



Modification of the Environment

LESSON INFORMATION



Subject Area: Geography



Grade Level: Grade 6 or Grade 9



Time Frame/Duration: four 55-minute class periods

OVERVIEW OF LESSON

This lesson is a twist on the classic concept of human and environment modification and impact. Students will learn about how the environment is modified and start to think about how those decisions are made and by who.

LEARNING OUTCOMES

By the end of this lesson, students will be able to

1. Identify ways in which the environment is modified by humans and how the environment is impacted.

ESSENTIAL / GUIDING QUESTIONS

What are the questions being asked and potentially answered for this lesson?

1. How do roads, businesses, and housing impact the environment of a place?
2. What professions make decisions about the placement of roads and housing?
3. How do they use Geography to make those decisions?

CONNECTION TO CURRICULUM / UNIT

During the U.S. and Canada Unit

BASIC TERMS AND VOCABULARY

*human-environment interaction * suburbs * runoff * pollution * transportation * infrastructure * modification*

POWERFUL GEOGRAPHY FOCUS

Career and Jobs: urban planner | environmental consultant | housing authority | parks management | water management | infrastructure | transportation planning | energy and utilities | hazards management

Career Categories: Urban Development, Sciences, Transportation, Environmental Matters

KEYWORDS

4-day lesson, building path, environment, green jobs, high school, human modification, infrastructure, lesson plan, middle school, North America, urban development, US and Canada

GEOGRAPHIC SKILLS

- ☐ Asking Geographic Questions
- ☐ Acquiring Geographic Information
- ☐ Organizing Geographic Information
- ☐ Analyzing Geographic Information
- ☐ Answering Geographic Questions

ADDITIONAL INFORMATION

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Developed by Robin Manning

STANDARDS (STATE AND/OR NATIONAL)

Social Studies - Grade 6 (Texas Essential Knowledge and Skills Standards)

- (5) *Geography. The student understands the impact of interactions between people and the physical environment on the development and conditions of places and regions. The student is expected to:*
 - (C) identify and analyze ways people have modified the physical environment such as mining, irrigation, and transportation infrastructure.
- (22) *Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.*

World Geography Studies (Texas Essential Knowledge and Skills Standards)

- (8) *Geography. The student understands how people, places, and environments are connected and interdependent. The student is expected to:*
 - (A) compare ways that humans depend on, adapt to, and modify the physical environment, including the influences of culture and technology.
- (23) *Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to:*
 - (C) use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

RESOURCE / MATERIALS NEEDED

For Students:

- Career Connection Tools handout
- [Student Resources](#) on the Powerful Geography website
- Handout/graphic organizer/note paper to record answers
- List of questions for the Guest Speaker
- Large blank paper for mural (newsprint or 11x17 paper)
- Markers, paint, or crayons

For Teachers:

- Projector for pictures
 - Arrange for guest speaker.
- Guest speaker** (urban planner, Environmental Consultant, or similar professional) available in person or by Skype to discuss how they make decisions about road placement, development density, positive and negative impacts of development, and the use of geography in their job.

PEDAGOGICAL STRATEGIES

N/A

PRE-REQUISITE KNOWLEDGE

Students will need to be familiar with the basic concepts of both physical and human geography before undertaking this lesson. In fast growing suburban areas roads, houses, and parking lots are quickly covering up natural areas. Many problems result, such as increased rainwater runoff into streams, which can result in downstream floods; pollution both from increased vehicle traffic and runoff of various pollutants (yard fertilizers and pesticides, litter);

decreases in pollinators (bees) and other animals due to lack of food. This lesson helps the student identify professions with the information the student needs to analyze the impacts of development on the environment and connects student learning to real-life career paths.

LESSON DEVELOPMENT

STARTING THE LESSON

1. Hook: Open the PowerPoint presentation. Show the picture of the *Road to Nowhere* and have students brainstorm questions they have about it, such as “where is it” “why is it there” “who built it” etc.
2. Then show the *Suburban Neighborhood* and *Parking Lot* pictures. Ask students how the environment in pictures 2 and 3 are different from picture 1.
3. Point out that both have roads - what makes the environment around them different? How have people modified the environment? What impacts do the roads and surrounding development have on the environment?
4. Model questioning for the students, such as:
 - a. How do people choose where to place roads?
 - b. Where is open/natural space?
 - c. Who decides how much “green space” is left after development?
 - d. How many buildings can/should be built on this land?
 - e. How many cars can fit on this road?
 - f. What impacts will there be on the environment from a road or parking lot?
 - g. What happens to rain that falls on pavement?
5. Ask the students “what questions do you have?” (write down student questions on board).
6. Ask the students “what careers can answer these questions”, “who gets to decide what gets built in a city?”

THE LESSON

7. Hand out the one-pager *Career Connections*. Professions that use Geography are divided into four categories: Physical Geography, Human Geography, Places and Regions, and Environment and Society.
8. Using the one-page handout, help students to identify which category mostly closely aligns with the information they need. Be sure to help them observe the overlap between

categories (such as Watershed Management in Physical Geography and Hurricane Mitigation and Hazard Management in Environment and Society).

9. After students have selected the categories they need, have them look through the Student Resources on the Powerful Geography website to identify particular professions/careers that apply to development in suburban areas. Students should summarize that information on the graphic organizer.
10. With the teacher, brainstorm to identify other professions that might be involved in transportation infrastructure and the consequences of human modification of the environment. Record these on the graphic organizer.

ENDING THE LESSON AND CLOSING PRODUCT

11. Tell the students that a guest speaker is coming, and they will have the opportunity to ask him/her questions about roads and development, and how the person uses geography in their job. Depending on the level of the students they can be divided into groups, work independently, or work as a class to develop questions they would like to ask the Guest.
12. Have the speaker present their information, then have the students ask their questions. If the students are able, they can take some notes on their own paper.
13. After listening to the speaker and having their questions answered, debrief students by helping them organize their information - perhaps develop a list of positive and negative consequences of development on the board.
14. Discuss how the speaker used Geography.
15. Explain the assessment to the students: they will demonstrate their new knowledge by creating a mural.

DIFFERENTIATION STRATEGIES

- Provide a modified *Career Connections* handout with less careers in each box.
- Give students a list of careers/professions to research on the Student Resources page.
- Decrease the number of impacts that are needed in the mural.
- Require students to include possible solutions to negative impacts in the mural.

EVALUATION AND ASSESSMENT

Students will create a mural that answers the big question “How do roads, businesses, and housing impact the environment of a place?”

On the back of the mural, they will write a paragraph to answer the questions:

- “What professions make decisions about the placement of roads, businesses, and housing?”
- “How do they use Geography to make those decisions?”

Rubric:

A - mural shows 4 impacts on the environment; neat, colorful; paragraph answers the questions completely, and includes detailed explanations.

B - less than 4 impacts; not as colorful or neat; paragraph lacks details.

C - less than 4 impacts; messy, lacks color; paragraph does not adequately answer the questions.

EXTENSION AND ENRICHMENT

Have students research possible solutions for negative impacts that had been discovered throughout the lesson and connect the solutions to careers.

ACCOMPANYING WORKSHEETS

Name _____ Date _____

Profession _____

What they do _____

Skills needed _____

Profession _____

What they do _____

Skills needed _____

Profession _____

What they do _____

Skills needed _____



Notes

Speakers Name _____

Speakers Profession _____

My questions

My notes

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.