

# When Opportunity Knocks:

## Technology's Global Impact on Resource Use and Economic Health



Grades 8–10

Using AIT Products

- *Creating Our Economy*, program 5, “International Trade”
- *The Voyageur Experience in Global Geography*, program 10, “Singapore: Industrialization and Migration”

### Overview

As stated in “The Importance of Geography in the School Curriculum,” a pamphlet offered by the National Council for Geographic Education (page 3), “The world’s economies are increasingly linked into an international network of trade and exchange. If our competitors know more about us than we do about them, they have an advantage in serving our markets and negotiating trade agreements, and we are placed at a disadvantage in reaching their markets.” This lesson helps students relate to concepts of global interdependence and world geography by focusing on those emerging technologies most important to their lives: cell phones, Mp3 players, video game systems, and computers.



“The world is moving so fast these days that the man who says it can’t be done is generally interrupted by someone doing it.”

— Harry Emerson Fosdick

In this lesson students will find out what it's like to do without their favorite technology-based gadget, consider how difficult it would be for the United States to create everything it needs without interdependence, and then work in collaborative groups on an inquiry-based project focusing on an essential question of geography and economics: what makes some countries move their business or manufacturing centers to offshore locations?

This lesson plan aligns to the following national standards:

- **National Geography Standards<sup>1</sup>:**

- \* Standard 16: The changes that occur in the meaning, use, distribution, and importance of resources.
- \* Standard 18: To apply geography to interpret the present and plan for the future.

- **NCSS Curriculum Standards for the Social Studies<sup>2</sup>:**

- \* III People, Places & Environments: Social studies programs should include experiences that provide for the study of people, places, and environments.

- e. Describe, differentiate, and explain the relationships among various regional and global patterns of geographic phenomena such as landforms, soils, climate, vegetation, natural resources, and population.

- k. Propose, compare, and evaluate alternative policies for the use of land and other resources in communities, regions, nations, and the world.

- \* IX Global Connections: Social studies programs should include experiences that provide for the study of global connections and interdependence.

- b. Explain conditions and motivations that contribute to conflict, cooperation, and interdependence among groups, societies, and nations.

## Objectives

- Identify how the availability of human and natural resources influences economic activity and land use.
- Describe how inventions, innovations, and emerging technologies shape resource use and the economic health of regions and countries around the world.
- Collaborate on an inquiry-based project to investigate an essential question related to the impact of emerging technologies on the global economy.

## Vocabulary

globalization	meritocracy
incentives	offshore manufacturing resources
interdependence	resources
international trade	strategic planning
labor force	

## Preparation

### Materials Needed

- AIT video *Creating Our Economy*, program 5, “International Trade”— CUE the tape to

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<sup>1</sup> Geography Education Standards Project. 1994. *Geography for Life: The National Geography Standards*. Washington, D.C.: National Geographic Society Committee on Research and Exploration. Found at [www.ncge.org/geography/standards](http://www.ncge.org/geography/standards)

<sup>2</sup> 1994. *Expectations of Excellence: Curriculum Standards for Social Studies*. Washington, D.C.: Task Force of the National Council for the Social Studies. Found at [www.socialstudies.org/standards](http://www.socialstudies.org/standards)

approximate time code 09:54 (about 6.5 minutes in total length).

- AIT video *The Voyageur Experience in Global Geography*, program 10, “Singapore: Industrialization and Migration”—CUE the tape to approximate time code 00:38 (about 10 minutes in total length).
- World map

## Time

This project will take about two 45-minute class periods, in addition to homework and inquiry-based project time.

## Procedure—Day 1

### Introduce Topic: The Impact of Emerging Technologies on Individuals

Select two students to act as recorders and conduct a 30–40 second brainstorming session about material objects that are important to students’ lives. Set up the brainstorming session by explaining that you will be asking them to call out some of their material possessions that they consider vital to their happiness. They can describe clothing, food, or anything they own or know that they have easy access to. If the item contains a brand name, they should mention the brand as well. The recorders will be writing—on separate areas of the board or sheets of chart paper—the items they hear called out from their designated half of the classroom. Make note of the time and call “Go!” When you think the class has exhausted their ideas or 30–40 seconds have elapsed, call “Stop!”

Quickly organize the listed items by type, using a system to mark them, such as checkmarks for items of clothing, Xs for favorite foods, etc. Circle items of emerging technologies like cell phones, iPods, and computers. Ask students to identify which items their parents or grandparents could

have owned at their same age, and cross out those items.

Identify which categories contain the most items listed. Chances are, the emerging technologies will outrun all other types of material goods. Explain that students will be investigating the impact emerging technologies have played and are still playing on their lives, their country’s and other countries’ economies, and the use of human and natural resources around the world.

## Pre-Viewing Activity

Clear the board of the brainstorming session results and list (on the same board or on chart paper, depending on which area you will be able to save for 2–3 class periods) the following items and uses that are a part of today’s emerging technologies. Ask students to suggest additional technologies that may be missing from the list.

- Cell phones—for phone calls, photography, text messaging, music and video downloading, playing games, or scheduling appointments
- Handheld computers (e.g., PDAs or similar features on a cell phone)—for storing personal data or performing tasks
- Video game systems (Xbox 360, PS2, Wii, etc.)—for single-player or multiplayer gaming, including multiplayer online gaming
- Wireless networking—for Web access through cell phones, laptops, or handheld computers
- Wireless technology—for cordless phones, cell phones (e.g., Bluetooth headsets), computers (e.g., wireless keyboards and mice)
- Mp3 players—for music and/or video downloads or podcasting
- Computers (desktop or laptop)—for instant messaging, social networking (e.g., MySpace),

email, Internet surfing, games, blogs, videos, or discussion boards

- HDTV Televisions, plasma TV displays, etc.
- Satellite radios, Direct TV, digital cable, etc.

Take an informal poll of students to discover how many own or have access to each item as well as how often they use them. Which technologies have they acquired within the past year? Two years? Five years?

### Video

Prepare students for watching the AIT video from *Creating Our Economy* by asking them to think about the parts and materials that go into the creation of one or two of the items in the list and guess where the materials come from. Where are they manufactured or assembled? Display a map of the world and point out the state of Ohio and the South American country Brazil. Explain that they're going to watch a short (6.5-minute) video clip that describes a simplified view of how resources around the world come together to create the items we use every day.

CUE the program "International Trade" to approximate time code 9:54, with the on-screen graphic defining "Specialization." Stop the video at approximate time code 16:33, at the end of the segment on interdependence. In these two segments, two employees from Xtek, a Cincinnati, Ohio, manufacturer of capital goods for the steel and aluminum industries, talk about how different countries provide specialized knowledge and resources to world trade and the advantages and disadvantages of the United States' interdependence with its global trading partners.

### Class Discussion: Useful Tools or Status Symbols?

Discuss the video clip with students using the following questions.

- Jeff McKain said, "Without trade you are limited to what your nation can produce." What did he mean by that? Describe some food items we would have to do without if we had to rely on the natural resources of just the United States.
- At the end of the clip, Jeff McKain said, "Our country could probably function without goods from other countries, but I don't think anybody out there would want to do without their Nikes and their Nintendos." Think again about the materials that go into making the emerging technology items we own. Do you think the United States could manufacture them without depending on the resources of other countries? Defend your answer.

Have students describe the impact that these technologies and innovations have had on their lives. What do they consider as benefits of owning the items? Are there benefits beyond owning something they consider "cool"? Are the items useful to them? What did they do for similar tasks before they owned these technologies? Could they do without them? Ask students which side they would choose if they had to debate whether an item from the list is demonstrably beneficial to society (for example, performing an important service that couldn't be accomplished without it) or is not necessary to society (for example, existing technologies can perform the same functions and people buy the new stuff for "bragging rights" only).



"If opportunity doesn't knock, build a door."

— Milton Berle

## Homework

Have students each select one item from the list that they use every day and list all the tasks or activities for which they use it. Then explain that the homework assignment is to give up that item for the next 24 hours (or until the next time this class meets). Explain that they can substitute an earlier technology for the item each gave up. For example, if they give up their cell phones, they can still use land-line telephones; if they give up Mp3 players, they can listen to radios or CD players; and so on. Tell students they should pay particular attention to the number of times they find themselves reaching for or wanting to use their devices, and make note of how they feel about doing without them. In the next class period they will share some of their experiences. (Leave the list of emerging technologies posted until the following class period.)

## Procedure—Day 2

### Review/Reflection

Discuss with students their experiences in giving up one technological item for a day (or other period of time). Encourage them to share specific hardships, feelings, or incidents that arose from doing without the item. Did they have to rearrange their schedules, or change their usual activities to accommodate the loss of the item? Did anyone have a surprisingly good experience resulting from the loss?

### Introduce New Topic: The Impact of Emerging Technologies on World Regions and Countries

Explain that new inventions, innovations, and emerging technologies not only impact the lives of individuals who own or use them; they also make an impact on regions and countries around the world. As they saw in the video clip from *Creating Our Economy*, because Xtek developed specialized knowledge of steel manufacturing, the United States benefited from international trade when Brazil needed those

resources. Conversely, because Brazil has the resources to produce coffee and sugar, the U.S. can trade for those items much less expensively than trying to grow them here with our limited resources.

### Pre-Viewing Activity

In the previous class period students attempted to list parts and materials that go into the creation of one or two of the technology-based items they own and guess where the materials come from. Have students briefly discuss this question: In addition to the natural resources used to create the materials in the items, what other resources might a region or a country have to offer that would allow them to take part in global interdependence?

### Video

Prepare students for watching the AIT video from *The Voyageur Experience in Global Geography* by asking them to name where they think some of the emerging technologies they've been discussing are manufactured or assembled. List their ideas on the board. On a world map, point out the location of the island of Singapore on the southern tip of the Malay Peninsula in the South China Sea. Explain that they're going to discover why one of the industry leaders in electronics manufacturing, Hewlett Packard, chose to locate one of its factories in Singapore.

Show students a portion of the video "Singapore: Industrialization and Migration," beginning at approximate time code 00:38, where the first on-screen question appears; and PLAY to approximate time code 10:41, as Kenneth Lim concludes his remarks with, ". . . so I would put it down to planning."

Write the term "resources" on the board and remind students that a resource is a region's or country's wealth and can take many forms, such as land, water, air, forests, livestock, minerals, and even sunlight and human beings. In Brazil, land, water, air, and sunlight provide the country

with the ability to produce coffee and sugar, along with the human capital to work the land and prepare the items for market. Discuss Singapore's resources using the following prompts.

- What are the resources that Singapore used to become an industrial center?
- Why did Singapore's use of coal as a natural resource change? What resource that was important to the coal trade has remained important today? Why has it remained important? Can you predict an event that would make this resource less valuable in the future? Explain.
- How does "meritocracy" add value to the human resources of Singapore?
- How did Singapore use strategic planning to attract and convince businesses to locate their manufacturing centers there?
- How has Singapore kept its economy running smoothly over the years? How has the value of Singapore's resources changed over time?

### Group Work

Assign or allow students to self-select one of the emerging technologies listed on the board and then group students according to their selections. For example, one group might investigate cell phones, while another group investigates video game systems, and so on. Ask each group to collaborate on the following inquiry-based project to help them answer the essential question: "What lures companies to locate their manufacturing centers outside their 'home' countries?"

1. Discuss and reach a consensus to select a single manufacturer of the item (e.g., Cell phone manufacturers might include Motorola, Nokia, Apple, LG, etc.).

2. Begin with the essential question and work together to identify 4–5 subsidiary, or guiding, questions to focus your research. Assign one guiding question to each member of the group. (Teachers' note: Jamie McKenzie's "Questioning Toolkit" is a great source for more information about creating subsidiary/guiding questions. Look for a link to the toolkit in the Resources section of this lesson plan.)
3. Begin with the manufacturer and brand name (such as Motorola Razr or Apple iPod) and use the Internet or other resources to identify different manufacturing plants that company owns and where they are located.
4. Select one plant location in a region or country outside the United States and investigate that location through the guiding questions. After members have completed their independent research, they must combine their information in a way that responds to the essential question.
5. Create a presentation that answers the essential question by using that region or country as an illustration. The presentation can be in any form agreed on by the group, but should include maps, photographs, or possibly video clips that help to illustrate the geographic, economic, and cultural characteristics of the location as well as its place in global interdependence.

Provide opportunities for the groups to collaborate in class, but require that the majority of the work be done outside of class time. When all groups have completed their projects, schedule time for class presentations and encourage other groups to ask questions of the presenters on any points that weren't clear.

## Assessment



### Individual Assessment

Ask students to write an essay on how emerging technologies impact international trade by relating the five themes of geography (location, place, human-environmental interactions, movement, regions) to what they have learned about the resources and economic health of Singapore, Brazil, or the country or region their groups investigated during their inquiry-based project. Look for evidence of understanding in students' use of some of the key ideas listed below.

- Location
  - Relative location
  - Absolute location
- Place
  - Human characteristics
  - Physical characteristics
- Human-Environmental Interactions
  - Humans adapt to the environment
  - Humans modify the environment
  - Humans depend on the environment
- Movement
  - People
  - Goods
  - Ideas
- Regions
  - Formal
  - Functional
  - Perceptual

“Joint undertakings stand a better chance when they benefit both sides.”

— Euripides

### Group Assessment

Grade groups according to how well they worked together to respond to the essential question. The assessment should reflect evidence of effective participation, collaboration, and consensus, as well as an understanding of the incentives that lure companies to other countries for their manufacturing and other business needs. Look for evidence that groups covered different categories of resources and incentives that a region or country might offer a prospective manufacturer, including but not limited to:

- A fully-functioning transportation infrastructure
- Government incentives such as tax breaks and other policies favoring multinational businesses
- Research facilities (e.g., nearby universities)
- Highly educated, technically skilled workers
- Close proximity to a cosmopolitan urban center
- Abundant venture capital
- A locally-based network of global business linkages
- An environment offering attractive housing, climate, natural beauty, and recreational opportunities

### **Extension Activity: Making Global Connections**

(This activity is taken from the teacher's guide for *The Voyageur Experience in Global Geography*, program 10, "Singapore: Industrialization and Migration") Singapore has been nicknamed the Silicon Valley of the East. Have students research this comparison more closely, using the criteria listed in the Group Assessment section to compare California's Silicon Valley to Singapore's.

### **Resources**

[www.ait.net/technos/e-zine/october\\_2007.php#1](http://www.ait.net/technos/e-zine/october_2007.php#1)

Visit AIT's **Technos e-Zine** for October 2007 and meet Dr. Jamie McKenzie, publisher of *From Now On: The Electronic Technology Journal*. Jamie, a former social studies teacher, is a proponent of authentic teaching, strong questioning, deep learning, and the use of new technologies to transform classrooms and schools.

<http://questioning.org/Q7/toolkit.html>

Explore Jamie McKenzie's *Questioning Toolkit* to find 17 categories of questions designed to build an inquiry frame of mind in both students and teachers.

[www.nationalgeographic.com/xpeditions/hall/index.html](http://www.nationalgeographic.com/xpeditions/hall/index.html)

Visit the National Geographic Xpedition Hall to view email from Dr. George Stuart, the National Geographic's Chairman of the Committee for Research and Exploration. Visitors share their ideas about how to respond creatively to the rapid pace of change in our world.

[www.pbs.org/frontlineworld/stories/guatemala.mexico/coffee1.html](http://www.pbs.org/frontlineworld/stories/guatemala.mexico/coffee1.html)

PBS *Frontline/World*: Your Coffee Dollar. Follow a coffee bean from the field to your cup with this interactive. Divide one dollar among all the players in the coffee supply chain, and then compare your allocations with how profits are actually split in the global coffee market.

<http://globalization101.org>

Globalization 101.org is an Internet resource offered by the Carnegie Endowment for International Peace to promote a greater understanding of globalization. The Endowment's goal is to challenge you to think about many of the controversies surrounding globalization and to promote an understanding of the trade-offs and dilemmas facing policy makers.