



Teacher Background

The teaching poster section with four accompanying lessons is appropriate for upper elementary and junior high school classes. The purpose of this teaching package is to help students understand and use maps. The U.S. Geological Survey (USGS) has provided this package as a service to educators so that more Americans will learn to understand the world of information on maps. Everything in this package teaches and reinforces geographic skills that are required in your curriculum.

This is a flexible resource unit. Included in this package are:

- A teaching poster
- Step-by-step lesson plans for four geography and map reading lessons:

Lesson 1—Introduction to Maps (2, 30-minute sessions)

Lesson 2—Some things You Need to Know to Read a Map (2, 30-minute sessions)

Lesson 3—What You Can Learn from a Map (2, 30-minute sessions)

Lesson 4—Reading a Topographic Map (3, 35-minute sessions)

- Three reproducible maps from which you'll create a map packet for each student
- Reproducible activity sheets—one for each lesson
- A summary of the five geographic concepts as articulated by *Guidelines for Geographic Education, Elementary and Secondary Schools*, a publication of the Joint Committee on Geographic Education of the National Council for Geographic Education and the Association of American Geographers
- Basic information about the USGS
- A list of materials for teachers available from the USGS.

About the poster

The poster section in this teaching package shows several views of the same place—Salt Lake City, Utah. It includes a large aerial view of the city with the mountains in the background. This is where our students begin—with the reality of a picture of a place.

The poster also shows some *symbolic* representations—maps and a digital elevation model—of the same area. This will help your students move from the concrete picture in the photo to the symbolic representation of a map. This is the most basic and necessary skill in helping students understand and use maps.

No map is meaningful if the viewer can't connect the symbols on the map to the reality of a place. For students in this age group, moving from reality to symbols is a major intellectual step and a critical part of the learning process.

The poster features:

1. An aerial view of the city and nearby mountains.
2. A shaded relief map showing some political features.
3. A road map.
4. A topographic map.
5. A terrain model, or three-dimensional drawing, created by USGS from computerized data.

Also, by showing these *different* maps of the same place, the poster clearly illustrates the decision-making process that goes into mapmaking.

A key teaching point is that *there can be many different kinds of maps* for the same place. It's not possible to show everything about a place on one map and still make it understandable and easy to read. So mapmakers have developed many different kinds of maps.

As students work with the poster, they will learn that the map they choose to work with depends on the kind of information they need.

Another key teaching point is that *the legend is the key to the map*. To understand the purpose of a particular map, students need to know how to read the legend. To make the point very clear, each map on the poster has an enlarged legend.

What's included in the lessons?

Each lesson contains step-by-step lesson plans, and "hands-on" student activity sheets, that incorporate information about maps into existing curriculum objectives in geography and social studies.

Lesson 1 helps students think about maps they have seen and are familiar with. Then the lesson introduces them to the picture and maps on the teaching poster.

Lesson 2 provides some basic information students need to know to read maps: direction, latitude and longitude, and scale.

Lesson 3 helps students realize that different maps can highlight different characteristics of a particular location. The legend is the key to unlocking the secrets of a map.

Lesson 4 is about **topographic maps**. It helps students understand how a two-dimensional map can represent a three-dimensional surface.

This teacher's package also includes a map packet—reproducible masters of the maps shown on the poster. Before teaching the first lesson, make a copy of each of the maps for your students. The map packet will be used in several of the lessons.

Teacher Background—page 2

Teaching methodology

Suggested in this teaching package are a number of different inquiry strategies you can use with students. This type of teaching is particularly appropriate in the social studies. Students will be asked to look at the data presented on the maps and draw some conclusions. In some cases, they will need to use data from more than one map to find the answers.

This helps them develop higher order thinking skills by manipulating data in several maps to make comparisons between them. Lesson plans use a variety of strategies that appeal to different learning styles. The teachers' guide for each lesson shows you how the information relates to the five key geographic concepts.

Summary of the five geographic concepts

The five geographic concepts developed by the Joint Committee on Geographic Education of the National Council for Geographic Education and the American Association of Geographers are articulated in Guidelines for Geographic Education, Elementary and Secondary schools.

The five concepts represent the types of questions geographers use as they strive to understand and define the Earth—for geography provides us with a system for asking questions about the Earth.

1. Location: position on the Earth's surface

Look at a map. Where are places located? To determine location, geographers use a set of imaginary lines that crisscross the surface of the globe. Lines designating "latitude" tell us how far north or south of the equator a place is. Lines designating "longitude" measure distance east and west of the prime meridian—an imaginary line running between the North Pole and the South Pole through Greenwich, England.

You can use latitude and longitude as you would a simple grid system on a State highway map. The point where the lines intersect is the "location"—or global address. For example, St. Louis, Missouri is roughly at 39 degrees north latitude and 90 degrees west longitude.

Directions

Children need to understand positional words. Words like "above" and "below" can be taught in a natural way when you give them directions. "Right" and "left" are as much directional terms as north, south, east, and west. Other words that describe such features as color, size, shape are also important in learning direction.

2. Place: physical and human characteristics

Every place has a personality. What makes a place special? What are the physical and cultural characteristics of your hometown? Is the soil sandy or rocky? Is the temperature warm or is it cold? If it has many characteristics, which are the most distinct?

How do these characteristics affect the people living there? People change the character of a place. They speak a particular language, have styles of government and architecture, and form patterns of business. How have people shaped the landscapes?

Help children understand their own neighborhood. Point out differences and similarities to other places. Help children understand various types of buildings and their uses. Are their features built to conform with the weather or topography? Do the shapes of some buildings indicate how they were used in the past or how they are used now?

Show children the historical, recreational, or natural points of interest in your town. What animals and plants live in your neighborhood? If you are near a national park, a lake, a river, or a stream, help children understand how it has affected the character of your town.

3. Relationships with places: humans and environments

How do people adjust to their environment? What are the relationships among people and places? How do they change it to better suit their needs?

Geographers examine where people live, why they settled there, and how they use natural resources. For example, Hudson Bay, the site of the first European settlement in Canada, is an area rich in wildlife and has sustained a trading industry for hundreds of years. Yet the climate there was described by early settlers as "nine months of ice followed by three months of mosquitoes." People can and do adapt to their natural surroundings.

Controlling our surroundings

Everyone controls his or her surroundings. Children can see how the furniture is arranged in their home. Furniture is placed to suit the shape of rooms and according to how people will use it.

Ask children to consider what the yard would look like if it were not changed by mowing the grass, raking the leaves, or planting shrubs or trees. What would happen if you did not water the plants?

Ask children what would happen if we did not pick up litter. How to dispose of waste is a problem with a geographic dimension.

Describe to children how people have shaped their environment—bonsai gardens, reservoirs, terracing, or houses built into hills. Tell them how and why these phenomena came to be.

Explain to children that farmers use soil, water, and sun to grow food. They use ponds or streams for water and build fences to keep animals from running away.

People do not always change their environment. Sometimes they are shaped by it. Often people must build roads around mountains. They build bridges over rivers. They construct storm walls to keep the ocean from sweeping over beaches. In

Teacher Background—page 3

some places near the coasts people build their houses on stilts to protect them from storm tides or periodic floods.

Ask children if they did not have a faucet with running water, where would they live.

4. Movement: people interacting on Earth

People are scattered over the Earth. How do they get from one place to another? What are the patterns of movement of people, products, and information?

Regardless of where we live, we rely upon each other for goods and information.

Most people interact with other places almost every day. We depend on other places for food, clothes, and even items like pencils. We share information with each other using telephones, newspapers, radio, and television to bridge the distances.

Different ways to travel

Ask children if they have been on an airplane, a train, a subway, a ferry, a barge, a horse, a carriage. Use a map to look at various routes for different methods of transportation.

Follow the movement of people and things

Tell children to look at home and see where things come from. Examine the labels of the clothes you wear. Where does your food come from? Why do bananas come from Central America? Why does your milk come from a local dairy? Is your climate too cold to raise bananas? Is milk too perishable to travel far?

Ask children where their ancestors came from. Use maps to find countries of family origins. Why did their ancestors leave their original homes?

Tell children to ask older relatives what the world was like when they were young. What did they wear? What did they use for transportation? What did they eat? Ask children to look at old family pictures. Ask them how things have changed since their grandmother was a child.

Follow the movement of ideas and information

Ideas come from beyond our immediate surroundings. How do they get to us? Remind children of telephone, mail, television, radio, telefax, posters, bumper stickers, as some of the many ways we convey information from one person or place to another. Ask children what are other ways of getting information. Ask children how they communicate with other people. Will they write a letter? Will they make a telephone call? Have children write a letter.

5. Regions: how they form and change

How can places be described or compared? How can the Earth be divided into regions for study? Geographers categorize regions in two basic ways—physical and cultural. Physical regions are defined by landform (continents and mountain ranges), climate, soil, and natural vegetation. Cultural regions are distinguished by political, economic, religious, linguistic, agricultural, and industrial characteristics.

Help children understand physical regions by examining areas in the school—the classroom, the hallways, the cafeteria, the coatroom. Have children describe their town. Are their neighborhoods around the hills, the waterfront? Ask children if there are "regions" in their homes. Are there "physical" regions in their town?

Examine cultural regions

Tell children about different political, residential, recreational, ethnic, and commercial regions of the city. Tell children about different customs of people around the world and your city.

Talk about costumes, holidays, foods, coins, stamps, money.

Teach children simple words in different languages, such as "hello," "thank you," and "goodbye." Teach them to count to 10 in other languages.

If you have foreign teachers at your school, ask them to visit your class and talk about their home and the customs.

In conclusion

Geography is a way of thinking, of asking questions, of observing, and of appreciating the world around us.

The U.S. Geological Survey

The U.S. Geological Survey (USGS) was established as a bureau of the Department of the Interior in 1879. For more than 100 years, the USGS carried on an extensive program of mapping to investigate the natural resources of the nation.

The USGS is the prime source of many kinds of topographic and special purpose maps of the United States and its territories. It is also a prime source of digital map data. All USGS maps are compiled to exacting standards of accuracy and content.

The USGS cooperates with agencies of other governments in distributing map information and map products internationally. USGS resources and expertise are made available to foreign governments through cooperative agreements and through the United Nations.

The USGS makes available to the public both basic map data and a family of general purpose maps. As these products are intended for a wide variety of uses—industrial, scientific, commercial, educational, and recreational—the maps are designed to satisfy a broad range of public needs. Maps depicting topography, geology and recreational use of national forests, parks, and refuges, among many other maps, are available from the USGS.

For more information, call 1-888-ASK-USGS.

USGS materials suitable for elementary school.

- Helping Your Child Learn Geography
- Finding Your Way with Map and Compass
- Types of Maps
- Catalog of Maps