

## Local to Global: Geographic Connections



[http://commons.wikimedia.org/wiki/File:Geo-Cosmos\\_Miraikan\\_cropped.jpg](http://commons.wikimedia.org/wiki/File:Geo-Cosmos_Miraikan_cropped.jpg)

Welcome to Local to Global, a fully developed online learning unit created by [Texas Alliance for Geographic Education](http://www.geo.txstate.edu/tage) and designed to provide rigorous, in-depth lessons on geographic concepts for 4<sup>th</sup>-8<sup>th</sup> grade students and teachers. This series of lessons informs students about the often-overlooked connections they encounter every day, exploring how and why people, ideas, and objects share links through space and time. This unit has a strong regional focus on Texas and the United States and also includes global extension topics. The content provided within the five geographic modules (Spatial Skills, Physical Systems, Human Systems, Places and Regions, and Environment and Society) includes case studies, state and national standards, embedded media and online resources, lesson planning, and much more.

## Local to Global: Geographic Connections

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The Local to Global: Geographic  
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The goal of this project is to  
equip Texas social studies  
teachers with geographic  
content and instructional  
materials.

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Please visit us on the World Wide Web -

<http://www.geo.txstate.edu/tage/>

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# Local to Global: Geographic Connections

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# Overview

Geography connects students to the world, near and far. From determining the best route to take to school, to the best location for a basketball court, to predicting flight delays due to volcanic eruptions, geography and its spatial skills are relevant to everyone's daily lives. This unit consists of five modules that introduce teachers to core geographic concepts through case studies, geographic instructional strategies, and TEKS-based instructional materials for use in the classroom. We hope that you find the information and resources in this unit helpful in your understanding and teaching of geography in your classroom.

In the Spatial Skills module, teachers learn about geographic skills and applications. This module focuses on HOW geographers study, necessary TOOLS and TECHNIQUES, and the STEPS to answering GEOGRAPHIC QUESTIONS. The module provides online and media resources to support this topic. There is a case study for teachers to learn more about geospatial technologies and how the ever-changing technology world is affecting geographic study.

The Places and Regions module is designed to assist in understanding the importance of places and regions in the study of geography, how they are understood, and how they can best be taught to upper elementary and middle school students. Places and Regions will also show how these commonalities connect people ideologically, culturally, geographically, and more.

In the Physical Systems module, teachers are introduced to part of the American landscape in the Colorado Plateau case study. Teachers learn about the breathtaking landforms of the Grand Canyon and Bryce Canyon National Park. This case study also gives background information on topics such as groundwater, aquifers, surface water, and the natural cycles found on earth.

In the Human Systems module, teachers delve into lessons regarding demographics, political and economic systems, and human culture. This module provides teachers with ways to challenge students to think of the "what if" with lesson plans covering topics like state population and settlement patterns, the founding of our national capital, and immigrant influences here in the United States.

The Environment and Society module gives teachers the opportunity to really look at the interactions between humans and the natural environment. Students will discover that with this exchange come consequences. A case study on urbanization gives teachers solid background information to further enhance what is shared with students.

Students will use these modules to gain their own local-to-global GEOGRAPHIC PERSPECTIVE. The embedded lesson plans, online interactive tools, maps and more will give them a new outlook. Additionally, there are many options within these lessons that will encourage interest from students that are possibly more science minded. The modules work well together to create a "global eye" for our students.

# Introduction – What is Geography?

Geography is the study of places and the relationships between people and their environments. The term itself comes from the ancient Greek *geo*, meaning “earth”, and *-graphy*, meaning “to write”. Geographer’s key area of study is a geographic **space**. They ask the questions “Where is it? And why is it there?” More than just looking at a map, geography is about understanding the underlying connections between things spread across a space.

National Geographic Education put together a series of videos explaining geo-literacy - what it is and why it is important. Please take a minute to watch the video before proceeding to the modules.

Video 1.1: What is Geo-literacy?, <https://www.youtube.com/watch?v=Pb8yenSogzE>

Geo-literacy prepares us for decision-making in the 21<sup>st</sup> century. It helps us to understand our world. In this video, geo-literacy is defined as being composed of three parts known as the 3 I’s. The 3 I’s are: interactions, interconnections, and implications. The interactions are between the human and physical systems. How do these interactions impact our decisions and the world we live in today? The interconnections are the connections between culture, society, and the world and the geographic reasoning behind these connections. The implications are geo-literacy’s impacts on decision making in today’s world. Overall, geo-literacy is critical for the future since we are living in an interconnected world.

- Spatial Skills
- Places and Regions
- Physical Systems
- Human Systems
- Environment and Society

# Spatial Skills

In geography, maps provide a way to tell stories and arrange data in a visually appealing and easy to understand format. However, with geospatial technology advances, we now have access to increasingly complex data, and it is important for students to know how to make sense of it. Students must understand how to use spatial tools, content, and skills to think critically, and geographically, about the world around them.

Video 2.1: Geospatial Revolution, [https://www.youtube.com/watch?v=s\\_QHJfPD1s](https://www.youtube.com/watch?v=s_QHJfPD1s)

This video encourages the viewer to think spatially and to understand what tools can be used to aid spatial thinking through a series of questions. What is happening currently at a specific location? What tools can you use to know and understand your surroundings? To understand your surroundings, you can use a tool such as a map. What do you need to use a map? What skills do you have to have to make a map? What role can technology play in spatial thinking and spatial skills? What role can your cellphone or a family member's cell phone have in this?

## Introduction

Geospatial technologies, including cell phone locational services, Google maps, [Esri's ArcGIS](#) (geographic information systems), and GPS (global positioning systems), are increasingly household tools. GPS functions as a daily navigational tool, allowing drivers to hop in their car and drive anywhere with turn-by-turn directions. The ability to map almost any data makes the study of geography and its skills even more important. Geospatial technologies may successfully navigate you to the correct location, but reliance on them may mean that you have no idea where you are. (Read [Without mental maps, we're lost](#)) The study of geography puts a location into context. Geographic skills help answer the questions "where" and "why there".

When approaching a problem, a geographer goes through an inquiry process. (This process is explored more thoroughly in the Places and Regions module.)

1. Ask a Geographic Question – Identify a problem or decision requiring a geographic understanding in order to find a solution.
2. Acquire Geographic Information – Data acquisition can be a daunting task. In acquiring this information, a geographer must consider the validity and reliability of the data acquired.
3. Organize Geographic Information - While geographers rely upon the creation of maps to organize information, other tools, including graphs, charts, timelines, etc. are helpful as well.
4. Analyze Geographic Information- At this stage, the problem solving begins. The geographer must rely upon an understanding of how places and spaces relate to each other to analyze the collected data.
5. Answer/Act on Geographic Question – Present a solution, decision, or conclusion based upon the data. Some people consider “Act” in this method as well, to act upon the information received.

While the other modules in this series focus on WHAT geographers study, the Spatial Skills module emphasizes HOW geographers study. Geography asks how location matters: how spaces and places came to be, how they relate to each other, and how they will change in the future. This module introduces the tools and techniques needed to answer these questions.

## Case Study - Global Positioning System (GPS) and Geographic Information Systems (GIS)

### Video 2.2: Why Study GIS?

<http://www.pbslearningmedia.org/resource/psu10sci.vid.geospatial.whystudy/geospatial-revolution-why-study-gis/>

This video shows the application of GIS to wildfire issues in California. The GIS process is shortly explained in the video. It is outlined as: collecting data, creating a map, and analyzing the map to find the solution to a problem. One can use GIS to understand and find a solution to today's major issues.

### GPS, GIS, and Biology

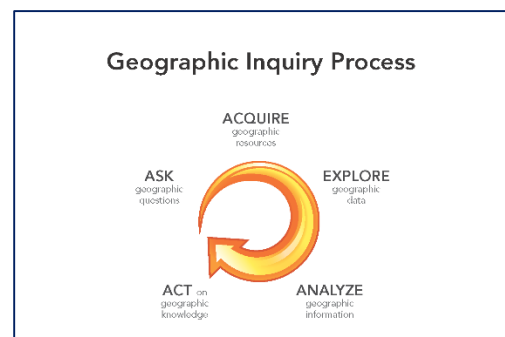
Early on a Saturday morning, long before the boaters and tourists arrive, a biologist paddles his kayak around a lake setting out sensors to collect data for a water quality survey. The biologist needs to understand what is happening to the lake, why it is happening, and how best to keep the lake healthy for the fish, the wildlife, and for the humans who use the lake. The sensors are small, but they collect enormous amounts of data. The biologist realizes that by simply collecting the GPS (global positioning system) coordinates of each sensor, he can use GIS (geographic information systems) software to map the collected data. By adding a spatial component to his survey, the data is presented in a more streamlined way, sections of the lake that are being affected the most are easily located, and the source of the pollutants is identified more effectively.

Just as the biologist above used GPS to collect and organize data, mobile technology now allows anyone to do the same. Many cell phones and tablets can record and geotag photo locations, and mobile apps like ESRI's Collector for ArcGIS collect GPS data in the field. This poses certain safety and security risks but also is a streamlined way to connect data. (Read [Geotagging poses security risks](#)) The video below is an excellent case study of people using GPS, GIS, and mapping to put themselves on the map.

Video 2.3: Mapping Power to the People, <https://www.youtube.com/watch?v=ChWj4yBmE0E>

This video shows the power of the application of GIS to problems across the world, such as the mapping Kibera, Kenya. There is a true power in mapping and using your geospatial toolkit. In Kibera, the power of mapping and using GIS assisted the local people with mapping issues and other local issues such as security.

**Classroom Application:** Using the Geographic Inquiry Method (learn more about this method in *Places and Regions*), plan out a project. To get comfortable with the devices, record selected locations around your school, perhaps trees, water fountains, or other significant structures. Then map these locations using pen and paper, Google Earth or ArcGIS online. Combinations of geospatial technologies (GPS, GIS) can be used for cross-curricular projects with science, math, or even art and literature classes. Students can create tracks of their movements to “write” words or “draw” pictures, which can then be “mapped” using GIS. Students can practice calculating the area of shapes mapped out using the GPS device, or record sites where litter is often found around the school – perhaps new trash cans need to be installed? GPS units can record everything from school bus routes to areas where traffic jams are common in the school halls. Once

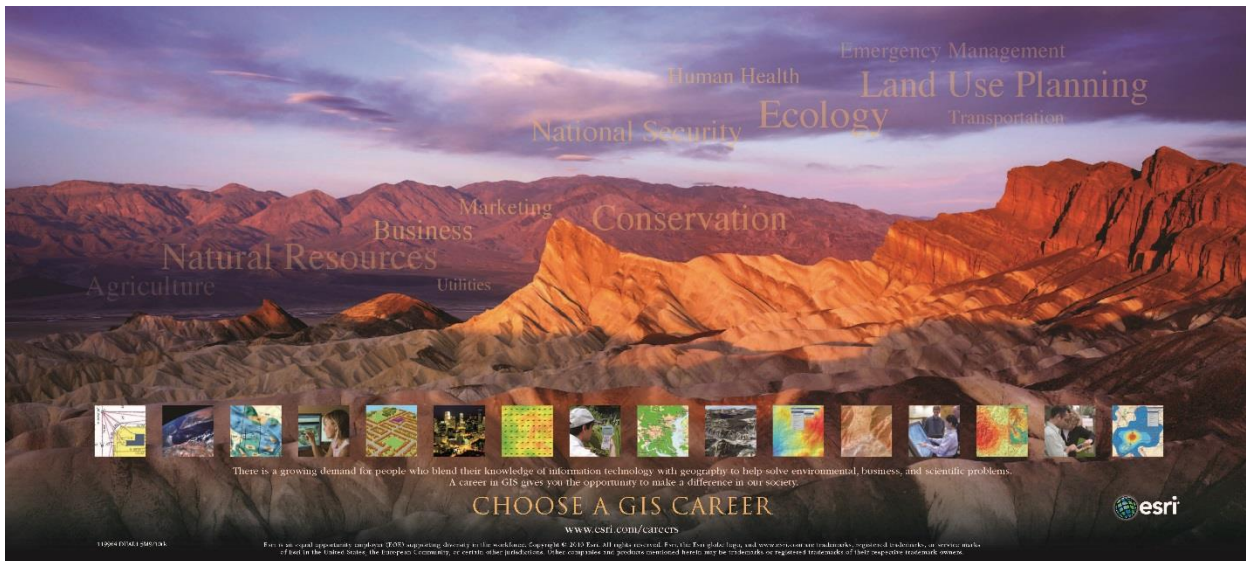




students have more skill in using these devices, they will come up with their own location data to collect. ESRI's Story Maps (<http://storymaps.arcgis.com/en/>) can be powerful teaching tools for using maps to tell stories (how about a map showing supposed locations for Odysseus' journey, locations of famous authors' homes).

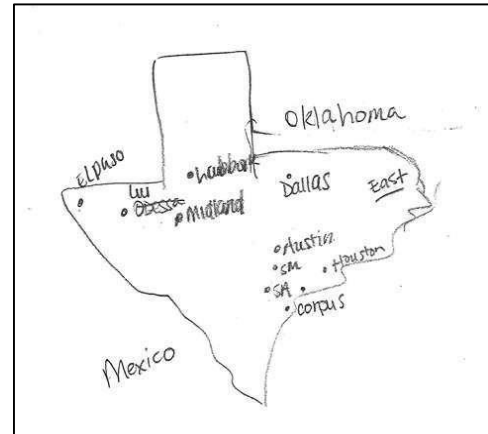
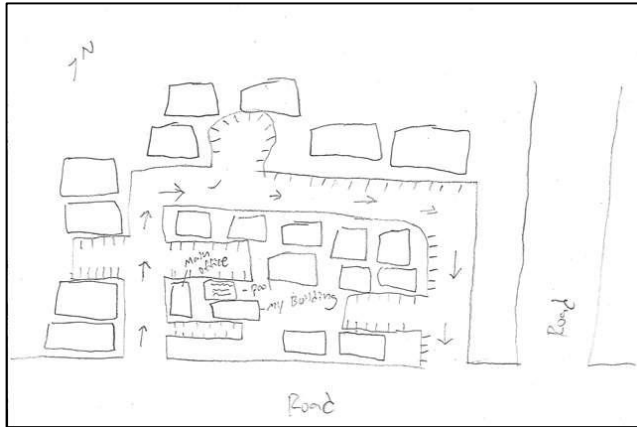
Once students have collected their data using their GPS devices, and have created their maps, it is important to finish the activity with an analysis of what this location data shows and to ask some questions about the use of the devices.

- How did using GPS affect your understanding of the data?
- Did using the GPS make creating your map easier or more difficult?
- How does mapping your data affect your ability to understand the information and its underlying causes?
- How does using GPS and mapping your data impact your ability to predict future patterns and/or solutions to your study topic?



## Instructional Strategy: Sketch Maps

One of the most important geography skills is the ability to create maps. Maps are an ideal way to organize and present a large amount of information. As technology advances, students have the ability to create increasingly sophisticated maps using GIS, Google Earth, and other platforms. The sheer amount of data available through these technologies may overwhelm students, resulting in cluttered and unfocused maps. Students may become so involved in using the technology that they fail to understand the purpose of the map. Many decisions are involved in making a successful map. The sketch map can lay a foundation for understanding geographic relationships, organizing information, and answering questions.



Unfortunately, the idea of drawing maps by hand, or sketch maps, can be intimidating to both teachers and students. Many people feel that they do not have enough artistic ability or that their maps must be perfect. It is important to reassure students that sketch maps are for student reference. They are judged on content, not artistic merit, and ALL maps – even the best ones – are imperfect representations of the Earth's surface with some distortion and error. Mapmakers choose specific projections [<http://education.nationalgeographic.com/education/activity/investigating-map-projections>] to minimize this distortion and error.

**TEACHERS:** It is important for you to model sketch maps on the board. Watching the teacher create less than perfect maps can help eliminate some of the fear, especially if the teacher purposefully creates a VERY simplistic representation and allows the students to see that perfection is not the goal. It can be difficult to grade sketch maps. Below are two rubrics for your use:

There are two methods of using sketch maps that can be particularly effective as note-taking devices. The first method, Mapshots, comes from TEA’s Lighthouse Initiative. Mapshots are note-taking templates where students organize information in a matrix around a central blank area where they can sketch a map or color in a simple thematic map. The sample shows a template created for a Texas History course. Students take notes about explorers from different colonial powers in the boxes around the blank center. In the center, students sketch a map of Texas and draw in the explorer’s routes. They can draw the routes in a different color for each country or each explorer. Finally, this mapshot has been modified to include a timeline across the bottom where students can record the dates. Once completed, this is a powerful study aid for students when preparing for an exam. More information on the Lighthouse Initiative and “Mapshots” can be found at <http://www.tealighthouse.org/socialstudies/>.

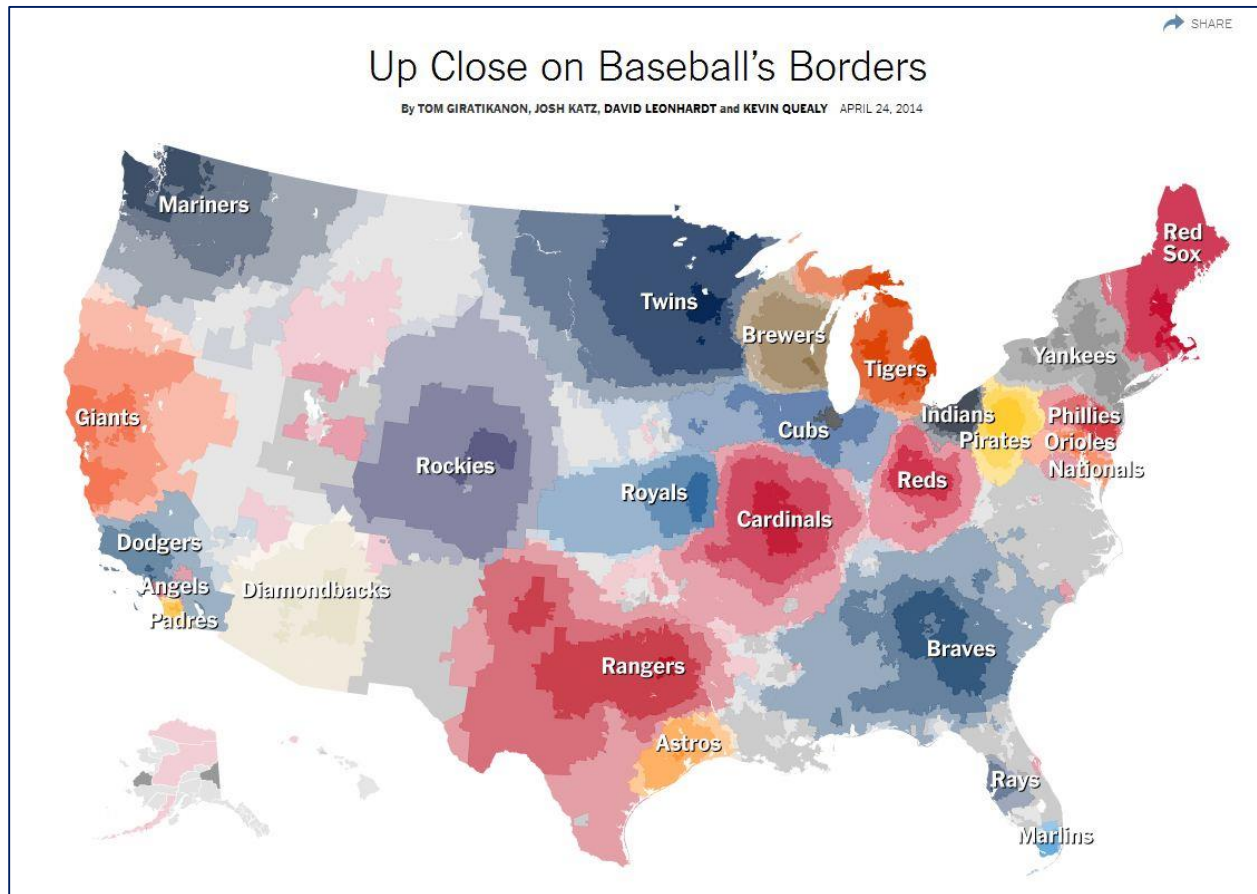
The second method, the Annotated Sketch Map, serves as a graphic organizer. Rather than sketching out the entire map at once, the students add features to their map during the note-taking process, essentially writing their notes onto their map. This form of guided note-taking (and guided map-making) helps to alleviate student apprehension by allowing the students to focus on only one step at a time. This technique may be a bit more time consuming than traditional notes, but with guidance, practice and proper time management, it is an extremely effective tool. Additionally, by drawing in the features themselves –taking the time to annotate features and ensure that features are in the proper relative location, students develop their mental maps, an internal representation of the Earth’s surface and a foundation of spatial thinking.

### Instructional Materials

Three lesson plans developed specifically for this module include a lesson on NFL Geography and the Texas Independence Trails. All lessons are modifiable for different locations and scales. Additional resources includes lesson plans from external sources that support the instruction of places and regions.

[Download Instructional Materials and Resources](#)

# Places and Regions



*Are you a baseball fan? If so, in Texas you are more than likely either a Rangers or Astros fan. Why? This maps shows the geography of baseball. You can easily see not only place-based identities but also the regions those identities create. <http://www.nytimes.com/interactive/2014/04/23/upshot/24-upshot-baseball.html>*

## Introduction

Understanding place is essential to understanding a geographic perspective. Places are locations on Earth with distinct characteristics - both human and physical - that give them meaning and distinguish them from other locations. Places are created on a variety of scales, from local to global, and often influence how people identify themselves. A person may introduce themselves as an Austinite, a Texan, an American, and/or an Asian American. Physical characteristics of place include landforms and climate while cultural characteristics include language, economic systems, and population. Mecca is a well-known place, serving as the city with the [Ka'bah](#) or "The physical axis of the Muslim world a focal point toward which Muslims all over the world pray five times a day...". The photo below gives many clues about the characteristics of the place. It attracts thousands of people; it's in an urban area; with a distinct architecture. These, and many other characteristics, define and give meaning and significance to Mecca as a place.



Places are spaces that imbue feeling and are often intertwined with a person's identity. A place is space that is different from other spaces. Regions are areas defined by unifying physical and/or human characteristics. A region is a space that shares one or more qualities or characteristics. A region is a basic unit of study in geography. There are three types of regions:

- Formal, defined by related, measurable characteristics such as climate, vegetation, or religion (ex. North America, Sahara desert)
- Functional, organized around a central place and its connections (ex. Dallas/Fort Worth Metroplex, Alamo Area Council of Governments, Texas Education Agency Education Service Center regions)
- Perceptual, defined by people's perceptions or attitudes (ex. the baseball map above)

Each person may look at different sets of characteristics, such as mountain chains or types of government, to define a region. As seen in the case study, defining regions can be tricky. Something that may seem as monolithic as the Appalachian Mountains is actually a collection of several smaller mountain chains with unique characteristics. Region is dependent on scale and helps people express complex relationships. ASEAN, the Association of Southeast Asian Nations, is an economic region organized around ten nations to promote economic growth in the region. North America includes Canada, Central America, the United States, and Mexico. There are other regions within this large unit, defined by various characteristics; for example, Latin America includes Mexico and Central America because they share similar religious, economic, and political traits. Even the instructional materials reflect the Texas social studies curriculum focus on political states, nation, and world regions.

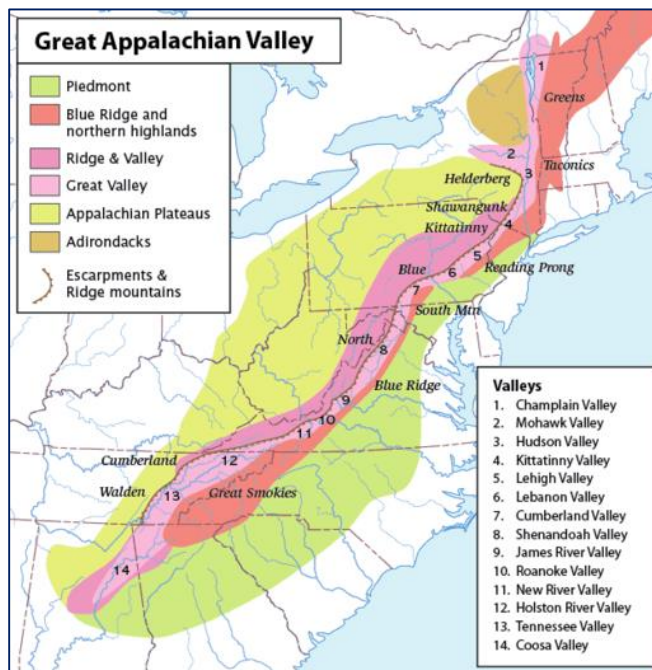
## Case Study: Appalachia, A Place Apart



Appalachia stretches along the eastern United States. This region is defined by physical characteristics stretching from Alabama into Canada with the Appalachia Mountains. Appalachia is also a cultural region with more fluid definitions. This case study looks at both perspectives of the region, highlighting the various types of place and region within Appalachia.

### Physical Characteristics

The Appalachia Mountains, made of some of the oldest rocks on earth, consist of several mountain chains including the Catskills, the Alleghenies, the Blue Ridge, and the Smokies. The Appalachia's are also home to one of the most diverse temperate rain forests on earth. The physical region stretches from Alabama northwest into Canada.



## Human Characteristics

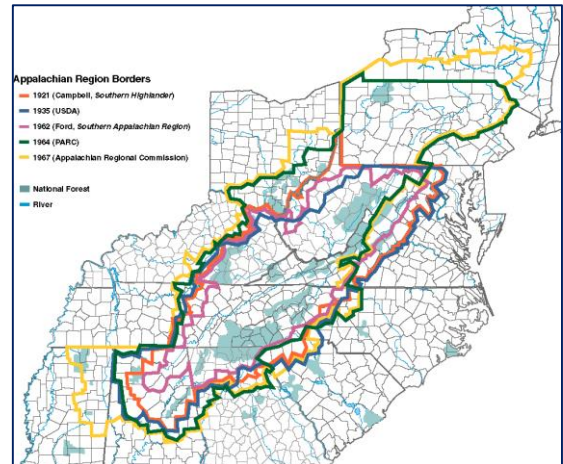
The Appalachia cultural region, typically defined as the central and southern areas, is home to approximately 25 million residents. Ulster Scots, Lowland Scots, and inhabitants of northern England, primarily settled here; the predominant faith is Protestant Christian. The mountain culture, often viewed as something independent of mainstream American culture, suffers stereotypes such as illiteracy, feuding, poverty, and moonshining activities that plague the region.

## Formal & Functional Region

The formal region of Appalachia can be defined by:

- A. The physical region distinguished by the mountains, or
- B. The political region designated by the Appalachian Regional Commission.

As a functional region, the Appalachian Regional Commission distributes funds throughout the region, helping to encourage sustainable communities and to promote economic development.



## Perceptual Region

Many people have stereotypical attitudes about this region and its culture. People within the region may define the regional boundaries differently than those outside the region. Cultural similarities may exist with regions outside the typical boundaries – the Ozarks in Arkansas, for example. American media has often promoted the view of the region's culture as a "culture of poverty" as well as a culture that needs to modernize.

Video 3.1: What is Appalachia and Where is it? <http://www.npr.org/templates/story/story.php?storyId=5386355>

There are various definitions for Appalachia. In this discussion, NPR discusses from where these definitions came from and the current definition of Appalachia.

Video 3.2: Living in the Appalachians, <https://www.youtube.com/watch?v=vJbiJXNP5zQ&feature=youtu.be>

How does it feel to live in Appalachia? Judy Bonds describes living in Appalachia as being secure and protected by the mountains.

Video 3.3: Pronouncing Appalachia, [https://www.youtube.com/embed/eGCqWrSAZ\\_o?wmode=opaque](https://www.youtube.com/embed/eGCqWrSAZ_o?wmode=opaque)

How to pronounce Appalachia? Apple-a-cha. One must remember the significance of pronunciation. How you pronounce a place tells the people your identity.

## Appalachia and Texas History

- Several heroes of the Texas Revolution, including Bowie, Crockett, and Houston originally came from Kentucky, Virginia, or Tennessee.
- A brief perusal of the list of the Alamo heroes shows that a large number of them (60 or so) came from the states of Kentucky, Tennessee, or the Carolinas.

### Appalachia in American History

- Appalachia is to the South what the South is to America, so they say. As Crystal Wilkinson stated in “Water Street”, “We were almost Southern, but not northern at all.”
- Appalachia played a critical role in American History, including such events as the Whiskey Rebellion and the Civil War.
- Due to the absence of plantation agriculture in Appalachia, slavery was not wide spread.
- Many Appalachian areas did not favor secession, Tennessee almost did not secede, and of course, West Virginia seceded from Virginia, rather than seceding from the United States.
- Timber from Appalachia was a vital resource to the American economy.
- The creation of the Smoky Mountain National Park sparked a great deal of controversy over property rights – and further perpetuated stereotypes of the region.

### Appalachia and World Cultures

- The area was settled mainly by Ulster Scots (or Scots-Irish), Lowland Scots and inhabitants from northern England.
- The traditional songs and instruments from those areas have heavily influenced many of the musical traditions from the region.
- Musicologists study the folk songs of the region and note the culture preserved many old folk songs from England, Ireland, and Scotland (with less change through time than in the home countries).



## Instructional Strategy: Inquiry Method/Geographic Skills

One of the best ways to get our students to understand geography is to have them actually DO geography. When designing lessons for a geography classroom, teachers should be aware of the main geographic skills. These skills closely follow the inquiry method of learning, where students:

1. Ask questions
2. Collect data
3. Organize their data
4. Analyze their data
5. Act/Answer their questions

For those of you familiar with science pedagogy, you will see that the Inquiry Method very closely resembles the Scientific Method. This form of exploratory learning engages students in performing research, rather than passively studying. When applied to the study of geography, the Inquiry Method becomes the Geographic Inquiry Method, or the Geographic Skill Set:

[Asking geographic questions](#)

[Acquiring geographic information](#)

[Organizing geographic information](#)

[Analyzing geographic information](#)

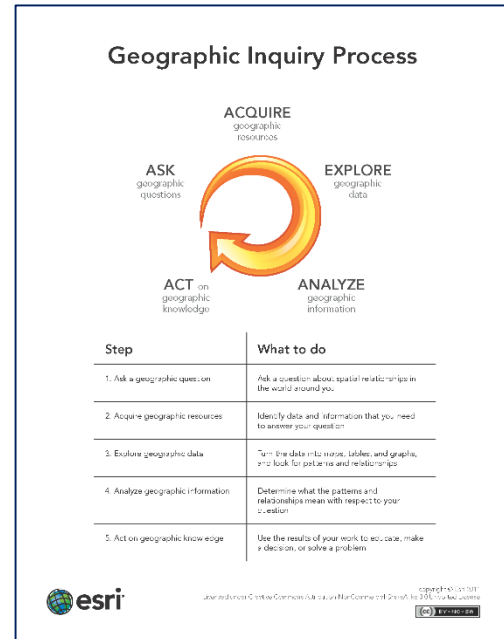
[Act/Answering geographic questions](#)

For a thorough explanation of the Geographic Skills, and how to use them, visit National Geographic Education's [Geographic Skills Index Webpage](#).

## Instructional Materials

Three lesson plans developed specifically for this module include a 4th grade activity which has students investigating how Texas places got their names. The second, written for 6th grade, is an exploration of the Middle East and how regions are defined – culturally or physically. All lessons are modifiable for different regions and scales. Additional resources includes lesson plans from external sources that support the instruction of places and regions.

[Download Instructional Materials and Resources](#)



# Physical Systems

The physical environment provides the backdrop for Earthly human activity. The physical systems create, maintain, and modify Earth's features. Knowledge of these processes, how they change and how they work, can influence people's decisions about where they live, work, travel, and even what they eat. This video demonstrates one way that geographers get their data and study physical systems.

Video 4.1: NASA Earth Right Now,

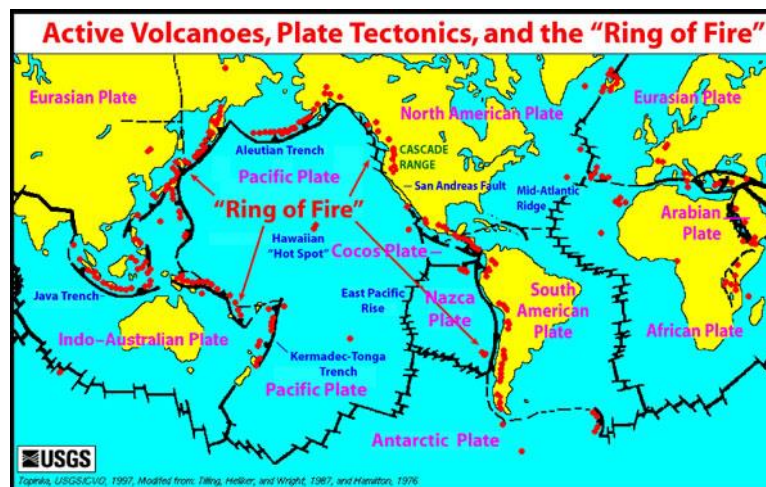
<https://www.youtube.com/watch?v=wYho0LhUw3M&list=PLiuUQ9asub3SOdRC7ZHR8ocKHUcjltGW%3Fwmode%3Dopaque>

This video portrays NASA's goal to understand the physical earth in which we live.

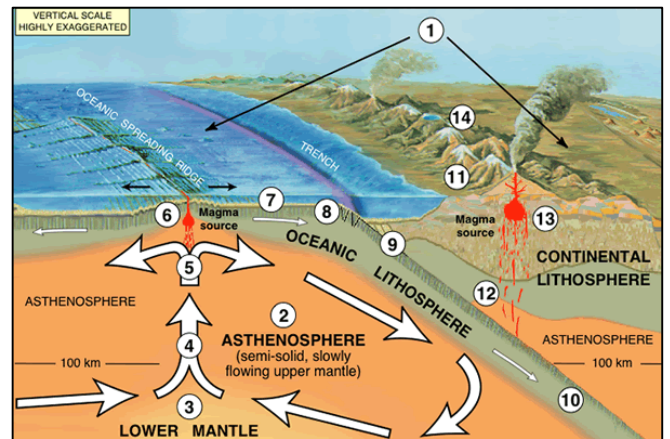
## Introduction

Our earth is a dynamic place – constantly building and rebuilding itself. The landscape of the earth is being altered both by our presence and by the processes, which created the landscape in the first place. The shifting of the cultural landscape is easy to see, as human activities tend to be rather fast-paced. But the physical landscape is shifting, as well. These processes include movements of the earth's crust from the colliding and shifting of tectonic plates, volcanic activities creating and destroying land, and erosion from wind, water, ice, and waves. Many of these shifts are often difficult for us to perceive as they take place on a geologic rather than human time scale.

At times, these changes are dramatic and sudden. We tend to view these events as disasters, rather than as necessary changes in the earth's physical systems. Volcanic eruptions can cause devastating loss of life and property. In addition, the gas and ash they expel into the atmosphere can alter weather patterns thousands of miles away. In the Ring of Fire, located in the Pacific Ocean, several tectonic plates meet and create the most active volcanoes on Earth. As oceanic plates slide under continental plates, such as along the western coast of the US or the eastern coast of Japan, the edges of the oceanic plate heat and melt. This newly melted material rises to the surface, creating volcanic arcs like the islands of Japan or volcanic mountain chains like the Cascades. Over time, the solidified lava breaks down and mixes with decaying plant material to form some of the richest soil on earth.



Other times, changes in our earth's surface are excruciatingly slow. Mountain building, canyon carving, and glacial valley forming processes take millions of years. We may not have been around to see the glaciers that covered large parts of North America, but we depend upon the lakes they left behind for transportation, food, and water supplies. States without glacial pasts have to resort to dam building in order to artificially create what the glaciers left in other places. Mountains provide us with metals and other minerals which we need for everything from building skyscrapers to powering our homes. Finally, canyons, such as Bryce, Zion, and the Grand Canyon, attract tourists from around the world generating income in areas with little other potential for economic growth.



Teaching Physical Systems can be difficult for many geography/social studies teachers. First, few of us have had extensive training in Physical Geography, Geology, or other Earth Sciences. Second, as you will see in the state standards below, few of our courses in upper elementary or middle school have standards that cover physical systems at all. What you will find is that the standards covering the material in this module are often found just down the hall in your students' science classes. Physical systems can provide an excellent opportunity for cross-curricular study between social studies and science. In order to facilitate this, we have provided the Science TEKS for each grade level, which apply to the content of this module. This module also provides an excellent place to remind your students that geography is more than a social science – many geographers, especially physical geographers, are scientists who study geologic processes hand in hand with geologists. Finally, teaching Physical Systems gives us an opening to reach students who may feel they prefer science to social studies.

## A Case Study: The Colorado Plateau

The Colorado Plateau is a particularly fascinating region of the United States. Shaped by a wide variety of the processes, the Colorado Plateau incorporates some of America's most scenic landscapes, including the Grand Canyon and Bryce Canyon National Parks. These areas well known for their majestic beauty, are some of the most visited areas in our country drawing visitors from around the globe.

The Colorado Plateau was formed millions of years ago, and is continually being subjected to creative and destructive forces. As a result, the landscape of the Plateau is constantly changing. The plateau is approximately 140,000 square miles and covers areas within four states – Colorado, Utah, Arizona, and New Mexico. The plateau is a high crustal block. Over millions of years, the area experienced cycles of uplifting, volcanic activities, and the presence of warm shallow seas. As these constructive processes wound down, the destructive processes have taken over – various types of erosion and weathering have shaped much of the area.

### Sedimentary layers

Sedimentary layers are easy to see. Evident in uplifting and faulting, the layers are tilted in various directions.



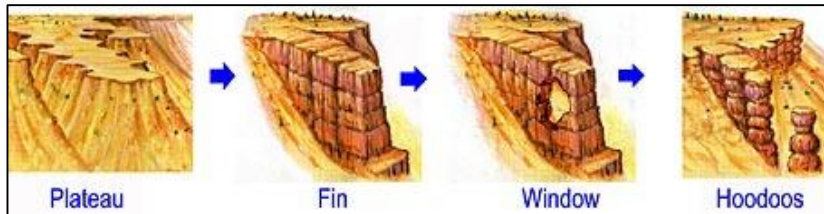
Rivers

Powerful rivers formed massive canyons through chemical weathering, physical weathering, and erosion.



### Hoodoos in Bryce Canyon

One of the more interesting regional features are the hoodoos. Hoodoos are skinny rock towers that rise above basins. They are formed through frost wedging when water accumulates in rock cracks and crevices, then freeze. The slight acidity in the rain dissolves some of the rock, shaping the hoodoos.



### Arches in Arches National Park

Arches are another unique feature of the region. They are made of very porous sandstone. Salt domes formed beneath the surface, bulged upwards, and created cracks. Rainwater dissolves the porous layers and collects along the tops of the impervious layers subjecting the layer to frost wedging.



Figure 1 Photo by Ken Crane; Text Reference and Graphic: National Park Service <http://www.nps.gov/arch/naturescience/geologicformations.htm>

## Ecosystems & Biomes

The plateau lies in the rain shadow of the Sierra Nevada. As a result, the climates found here are mostly desert and semiarid – with some alpine areas. The climates and high elevation mean that vegetation is sparse. The plants and animals which live in this environment have adapted to living with limited and sporadic supplies of water. For example, many of the animals in this area are nocturnal. Moving around only at night helps them conserve energy and keeps them cooler than movement during the day.

## Unique Soil Colonies

Arches National Park and the surrounding areas are home to biological soil crust. It is a combination of cyanobacteria, lichens, mosses, green algae, microfungi, and other bacteria. The bacterial colonies bind the soil together and help prevent erosion – even after they die.



<http://www.nps.gov/arch/naturescience/soils.htm>

## The Issue: Roped Activities in Moab



*Excerpt from U.S. Department of the Interior, Bureau of Land Management, Environmental Assessment DOI-BLM-UT-2014-0170-EA, August 2014, Temporary Restriction of Roped Activities at Corona Arch and Gemini Bridges*

Both Gemini Bridges and Corona Arch are outstanding geologic formations in spectacularly scenic settings at the end of hiking trails. Both features have been very popular destinations for hikers, sightseers and photographers for many years. It is estimated that 40,000 people visit Corona Arch and 50,000 people visit Gemini Bridges each year. Both geological features, but especially Corona Arch, are among the most often photographed sites on Bureau of Land Management lands. In recent years, however, Gemini Bridges and Corona Arch and their vicinities have been utilized by a small number of visitors engaging in Roped Activities. This had led to a number of complaints from the public about the Roped Activities diminishing the experience of hikers, photographers and sightseers.

Visitors approach the two arches by a foot trail that is approximately 1.5 miles long. As hikers round the last corner on the trail, Corona and Bowtie arches suddenly appear in a spectacular setting. There is often an atmosphere of quiet reverence on the part of visitors as they grasp the enormity of the view.

#### Corona Arch

Very few reports of Roped Activities on the arch were received prior to the posting (February 15, 2012) of a YouTube video entitled “World’s Largest Rope Swing”. In January of 2013, the State of Utah forbade commercial outfitters from rope swinging on Corona Arch, although private use of the arch for rope swinging was not disallowed. Roped activities in the rock bowl containing the two arches occur with some regularity, although the number of visitors engaging in these activities is estimated to be small. It is not uncommon that there is shouting or screaming that accompanies engagement in the Roped Activities.

There have been reported conflicts between hikers and people engaging in Roped Activities over the past few years. The most notable of these conflicts involved a permitted group (Adventure Rabbi) that was authorized to have Passover under the arch, but was impeded by the presence of a group of people utilizing the arch for rope swinging. This incident was investigated by the Grand County Sheriff’s Department. On March 24, 2013, a man was killed while swinging on the arch in view of 70 people, including many children. Another man was severely injured while swinging on Corona Arch in May of 2014, again in view of many visitors.

#### Gemini Bridges

Highlining between the two rims of the canyon containing the Gemini Bridges is the primary rope activity that occurs in this location. Also occurring in this location is rappelling through the bridges as well as ziplining from canyon edge to under the bridges. It is estimated that a very small number of people engage in these activities. These types of activities are fully visible from the bridges. Visitors have also expressed concerns about the impacts to the rock from bolts, hardware and the scars made by the rope on the rock surface.

[https://www.blm.gov/ut/enbb/files/Corona.Gemini Temp Restriction EA w maps - 08252014.pdf](https://www.blm.gov/ut/enbb/files/Corona.Gemini_Temp_Restriction_EA_w_maps_-_08252014.pdf)

## Questions

A temporary restriction of roped activities is being proposed while the Bureau of Land Management conducts an Environmental Assessment to analyze the impacts of restricting the roped activities.

- What public comment would you make? (Appendix A in the above pdf includes a Checklist for reference or additional information)
- What are the pros and cons?
- Where is there an example of recreation activities affecting the physical landscape in your community?
- What measures are taken to protect the physical environment?

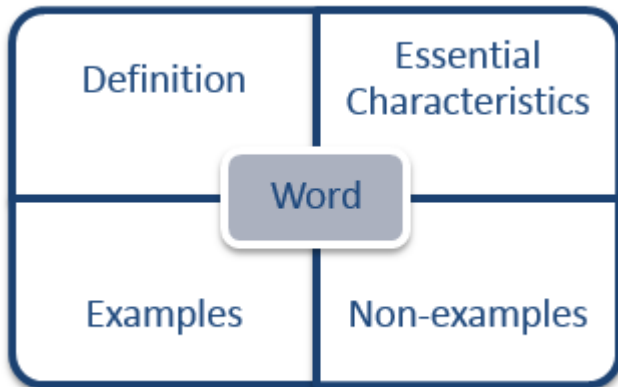


### Instructional Strategy: Vocabulary Square/Modified Frayer Model

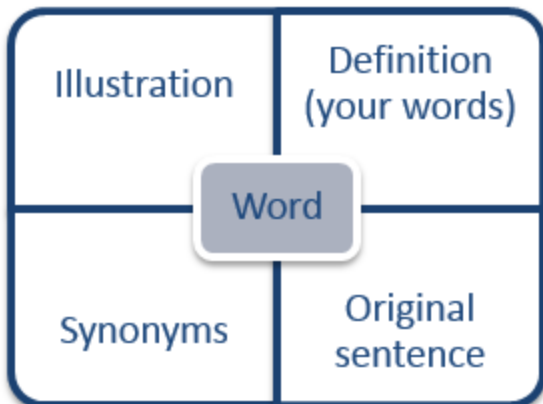
The instructional strategy highlighted with this module focuses on vocabulary development. Vocabulary is especially problematic when teaching physical systems. Many of the terms are specialized words your students may not understand. As we build our students' geographic vocabulary, it is essential that we help our students understand the words well enough to incorporate them into their own academic vocabulary – enough that they begin to feel comfortable using the words in their own writing. The Vocabulary Square/Modified Frayer Model as described below is one way to move our students' understanding of a word from knowledge to application level.

Vocabulary Square/Modified Frayer Model – Developing a strong vocabulary is critical to student success in geography and its specialized vocabulary. Simply copying definitions does not help most students recall those definitions later, and it rarely helps the students move beyond knowledge level of the word to being able to apply the word in their own studies of geography. One of the strategies used in the lessons in this model help students develop their vocabulary skills. The Reading Educator (<http://www.readingeducator.com/strategies/frayer.htm>) has a thorough description of how a Frayer Model is used.

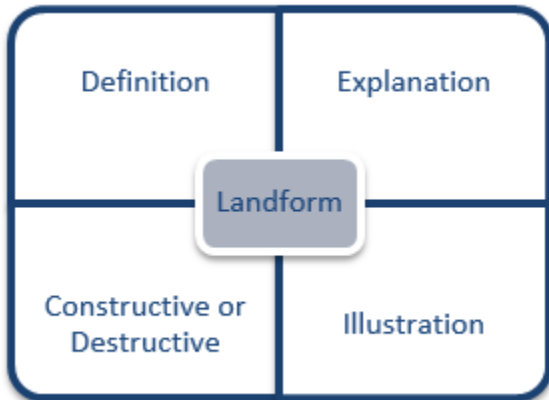
The standard matrix for a Frayer Square:



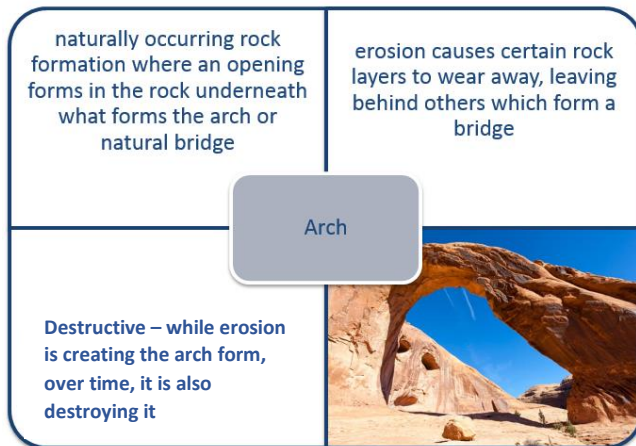
A vocabulary square uses the same matrix, but the categories are a bit different:



Modified Frayer Model:



The students will define the landform in the top left hand corner. In the top right hand corner, they will explain how the landform was created. In the bottom left, the students will state whether the processes which created the landform are constructive or destructive and in the bottom right, they will draw or place an illustration of the landform. The name of the landform goes in the center.



This method of vocabulary development is used in a variety of ways within the geography classroom. In a study on regions, the region name goes in the center, with a map, a description, type of region (formal/functional/perceptual or physical/cultural), and major defining characteristics in the surrounding boxes. Below are additional examples:

- City name: map and/or photo, human characteristics, physical characteristics, similar cities or cities within the same region/ connected cities,
- Country name: similar to cities, include global connections
- Concepts: use the standard Frayer Model, but combine definition and characteristics, and include an example, illustration or map

## Instructional Materials

The lessons provided in this module come from different sources. The 6th grade lesson, *Lotsa Landforms*, was written especially for this module and provides students with a brief introduction to how landforms are created. The lessons for the other grades come from the Environmental Protection Agency on teaching students about groundwater and from National Geographic on landforms in the United States. The Additional Resources page has links to additional maps, diagrams, and lesson plans.

[Download Instructional Materials and Resources](#)

# Human Systems

In the video below, Hans Rosling looks at the factors involved in demographic changes. This presentation demonstrates massive amounts of demographic data in 4 minutes to show 200 years of changing income and life expectancy around the world.

Video 5.1: 200 Countries, 200 Years, 4 Minutes, <https://www.youtube.com/watch?v=jbkSRLYSojo>

Having the data is not enough- there needs to be an enjoyable way to communicate the data. The data is shown on a graph which indicates life expectancy and income. Within this graph, we can see where poor and sick would be located and rich and healthy would be located. The regions he is looking at is Europe, Asia, the Americas, and Africa. This video is a very engaging and enjoyable way to understand global health and wealth patterns.

Note: Income per person (GDP per capita) is adjusted for inflation and for differences in costs of living (purchasing power) across countries. You can play with the data yourself in Gapminder World.

## Introduction

The study of the Earth's Human Systems is a complex topic. Over 7 billion people inhabit Earth and each are part of multiple human systems. Human systems, simply put, are the patterns and relationships among culture, economies, politics, and demographics. It is easy to make generalizations and oversimplify these systems (and the people in them), but this often leads to misunderstandings, stereotypes, and even prejudice. Our job as geography educators is to eliminate these misunderstandings and lead our students to a deeper understanding of the rich cultural mosaic of our global population.

Demographics, or the study of population, includes the study of population density, birth and mortality rates, migration patterns, literacy rates, standard of living, and other statistics which reveal a great deal about the health and prosperity of people across the globe. Too often, our students have misconceptions about poverty and material wealth, sometimes equating a lack of material goods with poverty. Many also perceive that people living in less developed countries are all poor and uneducated. Looking at the demographics at varying scales and in regions across the world often shows a very different picture.



Figure 2 Convento at Mission San José in San Antonio, Texas

Human Systems also covers political and economic systems: how the two are related to each other, why they are distributed the way they are, and how countries with different systems interact with each other. Terms such as communism and socialism often produce very emotionally charged responses, typically the result of fear, misunderstanding and propaganda. Democracy and freedom produce equally charged responses, if for different reasons. Our students need to understand that none of the political or economic systems we study exist in actuality. Rather, they are models for understanding complex systems which are uniquely practiced to varying degrees

across multiple scales. A country with a command market economy at a national scale may have a more open or free market economy at the local level, especially if there are isolated communities not directly connected to the national economy.

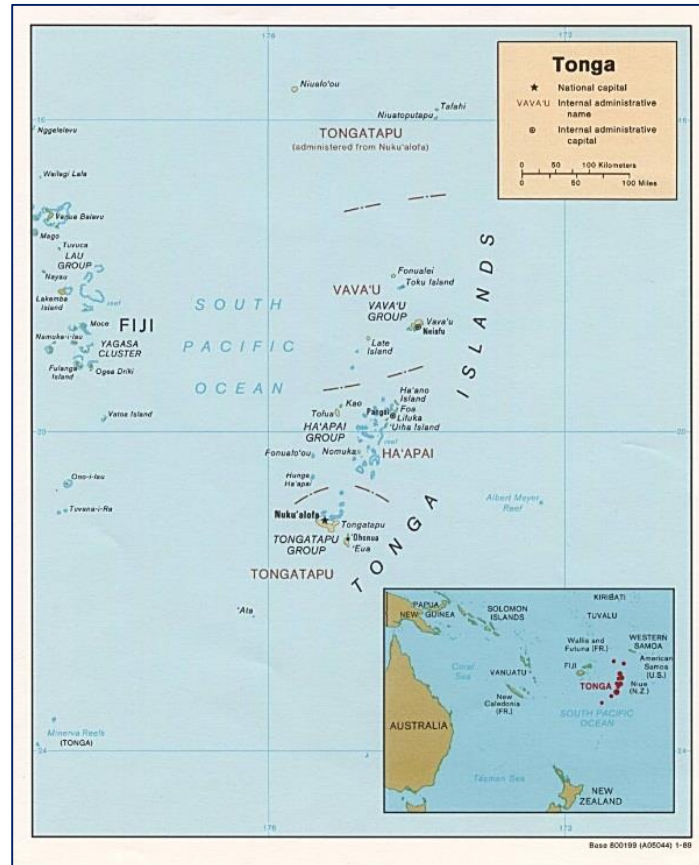
Human culture is a complex blend of traditions, food, language, religion, and more. The expression of the concept of culture changes as groups move, mix, and mingle, and as information and ideas diffuse. It is important for students to understand the multicultural world in which we live to have context for their own and other cultures. As with political and economic systems, scale significantly affects our study of culture. It is important that we teach our students the general beliefs, but at the same time, emphasize that practices at the individual, community, regional, or national level may vary greatly.

It is very important that we guide our students carefully through each of these topics. Literacy rates, political systems, birth rates, religious practices, and dietary restrictions are all shaped by cultural and societal values which can vary tremendously from our own. We must make sure that we present the information in a way that respects those values and deals with them without prejudice or bias towards our own value systems. Students are often focused on the “weird” or “wrong” rather than different and diverse. It is our goal as educators to build that bridge!

By developing a well-balanced understanding of human systems and the role they play in the world, our students will become better global citizens and be more prepared to make decisions and understand the complexities of these decisions locally and globally.

## Case Study: Tonga--The Nation, Utah, and Texas

The island nation of Tonga lies about a third of the way from Hawaii to New Zealand. This nation of great history and culture is curiously showing great influence here in the United States. Today, a vast population of Tongans live in Utah and a small town in Texas.



### Introduction

Tonga is a multi-island nation in the southern region of the Pacific Ocean, east of Fiji. It gained its independence from Great Britain in 1970 and is currently the only kingdom island nation in existence. Tonga is a tropical archipelago that is home to over 170 different islands of primarily uplifted coral reef and volcanic rock formations. The tropical weather makes Tonga a great attraction for tourism. Tonga has shown a great influence on parts of the United States, and the culture of this great nation is spreading.



### History

The history of Tonga goes back over 3000 years ago, originating with the some of the earliest Polynesians, the Lapita people in Southeast Asia. In 1773, Captain James Cook visited some of Tonga's islands and was amazed by the hospitality of the people, nicknaming Tonga the "Friendly Isles." In 1845, George Tupou I, King of Tonga united the islands into a kingdom and later declared Tonga a constitutional monarchy in 1875. In 1900, Tonga became a protectorate of Great Britain, but still maintained its indigenous sovereignty. When Tonga's protection status ended in 1970, it joined the Commonwealth of Nations, and later the United Nations. Tonga is a predominately Christian nation, including a very large Mormon population.



Figure 3 Nukualofa-Tonga LDS Temple

### Tongans in Utah

During WWII, Tonga housed many WWII servicemen. Among these servicemen, there were several Mormons, or members of the Church of Jesus Christ of Latter Day Saints. These men shared their faith and family-focused ideals with the native Tongans. A church and a temple were built in Tonga, and many Tongans became missionaries of the faith. Some of these missionaries moved to Salt Lake City, Utah and the surrounding areas, thus creating an enormous growth of Tongan people in the United States. In fact, one in four Tongans living in the United States resides in Utah. So, why did so many make the move to Utah? "First and foremost, they came because of religion and the LDS faith. They wanted to come to Zion,"

says Tevita E. Kinikini, president of the all-Tongan Salt Lake Utah Stake of the LDS Church, one of three such stakes in Utah.

### Tongans in Texas

In the 1970s, a large migration of Tongans to small-town Euless, Texas began. Initially, this was due to the similar strong, family-focused values Tongans found in this north Texas town near Dallas. Additionally, the search for jobs was helped by American Airlines at the Dallas-Fort Worth airport working with Tonga to provide jobs for those who came to Texas. Today there is a tight-knit community of ethnic Tongans centered on the Free Wesleyan Church, the largest Methodist denomination of Tonga. This community of over 3,000 Tongans, including the current king, is a great influence on the local traditions and community culture of the Euless area. This can be seen every Friday night during football season when players from the Trinity High School football team perform the Haka war dance before the start of the game.

To this day, most community and school events in Euless are showered with beautiful traditions and customs from the Tongan people. This cultural variety is expressed in the chants used by football players from the small town of Euless, Texas.



Figure 4 Tongan football players perform the Haka at a Trinity football game in Euless, Texas

Video 5.2: Tongans in Texas, <https://www.youtube.com/watch?v=sxB25H4yB2E>

### Resources

- The Church of Jesus Christ of Latter Day Saints: [www.lds.org](http://www.lds.org)
- The Salt Lake Tribune: [www.sltrib.com](http://www.sltrib.com)
- BBC News: [www.bbc.com/news](http://www.bbc.com/news)
- The Kingdom of Tonga: [www.thekingdomoftonga.com](http://www.thekingdomoftonga.com)
- CIA World Fact Book: [www.cia.gov/library](http://www.cia.gov/library)



## Instructional Strategy: TRAPPED Map Analysis

Help, I'm TRAPPED in a map!

Developing spatial thinking in our students is critical to their ability to analyze and interpret any visual information they encounter. Interpreting maps, such as thematic maps, allows students to analyze much more complex information than would be possible if the same information were presented in a chart or table. But, too often, students fail to spend enough time completely analyzing the map. They hit the highlights and then move on, and ultimately fail to develop sophisticated spatial thinking abilities. The “[Modes of Spatial Thinking](#)”, as outlined by Carol and Phil Gersmehl, are structured to assist students with complex map analysis. For younger students, most of the modes may be a bit too sophisticated. The TRAPPED Map Analysis technique is designed to provide a more simple structure for younger students to begin undertaking rigorous map analysis and begin sharpening their spatial thinking skills.

<b>T</b>	<b>Topic</b>	What is the topic of the map? This is usually found in the title. In addition, it is important to investigate the key in order to understand how the topic of the map is depicted.
<b>R</b>	<b>Region</b>	As you analyze the map, you may see that there are areas where places are similar and can be grouped together. These regions may very likely be defined by the topic of the map. It is important to think about WHY these areas may be grouped together. What do they have in common?
<b>A</b>	<b>Association</b>	Do some of the features on the map occur together? If so, think about WHY they occur together.
<b>P</b>	<b>Pattern</b>	Describe the distribution of the features on the map. Are some of the features clustered together? Are there strings, rings, or other patterns to describe where the features are located? Are some features clustered together, while others are spread out?
<b>P</b>	<b>Processes</b>	Once you have identified specific regions, associations and patterns, try to explain WHY the map features are arranged in the way they are. What geographic processes might be responsible for the distribution of features you see on the map?
<b>E</b>	<b>Exceptions</b>	Are there features which do not follow the pattern? Describe where they are located. Go back up to processes and explain why you think these exceptions might be where they are.
<b>D</b>	<b>Description</b>	Once you have completed your analysis, write a short description of the map. Describe the topic being shown on the map and explain the distribution of its features and the processes which might be responsible for that distribution.

## Instructional Materials

In the 4th grade Texas history lesson plan, students investigate settlement patterns in Texas over time. The 5th grade students use primary sources to investigate the founding of the US capital. In the 6th grade lesson, *Immigrant Influences in America*, students analyze a map showing the prevalent countries of birth for immigrant groups in the US and generalize how these groups will have affected regions in the US.

[Download Instructional Materials and Resources](#)

# Environment and Society



*Welcome to the Anthropocene is an atlas of society's influence on the physical environment. The environment and society topic looks at the human footprint on the environment as well as the environment's influence on society.*

## Introduction

The Environment and Society module examines the way humans interact with the environment and vice versa. People adapt to and modify the environment for a variety of reasons, including transportation and recreation. Over time, technology has changed the relationship between people and the environment, resulting in higher crop yields, alternative energy sources, dams, and even earthquake detection. Natural disasters, however, often threaten much of the built environment. Worse, some of the harshest disasters people have faced are the products of our own construction. For example, the Dust Bowl was largely the result of human activities and a lack of knowledge of environmental systems.



Figure 5 Construction of Toll Loop 49 Segment 5 at Paluxy Drive (TylerTexasOnline Staff photo) (September 2011)

A second component of the environment and society interaction is how physical systems affect human systems. Historically, settlement was located near resources like fertile soil, water, and building materials. Then, waterway settlement provided ease of access to import and export goods, though flooding remains a constant issue in many of these locations, from New Orleans, Louisiana, to Bangkok, Thailand. Today, however, even sparsely populated deserts have access to water via dams, such as the Glen Canyon Dam.



Figure 6 A village near the coast of Sumatra lays in ruin after the Tsunami that struck South East Asia.

Students must understand that there are consequences when we modify the natural environment. Dams can both create a city and flood a city, and an entire canyon. Decisions as simple as putting sidewalks over vegetation to provide safer routes to school or the creation of the interstate highway system can both ease transportation and change the environmental situation, but on very different scales.

## Case Study: Urbanization and the Environment

Where do people settle? Which resources are necessary to provide basic needs - food, water, housing? How do you balance the human needs with the environmental needs? What is the best way to balance environmental protection and economic growth? Geographers consider these questions throughout the urban and regional planning process.

Historically, settlement occurred near essential natural resources, including waterways. Today, economic interconnections allow for less reliance on local resource needs. Urban planners must mitigate environmental issues due to a city's proximity to natural resources with growing population and urbanization needs.

This case study presents the key ideas of human-environment interactions in an urban setting. Below are three videos. One is a brief look at the job of an urban planner. The second video looks at the environmental impacts of urbanization on streams. The last video is an overview of water sensitive urban design.

Video 6.1: So You Want to be an Urban Planner, <https://www.youtube.com/watch?v=ZPJSAe0PM0U>

This video discusses the day to day activities of an urban planner. It discusses what areas and topics are utilized in urban planning.

Video 6.2: Connecting People to Urban Streams, <https://www.youtube.com/watch?v=anHBb5BCj6Q>

This video was made by the USGS to discuss the impacts of urbanization on stream environments and habitats.

Video 6.3: Water Sensitive Urban Design,

[https://www.youtube.com/watch?v=b\\_DTnOzYTR4&list=PLD5cwITc2o41Cs7lkia2bBY8HhUZBJiwP%3Fwmode%3Dopaque](https://www.youtube.com/watch?v=b_DTnOzYTR4&list=PLD5cwITc2o41Cs7lkia2bBY8HhUZBJiwP%3Fwmode%3Dopaque)

What is the priority of water in urban design? How can you manage water in an urban setting? This video discusses water management techniques in an urban environment. You can pause the video along the way to provide discussion and teaching moments.

*Teacher's Note:* When showing the videos in class, pause at various places for teachable moments.

## CLASSROOM APPLICATION

### Texas

Although most of the land in Texas is rural, over 80% of the population lives in urban areas. The strain on natural resources in the burgeoning urban areas continues to intensify and challenge urban planners. Growth is likely to expand outward into surrounding countryside, extending the reach of the city and resulting in urban sprawl. To protect existing natural resources, such as urban streams, planners must consider mitigation for these environmental issues.

## Exploration

- Explore the [USGS Historical Topo Maps](#) to view historic maps of your city.
- Explore satellite imagery [Urban Growth over time in San Antonio](#), [Las Vegas, Nevada](#), [Binhai New Area China](#)

## Questions

Describe how landforms such as flood plain, mountains, and deltas limit human activity.

- Identify characteristics that would attract settlers to San Antonio, Las Vegas, and the Binhai New Area of China based on the aerial images? Why are these cities located where they are?
- What are some environmental threats to human settlement?

Use [Google maps](#) or [ArcGIS Explorer online](#) to explore your school grounds, city, and all around the world.

- What natural features are around your school? What did the area look like before the school was there?
- How have people changed the environment in your city?
- What are the most important natural resources to protect in your city?
- What are some of the positive and negative consequences of this modification of the environment in your city?

## Instructional Strategy: OPTIC Visual Evaluation

OPTIC is an organized approach for teaching students how to read visual or graphic text, including photographs, diagrams, and charts. It allows the student to practice techniques of collecting and acquiring data as well as prepare them for higher level critical thinking skills. One of the lessons in this module, Photo Analysis, uses the OPTIC strategy to help students analyze satellite images showing change over time. The strategy has students explore the photos as a whole, as well as in smaller parts, and then determine how the parts relate to the whole. The strategy also encourages students to be able to summarize what they have seen in the photos.

<b>O</b>	Overview	<ul style="list-style-type: none"><li>• Conduct a brief overview of the main subject of the visual.</li></ul> [Write a short, descriptive summary about the visual.]
<b>P</b>	Parts	<ul style="list-style-type: none"><li>• Scrutinize the parts of the visual.</li><li>• Note any elements or details that seem important.</li></ul> [Focus on the parts of the visual. Read all labels and any written words (if you can). What details seem important?]
<b>T</b>	Title	<ul style="list-style-type: none"><li>• Read the title or caption of the visual (if present) for added information.</li></ul> [What is the title of the visual? What does it say about the visual?]
<b>I</b>	Interrelationships	<ul style="list-style-type: none"><li>• Use the words in the title or caption and the individual parts of the visual to determine connections and relationships within the graphic.</li></ul> [Using the title: What big umbrella connects the whole visual? What's the theme?]
<b>C</b>	Conclusion	<ul style="list-style-type: none"><li>• Draw a conclusion about the meaning of the visual as a whole.</li><li>• Summarize the message in one or two sentences.</li></ul> [Why is this visual important to what is being studied?]

OPTIC, How to Study in College (2001) by Walter Pauk

Teacher's Note: If you hold a white 8.5 x 11" sheet of paper in front of a projector lens, it will magnify and focus on a single part of a photo so that all eyes are drawn to the same section of the picture.

The strategies identified here come from the Texas Education Agency Lighthouse Initiative Social Studies Content and can be downloaded at the following link:

[http://www.tealighthouse.org/socialstudies/skills\\_and\\_strategies.pdf](http://www.tealighthouse.org/socialstudies/skills_and_strategies.pdf)

## Instructional Materials

Lesson plans developed specifically for this module include a photo analysis of two satellite images taken 20 years apart to show the changes which have occurred in the Panhandle of Texas. This lesson, written primarily for 7th grade, is easily modified for use with 4th grade students or other world regions. The 6th grade lesson has students exploring how people live in extreme environments. The 8th grade lesson has students analyzing maps depicting the early growth of the United States.

[Download Instructional Materials and Resources](#)

# Conclusion

The Texas Alliance is here to assist K-12 teachers with resources, training, and assistance in teaching geography. We hope that you found this module helpful and the resources useful.

Video 7.1: I'm a Geo-Educator, <https://www.youtube.com/embed/BoK7UFmKP6o?wmode=opaque>

The [Texas Alliance for Geographic Education](#) designed Local to Global: Geographic Connections to provide knowledge and resources for teachers to engage and connect students to geography with TEKS-focused geographic concepts. This full approach prepares students to have a global view of everyday life and connections. Hopefully, students will no longer look at the tags on their clothes without understanding their place in a very grand world. This unit took you through a look at the people, places, landscapes, interactions, regions, locations, and ideology behind the geographic questions that link us all.

After completing these modules, you should be able to answer the following questions:

- How do geographers study?
- What tools do geographers use?
- How can geographic questions be used to answer problems and questions in the world?
- How are humans interacting in Texas, the United States, and the world? Furthermore, how do these interactions have a geographic effect over years of time?
- What physical aspects of our world are constantly changing?
- What physical features on the Earth are influencing us on a daily basis?
- What patterns are common among humans, and their movement?

The modules provide resources that are a great addition to any classroom for cooperative learning and new strategies. The modules also provide great opportunity for an investment in learning. The information provided in this unit is just an introduction to the core geography concepts. There are many other ways to geographically enrich your classroom.

- Discuss current events
- Hang a map in your classroom and always show your students the locations that you're discussing
- Take a tour and map of your school grounds
- Join the Texas Alliance

Thank you for taking the time to complete this module. Please contact the Texas Alliance at [tage.geography@txstate.edu](mailto:tage.geography@txstate.edu) or 512-245-3827 with any questions or comments or for assistance. Welcome to the Texas Alliance for Geographic Education community!

## Appendix A - Videos

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Video 1.1: What is Geo-literacy?

<https://www.youtube.com/watch?v=Pb8yenSogzE>

Video 2.1: Geospatial Revolution

[https://www.youtube.com/watch?v=\\_s\\_QHJfPD1s](https://www.youtube.com/watch?v=_s_QHJfPD1s)

Video 2.2: Why Study GIS?

<http://www.pbslearningmedia.org/resource/psu10sci.vid.geospatial.whystudy/geospatial-revolution-why-study-gis/>

Video 2.3: Mapping Power to the People

<https://www.youtube.com/watch?v=ChWj4yBmE0E>

Video 3.1: What is Appalachia and Where is it?

<http://www.npr.org/templates/story/story.php?storyId=5386355>

Video 3.2: Living in the Appalachians

<https://www.youtube.com/watch?v=vJbiJXNP5zQ&feature=youtu.be>

Video 3.3: Pronouncing Appalachia

[https://www.youtube.com/embed/eGCqWrsAZ\\_o?wmode=opaque](https://www.youtube.com/embed/eGCqWrsAZ_o?wmode=opaque)

Video 4.1: NASA Earth Right Now

<https://www.youtube.com/watch?v=wYho0LhUw3M&list=PLiuUQ9asub3SOdRC7ZHR8ocKHUcjlwtGW%3Fwmode%3Dopaque>

Video 5.1: 200 Countries, 200 Years, 4 Minutes

<https://www.youtube.com/watch?v=jbkSRLYSojo>

Video 5.2: Tongans in Texas

<https://www.youtube.com/watch?v=sxB25H4yB2E>

Video 6.1: So You Want to be an Urban Planner

<https://www.youtube.com/watch?v=ZPJSae0PM0U>

Video 6.2: Connecting People to Urban Streams

<https://www.youtube.com/watch?v=anHBb5BCj6Q>

Video 6.3: Water Sensitive Urban Design

[https://www.youtube.com/watch?v=b\\_DTnOzYTR4&list=PLD5cwlTc2o41Cs7lkia2bBY8HhUZBJiWP%3Fwmode%3Dopaque](https://www.youtube.com/watch?v=b_DTnOzYTR4&list=PLD5cwlTc2o41Cs7lkia2bBY8HhUZBJiWP%3Fwmode%3Dopaque)

Video 7.1: I'm a Geo-Educator, <https://www.youtube.com/embed/BoK7UFmKP6o?wmode=opaque>