

# CANADIAN GEOGRAPHIC IN THE CLASSROOM

Article 'TITANS of the Great Lakes'  
Issue July/August 2017



## Lesson overview

Students are to familiarize themselves with the importance of shipping infrastructure as it relates to economics, trade and careers. They will also evaluate shipping from a sustainability point of view.

## Resources Used:

- "Titans of the Great Lakes" article from *Canadian Geographic* July/August 2017 issue (an online version may be found at [canadiangeographic.ca/article/titans-great-lakes](http://canadiangeographic.ca/article/titans-great-lakes))
- Optional companion article: "St. Lawrence Seaway: Inland superhighway" from *Canadian Geographic* July/August 2009 issue ([canadiangeographic.ca/article/st-lawrence-seaway-inland-superhighway](http://canadiangeographic.ca/article/st-lawrence-seaway-inland-superhighway))
- Great Lakes St. Lawrence Seaway System ([greatlakes-seaway.com/en/seaway/index.html](http://greatlakes-seaway.com/en/seaway/index.html))
- Rick Mercer and the St. Lawrence Seaway - The Welland Canal from the RMR [youtube.com/watch?v=zv9rNEVNIPg](https://www.youtube.com/watch?v=zv9rNEVNIPg) (6 minutes)
- Wreck of the Edmund Fitzgerald by Gordon Lightfoot (any number of videos available on YouTube)

## Materials Required:

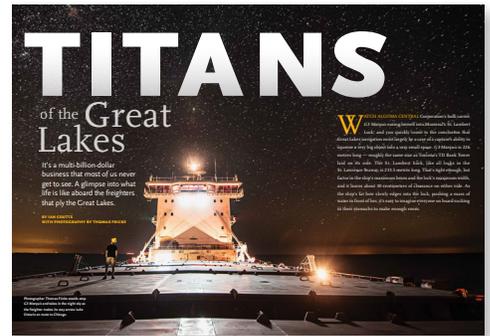
- Copy of article from July/August 2017 issue of *Canadian Geographic* for all students ([canadiangeographic.ca/article/titans-great-lakes](http://canadiangeographic.ca/article/titans-great-lakes))
- Access to computer lab or other tech (Wi-Fi) for student access to interactive link above
- Worksheets (attached)

## Opening Class Discussion

- Have students brainstorm different modes of transportation (e.g., air, road, rail and water) and routes/ports of origin (e.g., from Europe, St. Lawrence and the Great Lakes, east to west across Southern Canada, Pacific Ocean) that move goods to and from Canada. Provide a map of Canada, with major cities located, so students can draw links between modes of transportation and the human and physical geography. A tiled map of Canada can be found at: [canadiangeographic.com/educational\\_products/tiled\\_map\\_canada.asp](http://canadiangeographic.com/educational_products/tiled_map_canada.asp)
- Why would shipping over water (e.g. tankers) be used between Canada and other nations more than other modes of transportation? (Consider issues such as distance, landform barriers, oceans, cost per tonne, and value of commodities.)
- Why do the Great Lakes seem to be a funnel for the majority of shipping to and from Canada? (Compare a population map of Canada with the map of ports, found on page 37 of the article, "Titans of the Great Lakes." Possible reasons may include: many imports come from countries overseas, the largest concentration of Canada's population is in southern Ontario and Quebec so they are a major destination.)

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## Main Lessons

Note: Teachers can use any of these ideas in isolation or string them together to form a larger lesson plan for 3-5 classes.

### 1. THE FIVE HUMAN SYSTEMS

(Communication, Infrastructure, Transportation, Energy, Economics)

- In groups of 3-4, students are to evaluate the significance of the five human systems as they relate to the article.
- Provide students with a copy of the chart from the attached worksheet, “Human Systems and the Great Lakes St. Lawrence Seaway,” either as a photocopy or via Google Classroom (included at the end of the lesson).
- Invite students to define each of the five system terms.
- Ask students to read the article and record or underline examples of each term (some terms might have more or fewer examples, which is to be expected). They should label the examples (C, I, T, En, Ec). Some examples might fit into more than one type of system.
- Have students rank the systems in order of importance based on recorded examples.
- Note: Students will most likely identify Economics, Infrastructure and Transportation as being most important, especially as the three overlap. The other two systems — Communication and Energy — might have few examples, if any.
- Have students justify the system that they ranked as number one and explain why it is the most significant or important. This can be done as an exit card or a Google assignment and evaluated for each student individually.

### 2. INFRASTRUCTURE AND ECONOMICS

- Have students access the St. Lawrence Seaway website ([greatlakes-seaway.com/](http://greatlakes-seaway.com/)). Students will need technology (a laptop or access to a computer lab) to complete this lesson.
- Have students click on the “The Seaway” tab to get to the interactive map.
- Show RMR video ([youtube.com/watch?v=zv9rNEVNIPg](https://youtube.com/watch?v=zv9rNEVNIPg)) about how the locks operate.
- Hand out the worksheet “What is the Great Lakes St. Lawrence Seaway anyway?” for your students to complete.

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### 3. INTERACTIONS BETWEEN HUMAN AND NATURAL SYSTEMS

(Four spheres of natural systems: Biosphere, Lithosphere, Atmosphere, Hydrosphere)

- Ask students which of those spheres does shipping in the Great Lakes disrupt the most? (Invasive species are the greatest threat, so the Biosphere and Hydrosphere are the most disrupted.)
- Sustainability - Invasive species:
  - ▷ Have students read the section “Sustainability and Aquatic Invasive Species (AIS)” ([greatlakes-seaway.com/en/seaway/environment/index.html](http://greatlakes-seaway.com/en/seaway/environment/index.html)). Have them summarize how invasive species entered the Great Lakes St. Lawrence System. What are the invasive species of note and what is being done to mitigate this problem?
  - ▷ Show “Carpe Diem: A Fishy Tale” from The Nature of Things, Season 2012-2013, Episode 1, on the invasive species of Asian Carp. ([cbc.ca/natureofthings/episodes/carpe-diem-a-fishy-story](http://cbc.ca/natureofthings/episodes/carpe-diem-a-fishy-story) or commercial-free on curio.ca for subscribers)
  - ▷ Ask students how can the Great Lakes St. Lawrence Seaway be sustainably managed?

### 4. A SHIPPING CAREER ON A GREAT LAKES FREIGHTER

- Students will create a T-chart (Pros and Cons) of this career by reading the article.
- They should research this career using the school’s career platform or Google. Topics to explore include: training, education (e.g., time and cost), wages and other benefits, opportunities for career advancement, etc.



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## HUMAN SYSTEMS AND THE GREAT LAKES ST. LAWRENCE SEAWAY

TERMS AND DEFINITION	EXAMPLES FROM ARTICLE (write as many as you find for each term)	RANKING 1-5 1 is most important and 5 is least important, based on the article and topic
Communication		
Infrastructure		
Transportation		
Energy		
Economics		

For your #1 ranking, justify your answer as to why it is the most significant or important.

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## What is the Great Lakes St. Lawrence Seaway anyway?

- Go to the main page: [greatlakes-seaway.com/en/seaway/index.html](http://greatlakes-seaway.com/en/seaway/index.html)
  - ▷ Click “Gateway to North America (Interactive Tour)” on the centre of the page.
  - ▷ Click on each tab as instructed to complete the activity

<p><b>1. THE SYSTEM</b> - Explain how the Great Lakes St. Lawrence Seaway is different from just the St. Lawrence Seaway part of the system.</p>	<p><b>2. THE SYSTEM</b> - click the Welland Canal Region red dot - Draw a map on the back of this handout (see “2. Question continued”), showing the canal, the locks, and the Niagara River. Label all eight locks, Lake Ontario, Lake Erie and Niagara Falls. Draw the Canada-U.S. border.</p> <ul style="list-style-type: none"> <li>• What do you notice about the location of the Welland Canal?</li> </ul>
<p><b>3. THE SYSTEM</b> - click the Welland Canal Region red dot - click on red tab ‘Show Elevation’ - Referring to the elevation map, explain why the canal/lock system was built. Why and how is the system at the Welland Canal different from the rest of the system?</p>	<p><b>4. HOW LOCKS WORK</b> - click on red tab ‘Operation’ - Describe how the locks work. Click on all the steps.</p>

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<p><b>5. PORTS IN OUR SYSTEM</b> - choose one Canadian port. Name it and write down three important pieces of information, including the types of goods that pass through this port.</p>	<p><b>6. THE SYSTEM</b> - click on red tab to left 'A Vital Waterway' - What are the economic benefits? List the major commodities transported here. List the types of jobs people have. What is the value of trade since 1959? Which are the major areas of trade?</p>
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**2. (Question continued.)** Draw a map of the canal, showing the locks and the Niagara River. Label all eight locks, Lake Ontario, Lake Erie and Niagara Falls. Draw the Canada-U.S. border.