

The following instructional plan is part of a GaDOE collection of Unit Frameworks, Performance Tasks, examples of Student Work, and Teacher Commentary for the Sixth Grade Social Studies Course.

Sixth Grade Unit 6 "Environmental and Economic Forces in Latin America"

Elaborated Unit Focus

In this unit, students will examine the environmental and economic concerns in modern Latin America and the Caribbean. The theme of **human environmental interaction** will guide students' understanding as they study individual behaviors affect Latin America and the Caribbean today. Students will explain how the location and availability of resources affect where people in Latin America and the Caribbean live and how the unequal distribution of resources impacts trade in the region. By the end of the unit students will be able to explain the presence or absence of the factors of production in the countries of Latin America and the Caribbean, and how these factors of production influence the **production, distribution, and consumption** of goods and services in the region.

Standards/Elements

SS6G2 The student will discuss environmental issues in Latin America.

- Explain the major environmental concerns of Latin America regarding the issues of air pollution in Mexico City, Mexico, the destruction of the rain forest in Brazil, and oil-related pollution in Venezuela.

SS6E1 The student will analyze different economic systems.

- Compare how traditional, command, and market economies answer the economic questions of (1) what to produce, (2) how to produce, and (3) for whom to produce.
- Explain how most countries have a mixed economy located on a continuum between pure market and pure command.
- Compare the basic types of economic systems found in Canada, Cuba, and Brazil.

SS6E2 The student will give examples of how voluntary trade benefits buyers and sellers in Latin America and the Caribbean and Canada.

- Explain how specialization encourages trade between countries.
- Compare and contrast different types of trade barriers, such as tariffs, quotas, and embargos.
- Explain the functions of the North America Free Trade Agreement (NAFTA).
- Explain why international trade requires a system for exchanging currencies between nations.

SS6E3 The student will describe the factors that cause economic growth and examine their presence or absence in Latin America.

- Explain the relationship between investment in human capital (education and training) and gross domestic product (GDP).
- Explain the relationship between investment in capital goods (factories, machinery, and technology) and gross domestic product (GDP).
- Describe the role of natural resources in a country's economy.
- Describe the role of entrepreneurship.

SS6G4 The student will describe the cultural characteristics of people who live in Latin America and the Caribbean.

c. Evaluate how the literacy rate affects the standard of living.

Enduring Understandings/Essential Questions

HUMAN-ENVIRONMENT INTERACTION: The student will understand that humans, their society, and the environment affect each other.

- How does the physical geography of Latin America and the Caribbean affect where people live?
- What is the impact of development and trade on the environment? (air pollution in Mexico City destruction of rain forests in Brazil, and oil-related pollution in Venezuela)
- How has the physical geography and distribution of resources influenced how people have lived in Latin America?
- How has the distribution of natural resources affected the economies of the Caribbean?

PRODUCTION, CONSUMPTION, and DISTRIBUTION: The student will understand that the production, distribution, and consumption of goods/services produced by the society are affected by the location, customs, beliefs, and laws of the society.

- How do the physical geography and physical features of the region promote and/or prevent trade?
- How do governments impose trade barriers?
- How do the trade agreements made between countries in Latin America and the Caribbean (i.e. NAFTA) overcome trade barriers and encourage voluntary trade in the region?
- How do trade barriers (tariffs, quotas, and embargoes) prevent international trade from occurring between countries?
- Why is it necessary to exchange currencies for nations to trade?
- Why are the benefits of voluntary trade important for buyers and sellers?
- What are the factors that promote economic growth in countries?
- How are these factors present or absent in the countries of Latin America and the Caribbean? (Cuba and Brazil)
- How does having or not having these factors of production affect the countries of Latin America and the Caribbean? (Cuba and Brazil)
- What is the role of entrepreneurship in Latin America?

*NOTE: Evidence for student mastery of standards should include a balance of selected response, essay, performance assessment or communication-based assessment yielding clear evidence for mastery of state standards. (Rick Stiggins, 2004)

*NOTE: The balanced assessment plan included in this unit is presented as a series of suggested activities. It is not expected that the teacher complete all assessments for a successful unit.

Balanced Assessment Plan

Description of Assessment	Standard/ Element	Type of Assessment
<p>Location: Students will work in pairs using thematic maps (physical, population density, resources, etc.) to create cause and effect chains showing the links between physical geography, resources, and densely populated in the countries of Brazil, Cuba, Mexico, and Venezuela.</p> <p>For example: Plateau + River = Mexico City</p>	G3a,b	*Constructed Response, *Dialogue and Discussion
<p>Currency Exchange: Students will use currency exchange rates to transfer a set amount of money from U.S. dollars to other forms of currency in Latin America. Use the attached worksheet (Appendix A) to learn about currencies from Mexico, Brazil, Venezuela, Cuba and Canada.</p> <p>In small groups have students discuss and list the problems involved when working with different currencies. Have them answer these questions.</p> <p>*Why doesn't everything cost the same in every currency? *Why isn't there just one currency throughout the world?</p>	E2d	*Constructed Response *Discussion and dialogue
<p>Economic Overview: Students will use the CIA Factbook to complete the Economic Overview of the Americas chart (Appendix B). If the internet is not available for students the teacher may print out and post around the room the required statistics.</p> <p>After completing the chart each student should compile a "Human Index Development" table (Appendix C) which will rank the countries researched according to the overall "success" in comparison to each other based on investment in human capital, investment in capital goods, and distribution of natural resources. Students will write justifications for their choices, for example, "Canada's literacy rates and low infant mortality rates demonstrate a high investment in human capital." Justifications should also include a sentence describing the basic economic systems of each country.</p> <p>Each student should post their Human Index Development chart and justifications around the room and students should self-assess their choices by comparing their work with their peers.</p>	E3a,b,c	*Constructed Response, *Dialogue and Discussion, *Observation, and Self-Assessment

<p>Mapping GDP: Students will calculate United States GDP and GDP per capita, use a choropleth map to acquire information, and create choropleth maps of GDP per capita in South America. Students identify regions with high and low GDP per capita and suggest reasons why the well-being of people may be overestimated in countries with high GDP per capita and underestimated in countries with low GDP per capita. (Appendix D)</p> <p>Use this link to view a GDP per capita density map of the world. Students should write a paragraph describing Latin America’s economic level compared with other regions of the world. <i>(U.S./Canada and Europe have the highest GDP per capita in the world; however, small segments of Eastern Asia also have high GDP. Latin America is among the highest of the developing regions)</i></p> <p>http://www.visualizingeconomics.com/wp-content/uploads/sachs-gdpdensity.png</p>	SS6E3a,b,c	*Constructed Response *Discussion and Dialogue
<p>Trade Barriers: Students will identify physical trade barriers such as being a landlocked country (Bolivia) and trade barriers such as tariffs, quotas, and embargos and discuss how they affect trade.</p>	E2 a,b,c	*Discussion and Dialogue
<p>Trade: Show the SCIS video clip on the economies of Latin America and have students take notes on what actions the governments of Latin America did to improve the economy. (See Resource List for DVD information) Follow up with a short discussion on the economic situations in that region and identify the specific trade agreement between the United States, Canada, and Mexico. Students will then research and identify the functions of the North America Free Trade Agreement. Have them share their findings through class discussion with the teacher writing these functions on the board. Students will correct their notes.</p>	SSE2c	*Constructed Response *Discussion and Dialogue
<p>NAFTA: This lesson will help students to explain the pros and cons of NAFTA and defend a position either supporting or refuting the treaty. Lesson 3, Activity 2 in SCIS pp. 63-67.</p>	SSE2c	*Constructed Response, *Dialogue and Discussion, *Observation
<p>Environmental Issues: Students will complete notes on the graphic organizer while learning about the environmental issues of Latin America using the PowerPoint. Teacher will lead a class discussion concerning the impact of these environmental issues on Latin America.</p>	G2a	Constructed Response *Discussion and Dialogue *Observation

<p>Brazil's Beef Students will combine their knowledge of economic concepts and environmental issues of the Amazon to analyze factors that influence economic growth in cattle ranching vs. deforestation of the Amazon. Appendix E</p>	<p>6E3b,c,d 6G2a</p>	<p>*Constructed Response *Observation</p>
<p>End of the unit exam may be a balance of questions including multiple choice, matching, fill-in-the blank, and short answer.</p>	<p>All applicable</p>	<p>*Selected Response, *Constructed Response</p>

Sample Performance Task

HUMAN ENVIRONMENTAL INTERACTION: The student will understand that humans, their society, and the environment affect each other.

You have been invited to participate in an international forum on environmental issues in Latin America. You will work in **groups of three** to research an environmental issue to learn the causes and effects of the issue, what people are involved in and by the issue, and what regulations, if any, have been enforced to resolve the issue. The goal of the forum is to create a prioritized list of the most important environmental issues of the region along with two or three recommendations on how to resolve each issue to the best extent of the concerns of all involved. Issues to be researched should include air pollution in Mexico City, oil related pollution in Venezuela, destruction of the Amazon rain forest.

During the forum one member of your group will serve as the spokesperson in an “inner circle” of the forum. The remaining two members of your group will be seated behind you in the “outer circle” of the forum. The outer circle members will participate in the forum by writing notes, prompts, statistics, and suggestions to the member of their group serving in the inner circle in order to influence the conversation of the inner circle. At the beginning of the forum each person in the outer circle should have a stack of scrap paper with their name on each piece. These scrap notes will be saved and used as evidence of participation in the forum. Everyone should take notes on the Guided Notes (Appendix E) during the forum.

At the conclusion of the forum, each participant of both the inner and outer circles must write a list of the environmental issues from most important to least important with supporting reasons for their choices. Supporting reasons should make clear connections to how the physical geography has influenced how people use of the natural resources and the consequences of human development on the environment.

An example from your list should include *at minimum* the following:

Issue #1

- Cause & Effect of Issue
- Economic benefits gained through the activity
- The people affected by this issue include...
- Regulations on this issue include...

Map and Globe Skills: 6, 7, 8, and 12	Information Processing Skills: 1, 3, 4, 5, 8, 11, 12, 14, 15, and 16
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***Note concerning rubrics:** Each performance task is accompanied by two rubrics. The first is designed to address content and understanding of the standards in terms of the enduring understandings. The second rubric focuses on the product of the performance task. This is where students are scored on items involving grammar, punctuation, spelling, creativity, presentation, etc. It is NOT intended that each rubric counts for 50% of the assessment. Teachers should weigh each section of the rubric according to the areas they wish to emphasize.

Content Rubric for Environmental Forum

	1 – Below Standards	2 - Improving	3 – Meets Standards	4 – Exceeds Standards
<p style="text-align: center;">SS6G3 b, c</p> <p style="text-align: center;">Analyzes cause and effect of environmental issues</p>	Lists environmental issues but does not explain how they became problems (cause) or their effects.	Explains either the causes OR effects of air pollution, destruction of rain forests, and oil related pollution but does not give BOTH cause and effect.	Clearly analyzes the cause and effects of air pollution in Mexico City & Santiago, destruction of the Amazon rain forest, and oil related pollution .in Venezuela	Clearly analyzes the cause and effects of the preceding issues plus others
<p style="text-align: center;">SS6G2 b</p> <p style="text-align: center;">Gives examples of how governments and citizens work together</p>	Does not give a specific example of a regulation or of how people are affected.	Gives one example of a regulation OR one example of how people are affected but not both.	Gives examples of current regulations and their impact on the region. Gives examples of how people are affected.	Gives examples of current regulations and their impact on people locally and globally. Gives examples of groups advocating for further change.
<p style="text-align: center;">Evaluates the benefits vs. costs</p>	Does not link economic benefits to the environmental issues.	Links economic activity to the environmental issue but does not evaluate the benefits or costs.	Evaluates the benefits gained by society through the economic activity vs. the cost to society by the resulting environmental issue.	Evaluates the benefits gained by society through the economic activity vs. the cost to society by the resulting environmental issue. Determines if the benefits outweigh the risks involved.

Product Rubric for Environmental Forum

	1 – Below Expectations	2- Improving	3 – Meets Expectations	4 – Exceeds Expectations
Group had adequate information to participate in the forum.	Tells about an environmental issue but does not describe the causes and effects.	Describes the environmental issue but does not describe both causes and effects, who is affected, or how the issue is being regulated.	Accurately described the cause and effects of issue, who is affected, and how the issue is being regulated.	Describes the cause & effects of issue, how the issue affects people locally and globally, gives examples of regulations, and gives examples of interest groups involved in issue.
Inner and Outer Circles worked effectively during the forum	The team had little or no interaction of ideas and information during the forum.	The inner and outer circles shared few ideas or suggestions during the forum and often conversed with each other.	Outer circle submitted pertinent information and inner circle incorporated submittals into the conversation smoothly.	The team worked together smoothly and supporting each other without interruptions to the inner circle.
Written Recommendations are organized	The written recommendations are difficult to understand because of disorganization.	The written recommendations do not follow a consistent format or organizational style.	The written recommendations are organized and follow a clear format.	The written recommendations are well organized and free of grammar and spelling errors.
Purpose or point of view	Participation & writing did not reflect a purpose or point of view.	Participation or writing did not demonstrate a purpose or point of view.	Participation & writing demonstrated an awareness of the relevance and motive to task.	Participation & writing demonstrated a passion towards issue and its relevance globally.

Resources for Unit

The United Nations Development Program publishes Human Development Indexes for countries and regions of the world based on many statistics and determining characteristics.

<http://hdr.undp.org/en/>

Office of the United States Trade Representative – gives details of trade agreements around the world.

http://www.ustr.gov/Trade_Agreements/Section_Index.html

Environmental Issues Resources: www.cia.gov

DVD “Latin America in Transition Part 3 -- Economics

Individual Case Studies <http://www.ess.co.at/GAIA/CASES/cases.html>

World Wildlife Fund <http://www.worldwildlife.org/wildplaces/lac.cfm>

A collection of kid’s pages on oil spills <http://oils.gpa.unep.org/kids/kids.htm>

United Nations Environment Program:

<http://www.unep.org/Home/unep-world.asp?map=rolac>

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Appendix A Currency Exchange Rates in the Americas

Directions: You are traveling around the Americas and realize you forgot your camera. Since you like to take many pictures you decide buy disposable cameras when you need them. The disposable cameras you are buying cost about US\$10.00; how much do you have to pay in other countries?

Use this link to convert US\$10 to another currency:

<http://www.worldatlas.com/aatlas/infopage/currconv.htm>

Country	Currency	Exchange Rate	= US\$10.00
Brazil			
Canada			
Cuba			
Mexico			
Venezuela			

1. What might be challenging about traveling to many different countries on a trip?
2. Why do you think countries keep individual currencies?

Appendix B

Economic Overview of the Americas

	Venezuela	Brazil	Canada	Cuba	Mexico
Literacy Rates					
Males					
Females					
Infant Mortality Rate					
GDP per Capita					
Employment by sector					
Agriculture					
Industry					
Service					
Unemployment Rate					
Population below Poverty					
Name of Currency					
Top Three Imports					
Top Three Exports					

Appendix C: Human Development Index

Ranking	Country
1	
2	
3	
4	
5	
6	

Country #1 _____

Reason #1: _____

Reason #2: _____

Reason #3: _____

Country #6 _____

Reason #1: _____

Reason #2: _____

Reason #3: _____

Appendix D

Mapping GDP per capita in Latin America

INTRODUCTION

Gross Domestic Product (GDP), a basic measure of economic output, is the total market value of all final goods and services produced in an economy in a given year. Although GDP does not account for differences in the types of goods produced, nor for differences in the distribution of income, GDP per capita (GDP divided by population) is often used to compare the economies of countries and the well-being of their citizens.

Geographers apply a spatial perspective to economic and social data using choropleth maps. A choropleth map shows differences between areas. Distinct categories of qualities can be represented by different colors or shading patterns. Four different colors could represent deserts, mountains, forests, and grasslands, for example. Choropleth maps can be used to display differences in quantities as well. The range of population density can be divided into five to ten categories. Each category is then assigned a color or shading pattern, and each area on the map is colored based on its category of population density. Regional concentrations of population and areas of sparse population could be easily identified with such a map.

Choropleth maps that display economic data aid in the analysis of that data. This lesson uses choropleth maps of GDP per capita. This technique will be used in subsequent lessons with other measures of well-being.

LESSON DESCRIPTION

Students calculate United States GDP and GDP per capita, use a choropleth map to acquire information, and create choropleth maps of GDP per capita in South America. They identify regions with high and low GDP per capita and suggest reasons why the well-being of people may be overestimated in countries with high GDP per capita and underestimated in countries with low GDP per capita.

Economic Concepts

- Gross Domestic Product (GDP)
- Choropleth Map
- Measure of Value
- Double Counting
- Final Goods and Services
- Flow of Product
- Approach Earnings and Cost
- Approach Consumer Spending, Investment Spending, Government Spending, Exports, Imports, Gross Domestic Product Per Capita

Time Required

Two Class Periods

Materials

Blank Outline Map of the Western Hemisphere
Color Pencils

Procedure

1. Tell the class that this lesson is about Gross Domestic Product (GDP), a measure of economic production, which is used by economists and geographers as a measure of well-being. GDP is the total market value of all the final goods and services vices produced in an economy in a given year.
2. Distribute Activity 1, Gross Domestic Product, and ask the students to read the explanation of GDP and to answer question 1. If the reading is too difficult for your students, go through it with the students, paragraph by paragraph. (United States GDP for 1993 was \$6,374.0 billion.)
3. Review the information from Activity 1, Gross Domestic Product, to be certain students understand:

*Definitions of GDP.

*Calculating GDP using the total spending method.

*Limitations of GDP as an indicator of economic well-being.

4. Explain GDP per capita and have students answer question 2. (United States GDP per capita for 1993 was \$24,683.)
5. Display the transparency of Visual 1, Choropleth World Map of GDP Per Capita. Explain that this is a choropleth map that will be used to analyze regional variations in GDP per capita. Tell the students that the range of GDP per capita is \$80 to \$32,790. That range has been divided into 9 categories which are shown in the legend or key. Each category has a shading pattern associated with it, and each country is shaded according to its category. Ask the students to complete the following statements:

The GDP per capita of Canada is between \$ _____ and \$ _____.

Four countries with GDP per capita between \$15,000 and \$19,999 are _____, _____, _____, and _____.

The nations of South America have GDP per capita between \$ _____ and \$ _____.

(GDP per capita of Canada is between \$20,000 and \$24,999. Four countries with GDP per capita between \$15,000 and \$19,999 are Great Britain, France, Italy, and Australia. The nations of South America have GDP per capita between \$300 and \$4,999.)

6. 6. Distribute Activity 2, Constructing a Choropleth Map, and ask the students to read the first three paragraphs, which describe choropleth maps. Go over the directions for creating a choropleth map with the students and answer any questions that they have about the process.
7. 7. Distribute Activity 3, Map of South America. Have each student construct a choropleth map of GDP per capita in South America. Allow students to work in pairs if they choose. (Tell the students who are having trouble getting started that the range of values from 370 to 3050 is 2680, close to 2700, and that nine mapping categories of 300 units will work well. The sample that follows is only a suggested answer. There are many other possibilities.)

Closure

Display the transparency of Visual 1, Choropleth World Map of GDP Per Capita. Some countries may be blank because they do not report data or may report it in a form not easily converted to GDP in dollars. Ask the following questions:

- Where are the countries with high GDP per capita (top four categories) located? *(In general, the northern hemisphere. Students should mention continents like North America, and regions like Northern and Western Europe or Western Asia, but they may tell you about individual countries such as Japan, Italy, and Australia.)*
- Where are the countries with low GDP per capita (bottom three categories) located? *(South America, Central America, Africa, Asia, Eastern Europe, and the Caribbean.)*
- Why might the well-being of people in low GDP per capita countries be underestimated? *(GDP per capita does not include goods and services not sold in the marketplace. When people grow their own food, build their own shelter, and make their own clothes, those goods and services vices are not included in their country's GDP.)*
- How can a nation increase its GDP? *(Point out that for an economy to become more productive it must produce fewer goods for domestic consumption and more capital goods. It is investment that increases the productivity of workers, including investment in the workers themselves, increasing the quality of their human capital. Such investments have significant opportunity costs and economic risks.)*
- Ask the students to create posters illustrating the components of Gross Domestic Product, using the flow of product approach.

From the National Council of Economics Education and can be found at:
<http://ecedweb.unomaha.edu/lessons/feogx.htm>

ACTIVITY 1

GROSS DOMESTIC PRODUCT

Gross Domestic Product (GDP) is a statistic that shows the value of goods and services produced in a country in a particular year. All of the goods and services that are sold each year have to be counted. Every new car and truck, every egg laid by every hen, every CD, every doughnut, burger, and taco has to be included. Services must be counted, too. Barbers, nurses, lawyers, computer programmers, and basketball players sell their services and these services are part of GDP. Suppose all of these things and many more besides were stacked up in one big pile. It would still be hard to know the value of all the goods and services produced by the economy, yet this is what the Gross Domestic Product (GDP) tries to measure.

How is it done? First, instead of counting the actual goods made and sold and all the of the services performed, economists add up what these things sold for in dollars and cents. In other words, they are using money as a **measure of value**. So, if people buy 2,000,000 bushels of apples at \$1 per bushel, and 2,000,000 books at \$1 per book, then these purchases add \$4,000,000 to the Gross Domestic Product.

Second, not everything made and sold during the year can be counted. For example, the paper in your math book was once part of a giant roll of paper in a paper mill. Some people worked hard to make your book. Both the roll of paper and the books are goods. But if the money paid for both the roll of paper and the book were counted, the value of the paper would be counted twice. So to avoid this problem of **double counting**, economists only count a product in its final form. They count the paper, for example, in its final product form as a book, newspaper, a magazine, or a shopping bag. They refer to these as **final goods and services**.

There are two different ways of counting the value of goods and services, but they both give the same answer. The first way, the **flow of product approach**, is by counting all the money spent by the buyers of goods and services. The second way, the **earnings and cost approach**, is by counting all the money received by those who produce the goods and services. Each of these ways looks at different sides of the same economic activities. If a person makes a chair and sells it for \$50, both seller and buyer have helped increase the Gross Domestic Product by \$50. In figuring out what the Gross Domestic Product is, an economist might count the \$50 the buyer spent for the chair, using the flow of product approach. But he might count the \$20 that went to the lumber yard owner, the \$5 that went to the paint store owner, the \$5 for wear and tear on tools used in making the chair, and the \$20 for the cost of labor, instead. These are the payments that were made for the resources that were used to produce the chair, and this example of the earnings and cost approach also adds up to \$50.

If the Gross Domestic Product is computed using the flow of product approach and counting what people spend, four different kinds of spending must be taken into account. These are:

- consumption: spending by ordinary consumers,
- investment: spending by businesses on new equipment,
- spending by all levels of Government, and
- spending by foreigners who buy American goods (our exports) minus spending by Americans on foreign goods (our imports).

Of course, no way of adding up the Gross Domestic Product can be entirely accurate. But the two ways discussed here give a rough estimate of the total value discussed here give a rough estimate of the total value of what the economy produces in a given year. Better still, measuring the Gross Domestic Product each year can show if the economy is growing or shrinking, healthy or sick. It is a standard by which the economy as a whole can be judged. It can be used to compare one economy with another. It can also be used to compare an economy with itself over time.

Symbolically, GDP is represented by the equation:

$$\text{GDP} = \text{C} + \text{I} + \text{G} + (\text{X} - \text{M})$$

The letters in this equation represent the four kinds of spending mentioned above. **C** is for consumer spending, **I** is for business investment spending, **G** is government spending, **X** is the spending by foreigners on the nation's exports, and **M** is the spending on imported goods from foreign nations. The figures below show the levels of spending in *billions of dollars* for the United States economy in 1993.

Consumer Spending	4,390.6
Investment Spending	892.0
Government Spending	1,157.1
Exports	660.1
Imports	725.8

Source: *Economic Report of the President, 1994*

1. Using the GDP equation above, calculate the United States GDP for 1993.

Gross Domestic Product per capita is the amount of GDP that would be available for each person to use if a country's production of goods and services were divided equally among its people. *Capita* is the Latin word for *head*, so GDP per capita means GDP per person. GDP per capita is one way to determine how well-off the average person is in a country.

2. Calculate the United States GDP per capita by dividing the GDP obtained above by the 1993 population. The population of the United States in 1993 was 258,233,000. _____

GDP does not show the types or quality of goods and services that a country produces. GDP per capita shows an average standard of living, and it does not show how many people in a country are richer or poorer than the average. People in countries that have similar levels of GDP per capita may share goods and services in very different ways.

GDP has other limitations as a measure of economic well-being. It does not include items such as goods and services not sold in the marketplace such as cooking, repairing one's own car, mowing the lawn, painting the garage, and other unpaid work done at home. The value of leisure time, and illegal goods and services are not added to GDP, and negative goods, such as pollution, that detract from well-being are not subtracted.

Despite its limitations, GDP is a powerful measure of economic welfare. It can be used in combination with other measures to assess the welfare of people throughout the world.

ACTIVITY 2

A choropleth map uses colors or shading to show differences between areas. Areas that share a quality are colored or shaded alike. A very simple choropleth map of the United States could be made using a single color or shading pattern to show those states that have state sales taxes, state income taxes, and both sales and income taxes, leaving blank those states that have neither sales taxes nor income taxes.

Choropleth maps can be used to show differences in quantity also. If you wanted to show the percent of people graduating from high school on a world map, you could use ten colors to represent 0 to 10%, 11 to 20%, 21 to 30%, and so on.

Mapping information locates it for you. You know *where* it exists. And you have a starting point for finding out why it is there.

DIRECTIONS FOR CREATING A CHOROPLETH MAP

1. Determine the mapping categories.
 - Subtract the lowest value from the highest value to calculate the range of the numbers.
 - Decide upon the number of mapping categories. Five to ten mapping categories are adequate for most maps.
 - Divide the range by the number of mapping categories to determine the numbers to include in each category.
2. Choose a color code or shading pattern for each category. The colors or patterns assigned should increase from light to dark to represent the lowest to highest category.
3. Locate and label each country on an outline map, determine its mapping category, and color or shade the country appropriately.
4. Title the map and add the *key* or *legend* to the map.

ASSIGNMENT

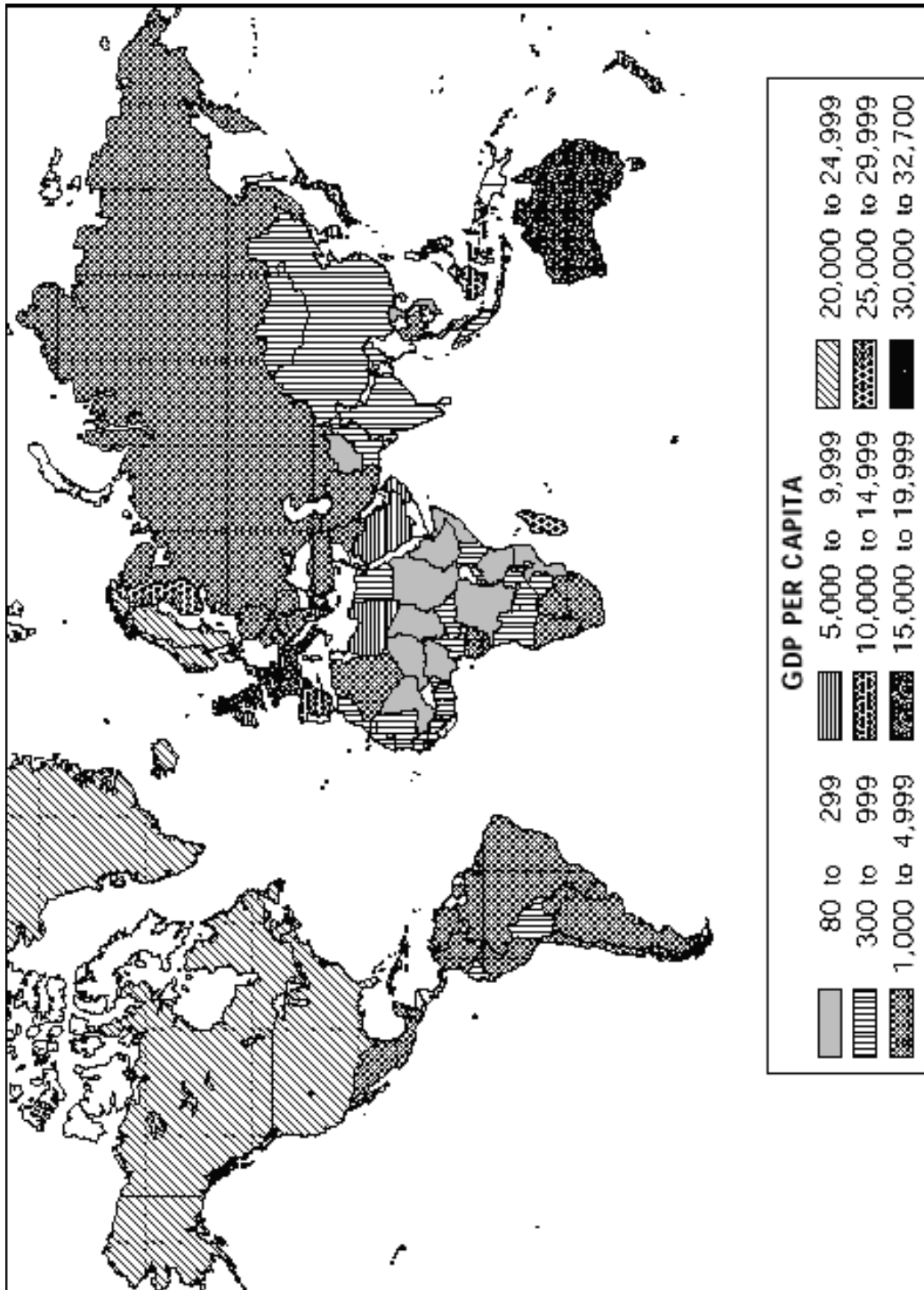
Use the following data to construct your own choropleth map of GDP per capita in South America.

GDP per capita for selected countries of Latin America

Brazil	\$9,700	Mexico	\$12,800	Haiti	\$1,300
Canada	\$38,400	Venezuela	\$12,200	Panama	\$10,300
Cuba	\$4,500	Bolivia	\$4,000	Columbia	\$6,700

Visual 1

CHOROPLETH MAP OF GDP PER CAPITA



APPENDIX E

Linking environmental and economic issues... THE CASE OF BRAZIL'S BEEF

How does the value of a currency affect supply and demand?

How does supply and demand for a product result in growing specialization and entrepreneurship?

Cattle ranching is the leading cause of deforestation in the Brazilian Amazon. This has been the case since at least the 1970s: government figures attributed 38 percent of deforestation from 1966-1975 to large-scale cattle ranching. However, today the situation may be even worse. According to the Center for International Forestry Research (CIFOR), "between 1990 and 2001 the percentage of Europe's processed meat imports that came from Brazil rose from 40 to 74 percent" and by 2003 "for the first time ever, the growth in Brazilian cattle production—80 percent of which was in the Amazon—was largely **export** driven."

Several factors have spurred recent Brazil's growth as a producer of beef. For each factor analyze the explanation and write answers to the questions to help understand the causes and effects of ranching and the destruction of rainforest.

CURRENCY DEVALUATION—The devaluation of the Brazilian real* against the dollar effectively doubled the price of beef in real and created an incentive for ranchers to expand their pasture areas at the expense of the rainforest. The weakness of the real also made Brazilian beef more competitive on the world market [CIFOR].

*the *real* is the currency of Brazil

1. What does devaluation mean?
2. Why does the devaluation of the real double prices and create an incentive to produce more beef.
3. Why does devaluation of the real increase demand for Brazilian beef as an export?

CONTROL OVER FOOT-AND-MOUTH DISEASE—The eradication of foot-and-mouth disease in much of Brazil has increased price and demand for Brazilian beef.

4. What does "eradication of foot and mouth disease" mean?
5. How does it affect supply and demand?

INFRASTRUCTURE—Road construction gives developers and ranchers access to previously inaccessible forest lands in the Amazon. Infrastructure improvements can reduce the costs of shipping and packing beef.

6. What is infrastructure?
7. How does the improvement of infrastructure in the above passage affect supply and demand?

BIG IDEA: Answer these questions to summarize what you learned about human environment impact.

8. The motive for expanding ranching into the Amazon, at the expense of the rainforest, is:
9. There are two levels of cattle ranching. One is small farmers/herders that are called...? The others are large ranches owned by companies referred to as...?
10. Are both of the above examples of cattle ranchers' entrepreneurships? Explain.

Going Deeper for Enrichment: The following factor contributing to destruction of the rainforest is based on finance and banking. Challenge yourself to get the big idea of this level of entrepreneurship.

INTEREST RATES—Rainforest lands are often used for land speculation purposes. When pasture land prices exceed forest land prices, land clearing is a good hedge against inflation. At times of high inflation, the increase of cattle prices and milk they provide may outpace the interest rate earned on money left in the bank.

1. What is “speculation”?
2. What does “hedge” mean in this statement?
3. Explain in your own words what this factor means for forest destruction. You may give your explanation graphically, in a sketch, or written.

Answer Key

Linking environmental and economic issues...THE CASE OF BRAZIL'S BEEF

CURRENCY DEVALUATION—The devaluation of the Brazilian real* against the dollar effectively doubled the price of beef in reals and created an incentive for ranchers to expand their pasture areas at the expense of the rainforest. The weakness of the real also made Brazilian beef more competitive on the world market [CIFOR].

*the *real* is the currency of Brazil

1. What does devaluation mean? *The value of the currency goes down compared to other currencies or the world market.*
2. Why does the devaluation of the real double prices and create an incentive to produce more beef? *The value of the currency (real) goes down so prices go up, the high prices make it more profitable to raise more cattle (the profits are higher than the cost of preparing the land for cattle).*
3. Why does devaluation of the real increase demand for Brazilian beef as an export? *When the value of the currency goes down it means the currency of other countries can buy more for the same amount of their own currency. More countries will be able to buy more beef for the same amount of their own currency. (When the US dollar goes down in value more people from abroad travel here and shop for goods to take home.)*

CONTROL OVER FOOT-AND-MOUTH DISEASE—The eradication of foot-and-mouth disease in much of Brazil has increased price and demand for Brazilian beef.

4. What does “eradication of foot and mouth disease” mean? *Foot and mouth disease requires the extermination of cattle to prevent the spread of the disease among the herds and humans.*
5. How does it affect supply and demand? *The supply of the cattle goes down (eradication) and the demand and price go up.*

INFRASTRUCTURE—Road construction gives developers and ranchers access to previously inaccessible forest lands in the Amazon. Infrastructure improvements can reduce the costs of shipping and packing beef.

6. What is infrastructure? *Give examples of infrastructure including the one given in the above statement? Infrastructure is the underlying framework and organization of society provided through government. The example in this statement is the improved road construction. Other examples include electricity and power grids, air traffic control, water and sewage, etc.*

7. How does the improvement of infrastructure in the above passage affect supply and demand? *The improvement of roads decreases the cost of shipping of the cattle, beef, and milk either decreasing price or making ranching more profitable.*

BIG IDEA: Answer these questions to summarize what you learned about human environment impact.

8. The motive for expanding ranching into the Amazon, at the expense of the rainforest, is: *humans are putting a priority of individual or corporate profit over environmental concerns.*

9. There are two levels of cattle ranching. One is small farmers/herders that are called...? The other are large ranches owned by companies what are called...?
Subsistence farming vs. commercial farming

10. Are both of the above examples of cattle ranchers' entrepreneurships? Explain. *Yes, both demonstrate people making a risk with an investment of capital in the hopes of making profit*

Going Deeper for Enrichment: The following factor contributing to destruction of the rainforest is based on finance and banking. Challenge yourself to get the big idea of this level of entrepreneurship.

INTEREST RATES—Rainforest lands are often used for land speculation purposes. When pasture land prices exceed forest land prices, land clearing is a good hedge against inflation. At times of high inflation, the increase of cattle prices and milk they provide may outpace the interest rate earned on money left in the bank.

1. What is "speculation"? *Taking a risk with money--investing in something risky*
2. What does "hedge" mean in this statement? *Making a bet with an investment hoping to "beat the odds"*
3. Explain in your own words what this factor means for forest destruction. You may give your explanation graphically, in a sketch, or written.

IF	Risk	Potential
Grazing land >\$ Forest Land	clearing land	Greater Profit