose a format to communicate their plan to the class, the school, and/or to the whole community, and are encouraged to put their plan into action.

Learning Goals:

Students will understand, know and be able to:

- Conduct research and inquire about environmental issues (check overall expectations under application)
- Assess and evaluate practices concerning the production, consumption, and disposal of a product from a geographical perspective
- Create an action plan that is specific, measurable, attainable, relevant, and timely

Big Ideas:

- By reducing some of the things that we want but don't need, we can help to reduce the ecological footprint that we impose on the environment
- Geographic inquiry involves organizing, assessing, and evaluating data from a geographic perspective
- Students are capable of making a difference by creating an action plan and focusing on reducing their wants.

Framing Questions/Guided Inquiry:

Question #1 What influence can I have on the environment by reducing my use and disposal of a product?

Question #2 How does one conduct geographic inquiry, and obtain a geographic perspective?

Question #3 What are the components of a good action plan?

How does this Lesson Link to Environmental Education ?

Students are given an opportunity to use their knowledge and skills about environmental issues to investigate an issue close to them and their community. Students are also given the option to engage in environmental projects.

Social Studies Curriculum Expectations and Inquiry Skills

Grade 7 Geography: Natural Resources Around the World: Use and Sustainability

- B.1 Application: analyze aspects of the extraction/harvesting and use of natural resources in different regions of the world, and assess ways of preserving these resources; FOCUS ON: Interrelationships.
- B.1.4 Create a personal plan of action outlining how they can contribute to more sustainable natural resource

extraction/harvesting and/or use.

- B.2 Inquiry: use the geographic inquiry process to investigate the impact of the extraction/harvesting and/or use of natural resources around the world from a geographic perspective.
- B.2.2 Gather and organize data and information on the impact of resource extraction/harvesting and/or use from a variety of sources, ensuring that their sources provide more than one perspective.
- B.2.4 Interpret and analyse data and information relevant to their investigation, using various tools and spatial technologies.
- B.2.5 Evaluate evidence and draw conclusions about the impact of natural resource extraction/harvesting and/or use around the world.
- B.2.6 Communicate the results of their inquiry using appropriate vocabulary and formats appropriate for a specific purpose.
- B.3 Understanding Geographic Context: demonstrate an understanding of the sources and use of different types of natural resources and some of the effects of the extraction/harvesting and use of these resources.
FOCUS ON: Spatial Significance; Geographic Perspective.
- B.3.4 Describe the perspectives of other groups.

Expectations across Subject Areas

Language Arts (Media Literacy)

- 3.1 explain why they have chosen the topic for a media text they plan to create
- 3.2 identify an appropriate form to suit the specific purpose and audience for a media text they plan to create
- 3.4 produce a variety of media texts of some technical complexity for specific purposes and audiences, using appropriate forms, conventions, and techniques

Prior Knowledge and Skills

Prior to this lesson, students will have:

- Some knowledge of the geographic inquiry process
- Basic knowledge of how to paraphrase information
- Basic knowledge of how to cite sources
- An ability to use appropriate technology to conduct research and communicate results

Relevant Terminology

Stakeholder

Inquiry

Geographic perspective

Materials and Supports

- Access to a computer and to the internet for research
- Access to other information sources (libraries, field trips, etc.)
- Access to appropriate technology for communicating results (options may vary)

BLM

BLM 4.1 – “The Story of my Product”

BLM 4.2 – “Stakeholders”

BLM 4.3 – “Action Plan”

BLM 4.4 – “Making my Voice Heard”

BLM 4.5 – “Focus Group Feedback”

BLM 4.6 – “Project Rubric”

Minds On :

Getting the Right Perspective (15 minutes)

Whole Class

- Distribute BLM 3.4. Ask students to look over their ideas for reducing one of their ‘wants’
- Explain to students that they will be conducting research on their product. Have students brainstorm appropriate criteria for geographic research. Remind them that geographers are ‘scientists’ and so would adopt some of the concerns that they have learned in scientific inquiry. Student responses may include:

- accurate facts
- detailed and relevant data
- reliable sources
- a variety of different perspectives
- a focus on environmental impact
- a consideration of how things are interrelated

Record these criteria on chart paper under the title “Geographic Inquiry”. Feel free to add criteria that students may have missed, but explain why you are adding that item to the list. Explain to students that by following these criteria, they are assuming a geographic perspective

NOTE: there is a difference between ‘geographic perspective’, as a way that students approach a topic of research (as opposed to a historical perspective, scientific perspective, etc.), and ‘perspective’ in the sense of people having different perspectives on a topic

Assessment Tools and Strategies:

Assessment for Learning:

- Assessment Tool: Observation

Assessment as Learning:

- Assessment Tool: students developing their own criteria for geographic research

Action

Developing a Plan (90 minutes)

- have students conduct research about the 'story' of their product. They will need to consider how the product is produced, how it is distributed and consumed, and how it is disposed of. They can use BLM 4.1 "The Story of my Product", to organize their information. Review with your students how to paraphrase information in their own words, and how to cite their sources
- have students create a web diagram showing the 'stakeholders' (both human and non-human) involved in the story of their product. Students should place stakeholders affected the most near the center of the diagram, and they can separate stakeholders who are affected positively on the left, and stakeholders affected negatively on the right. Use BLM 4.2 "Stakeholders" as a guide, but encourage students to make their own diagram, using their own design and more examples
- based on their research, students now begin to develop an action plan that would enable them to use the product less or in a different way so as to reduce their ecological footprint. They can use BLM 4.3 "Action Plan" to develop their plan.

Communicating the Plan (approx. amount of time in minutes)

- explain to students that they are to develop a communication strategy to promote their action plan to others. They should consider what format would work best for promoting their idea. Some possible options may include:

- podcast
- webpage
- social media
- interactive presentation
- promotional video

The communication format must show each step of their research, including:

- the 'story' of their product (production, consumption, and disposal)
- the stakeholders involved in that 'story'
- the plan (for individuals)
- how the plan could be developed for groups/the whole community
- how the plan would reduce the ecological footprint of those who adopt it

Students can use BLM 4.4 "Making my Voice Heard" to make sure that they include all of the requirements.

Focus Groups (approx. amount of time in minutes)

- in groups of 2 or 3, have students present their plan to each other
- students not presenting should complete BLM 4.5 "Focus Group Feedback" to provide feedback for the presenter
- allow students more time to make changes to their action plans

Assessment Tools and Strategies:

Assessment for Learning:

- Assessment Tool: BLM 4.5. Make sure to monitor student progress by circulating and providing oral feedback to students as they conduct their research and prepare their presentations.

Assessment as Learning:

- Assessment Tool: Focus Groups, in which students can provide feedback

Consolidation and Debrief

Social Action Day (30 minutes)

Whole Class/School/Community

- provide a forum in which students can present their action plans. This can be as a class, with other classes, with invited guests/parents, or even whole school. Use BLM 4.6 “Project Rubric” to assess their presentation of the plan.

Assessment Tools and Strategies:

Assessment of Learning:

- Assessment Tool: Rubric

Opportunities for Learning

Although participation in an action plan is voluntary, students can be encouraged to adopt one or more of their plans in a variety of ways. They might be encouraged to adopt their own plans, or they could take a vote on which plan or plans to adopt for their class/school/community.

Related Resources and References

Websites

- The Story of Stuff Project <http://www.storyofstuff.org/>

References

Cooper, Damian. (2007). *Talk About Assessment: Strategies and Tools to Improve Learning*. Toronto, Ontario: Nelson-Thomson Canada Ltd.

Strategies for Differentiated Instruction

Differentiating Content, Addressing Student Readiness

- Ensure working knowledge of background information
- Assembling rich, varied texts and diverse resources that challenge but are accessible and meaningful to students with a range of abilities
- Establish Learning Contracts to facilitate and guide student progress
- Provide techniques for evaluating sources for relevance and reliability

Differentiated Instructional Strategies

- Multiple groupings (small and large groups)
- Use of concrete examples
- Use of graphic organizers
- Outdoor education
- Multiple formats for communicating results

Differentiating Assessment and Evaluation

- Observations; anecdotal notes
- Peer assessment
- Rubrics

Differentiating the Learning Environment

- Opportunities to work in areas which minimize distractions
- Opportunities to work with others in small groups
- Computers and electronic devices for research and/or recording ideas

Opportunities for Technology Integration

- Videos and multi-media resources
- Internet research
- Multiple technologies for communication

Accommodations for Instruction, Presentation, Assessment

- Break tasks into small steps with monitoring to ensure understanding;
- Use of visual aids, artifacts whenever possible;
- Repeat, rephrase questions as needed;
- Allow students to work in first language, as appropriate;
- Summarize important ideas throughout lessons and activities and post as visual reference;
- Extended thinking and response time;
- Use of assistive technologies, software, Interactive White Board, iPad;
- Scribing, as needed;
- Learning Contracts for individual assignments, group work;
- Opportunities to demonstrate understanding through alternative formats which incorporate student strengths;
- Co-create/model success criteria so that students are aware of expectations prior to initiating tasks;
- Reference co-created success criteria throughout tasks;
- Ongoing descriptive feedback, both orally and in writing.

BLM 1.1 – The Story of Stuff

1. What do you think the video will be about?

2. During the video, record at least 3 Wow moments that you experienced while watching the film. Be ready to share your moments with the class.

WOW #1

WOW #2

WOW #3

BLM 1.2 – Exit Card

1. Summarize the main idea of the video (use at least 3 sentences).

2. Choose one of the clothing items that you discussed at the start of the class and explain how it relates to the video.

BLM 2.1 – Ecological Footprint

1. What is an Ecological Footprint?

2. What are the five components of an Ecological Footprint? Give an example of each.

Components of an Ecological Footprint	Examples
1.	
2.	
3.	
4.	
5.	

3. When is an Ecological Footprint considered to be 'sustainable'?

4. What are some implications of an Ecological Footprint that is not sustainable?

BLM 2.2 – My Ecological Footprint

1. Determine the size of your Ecological Footprint. Use one of the following websites:

- <http://www.myfootprint.org/>
- <http://www.earthday.org/> click on footprint calculator at the top of the page
- http://www.ecovoyageurs.ca/en/page.cgi?tplate=footprint_wide&stage=footprint/calc

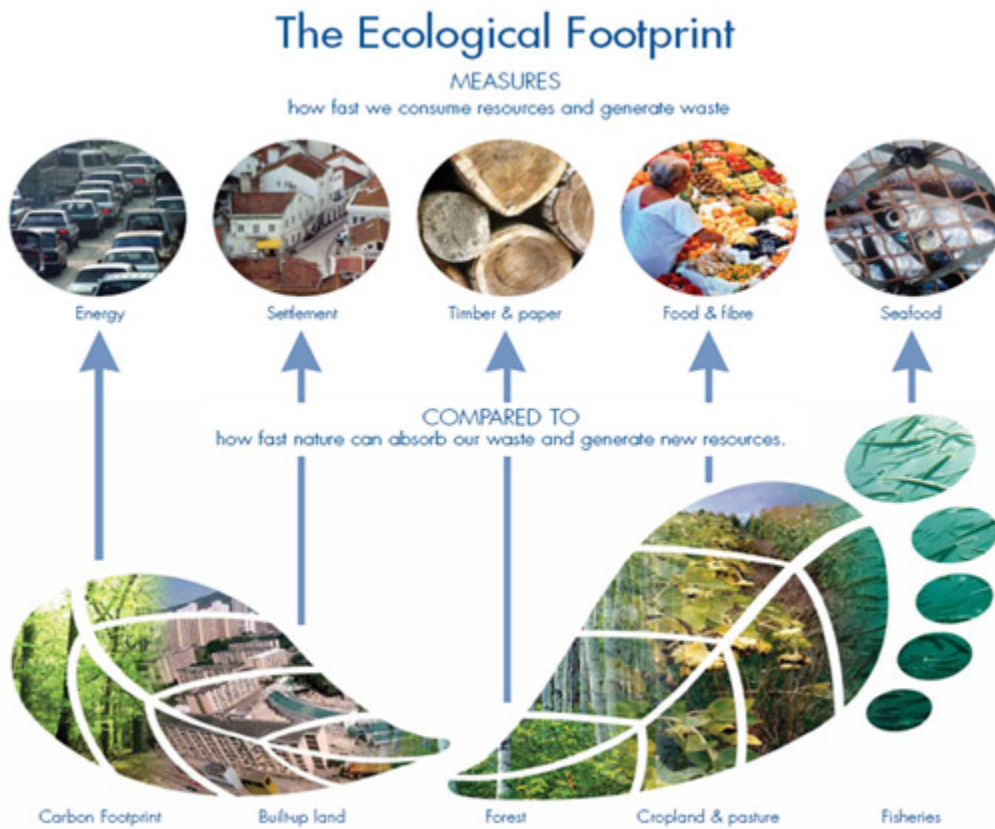
2. Summarize below the size of your ecological footprint.

3. Provide examples of your own footprint from each of the five components. Then think about ways that you could reduce each example.

Component	Example of Use	Ways to Reduce
Water		
Transportation		
Waste		
Energy		
Food		

BLM 2.3 – Ecological Footprint Teacher Resource

The Ecological Footprint estimates how much productive land and water you need to support what you use and what you throw away. Ecological Footprints can be calculated for individuals like you, communities, and even countries. We use natural resources when we consume, pollute, and discard garbage. If the Ecological Footprint indicates that more natural resources are used than the Earth supplies, then this is not a sustainable lifestyle. It is very important for all of us on the Earth to live a sustainable lifestyle in order to leave the planet in good shape for future generations to enjoy and prosper!



http://www.footprintnetwork.org/en/index.php/GFN/page/footprint_basics_overview/

History

William Rees and Mathis Wackernagel, both affiliated with the [University](#) of British Columbia in Canada, first developed the ecological footprint concept and calculation method in 1990. In 1996, Rees and Wackernagel published a book titled "Our Ecological Footprint: Reducing Human Impact on the Earth." Since that time, many alternative calculations have been developed to help individuals and businesses determine human impact on the ecology.

Read more: <http://www.livestrong.com/article/185668-how-is-an-ecological-footprint-calculated/#ixzz23Ye3ssnw>

BLM 3.1 – 7 Billion

While watching the video, think about the following questions and write down some ideas. You will be asked to share your responses at the end of the video.

1. What are some of the trends or changes in the human population?
2. What are some of the challenges that these trends or changes cause?
3. What are some interesting outcomes of having 7 Billion people?

BLM 3.3 – Sorry, No Room Teacher Resource

Sorry, No Room –

This game is from the Co-Ed Communications Ecovoyagers Program

- a. Choose a large area (about 20-30 m-outside preferably, but it could work in a gymnasium). Before you play the game, you will have to place a number of Hula Hoops at each end of the field. Place one hula hoop for every 3 students in your classroom. The Hula Hoops represent the natural resources available for all of the Earth's inhabitants.
- b. Explain to the students that they will be playing a running game. Explain that they are all of the Earth's inhabitants and that they get to choose what they want to be (human, animal, plant, bacteria, fungi, etc). The object of the game is for them to get into the Hula Hoop before anyone else – only 3 students can be in any one hula hoop. Tell them that they have just arrived on the planet Earth and that the hula hoops are their homes – with everything they need to survive inside. But they must make it to a Hula Hoop before all of the room is gone. Remind them: only 3 to a Hula Hoop, and if they don't make it into a Hula Hoop safely, they don't survive. They must sit out and watch for the rest of the game.
- c. Blow the whistle and start.
- d. Once they are safely in their habitats. Ask them: 'Did everyone make it safely? Isn't the planet Earth a wonderful place? Lots of space and food and water for everyone.'
- e. Let them run to the other end and into the Hula Hoops, one more time.
- f. Now it is time for them to come back again. This time, remove a hula hoops, and tell them, *"Some people in Canada, have decided that we need more cars for transportation. The main road needs to be bigger to make room for all of the new cars. Unfortunately, they had to take out the little woodland that bordered the road"*. Blow your whistle. Some of the students will not find room. They need to sit off. As they leave the playing field say, *"Many animals have lost their habitats and cannot survive"*.
- g. The game continues in the same way. Each time the students run, you read one of the reasons below for habitat loss and remove more Hula Hoops. You can make up your own reasons, but they should correspond to water, transportation, energy, food and garbage.
- h. When the habitat areas are almost all gone, ask your students how it feels when the habitats keep disappearing. Ask them to think of things that they might do to stop this from happening. If they can't think of things, suggest ideas that correspond to water, transportation, energy, food and garbage.
- i. Now go back to the game, only this time, tell the students who sit on the sidelines to watch for the return of their habitats and if they see an opening, they can run for it. Continue playing the game, only this time, call out things from the shrinking footprint list below and put a hula hoop back down with each one.

BLM 3.4 - Ideas about How to Reduce my Wants

1. Which 'want' did you decide to focus on? _____

2. Discuss with your group how you could reduce your use of that 'want' and list ideas below:

Idea 1:

Idea 2:

Idea 3:

Idea 4:

Idea 5:

3. I chose Idea # _____ because:

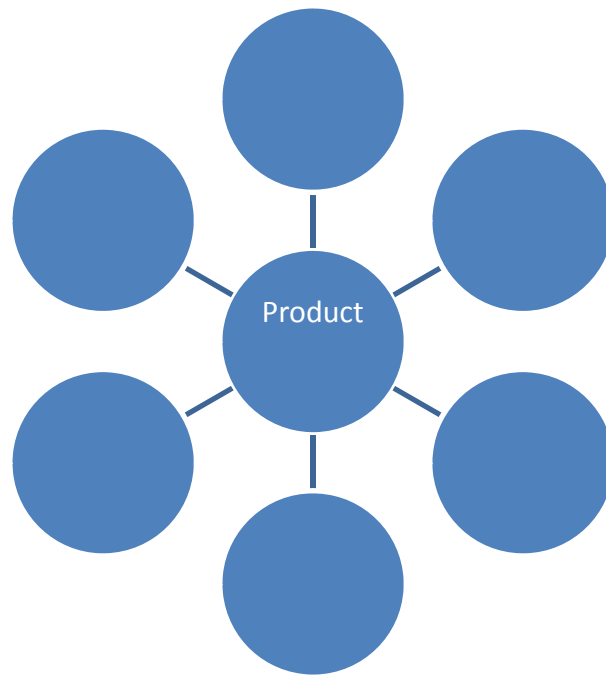
BLM 4.1 – The Story of My Product

Conduct research on the ‘story’ of your product, and record your information below. Remember to determine the ecological impact that each part of the ‘story’ has on the planet. Be sure to record your sources so that you can refer to them later.

1. How is it produced?	<p>Source(s):</p> <p>Book (author, title, publisher, date, page #) Article (author, title, journal title, date, volume/page #) Website (author, url, date) Other</p>
2. How is it distributed?	<p>Source(s):</p> <p>Book (author, title, publisher, date, page #) Article (author, title, journal title, date, volume/page #) Website (author, url, date) Other</p>
3. How is it consumed?	<p>Source(s):</p> <p>Book (author, title, publisher, date, page #) Article (author, title, journal title, date, volume/page #) Website (author, url, date) Other</p>
4. How is it disposed of?	<p>Source(s):</p> <p>Book (author, title, publisher, date, page #) Article (author, title, journal title, date, volume/page #) Website (author, url, date) Other</p>

BLM 4.2 – Stakeholders

In the chart below, put the name of your product in the center and names of stakeholders (human and non-human) around the outside. Place those stakeholders who are most affected near the center (and add other bubbles further out). If the impact is positive, place that stakeholder on the left; if the impact is negative, place that stakeholder on the right. (Feel free to add bubbles and/or place a stakeholder on both sides.)



BLM 4.4 - Making my Voice Heard

1. How will you communicate your plan to others? Choose a format to present your plan. Your choice may include one of the following:

- podcast
- webpage
- social media
- interactive presentation
- promotional video

2. The presentation must include all of the following:

- a summary of the 'story' of your product
- a diagram explaining the stakeholders (human and non-human) affected by your product's 'story'
- a detailed description of your action plan (including how it is measurable and attainable)
- an explanation of how you would extend the plan to the community
- an explanation of how it will help the environment

BLM 4.5 - Focus Group Feedback

Complete the following for each presentation. Be sure to provide details in the appropriate space.

The presentation ...	Yes it does, because ...	It would be even better if ...
1. ... provides a lot of relevant information about the environment.		
2. ... includes a variety of appropriate vocabulary.		
3. ... follows a sequence that is clear and easy to follow.		
4. ... used language structures that were effective and free of errors.		
5. ... includes all of the required elements (the story, the stakeholders, the plan, an application to the community, and an explanation of how it helps the environment)		
6. ... describes an action plan that is specific, measurable, and attainable.		
7. ... had a good flow from one thing to the next and kept my attention throughout.		
8. ... makes good use of the techniques specific to the format chosen.		

BLM 4.6 - Project Rubric

	Level 1	Level 2	Level 3	Level 4
1. Understanding of environmental concepts and issues	- demonstrates a limited understanding of the environmental impact of products	- demonstrates some understanding of the environmental impact of products	- demonstrates a strong understanding of the environmental impact of products	- demonstrates an in-depth understanding of the environmental impact of products
Communicating	- uses language that is rarely clear and effective to communicate information - uses appropriate vocabulary with limited effect	- uses language that is sometimes clear and effective to communicate information - uses appropriate vocabulary with some effect	- uses clear and effective language to communicate information - uses appropriate vocabulary effectively	- uses language that is highly effective and persuasive to communicate information - uses appropriate vocabulary with a high degree of effectiveness
Organizing	- organizes the required elements (the story, the stakeholders, the plan, an application to the community, and an explanation of how it helps the environment) with limited effect -includes an action plan that is minimally specific, measurable, attainable, relevant, and timely	- organizes the required elements (the Story, the stakeholders, the plan, an application to the community, and an explanation of how it helps the environment) with some effect -includes an action plan that is somewhat specific, measurable, attainable, relevant, and timely	- organizes the required elements (the Story, the stakeholders, the plan, an application to the community, and an explanation of how it helps the environment) effectively -includes an action plan that is sufficiently specific, measurable, attainable, relevant, and timely	- organizes the required elements (the Story, the stakeholders, the plan, an application to the community, and an explanation of how it helps the environment) with a high degree of effectiveness -includes an action plan that is specific, measurable, attainable, relevant, and timely to a high degree
Applying	- makes minimal use of strategies and techniques specific to the chosen format - applies environmental concepts to specific contexts with minimal effect	- makes limited use of strategies and techniques specific to the chosen format - applies environmental concepts to specific contexts with some effect	- makes good use of strategies and techniques specific to the chosen format - applies environmental concepts to specific contexts effectively	- makes extensive use of strategies and techniques specific to the chosen format - applies environmental concepts to specific contexts with a high degree of effectiveness