

# TEACHING WITH MAPS

*Lesson Plan Guide from the GIS Research & Map  
Collection, Ball State University Libraries*

# GIS Research & Map Collection



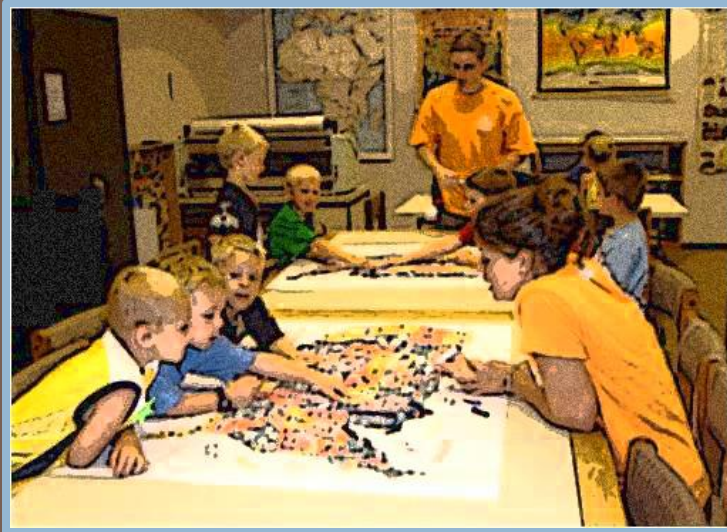
# GIS Research & Map Collection

The GIS Research & Map Collection on the second floor of Bracken Library houses over 145,000 maps, atlases, and other resources. These maps are a valuable—sometimes historically significant—resource that can be used to enhance lesson plans for students of all ages in many interdisciplinary studies.



# GIS Research & Map Collection: In the Classroom or As the Classroom

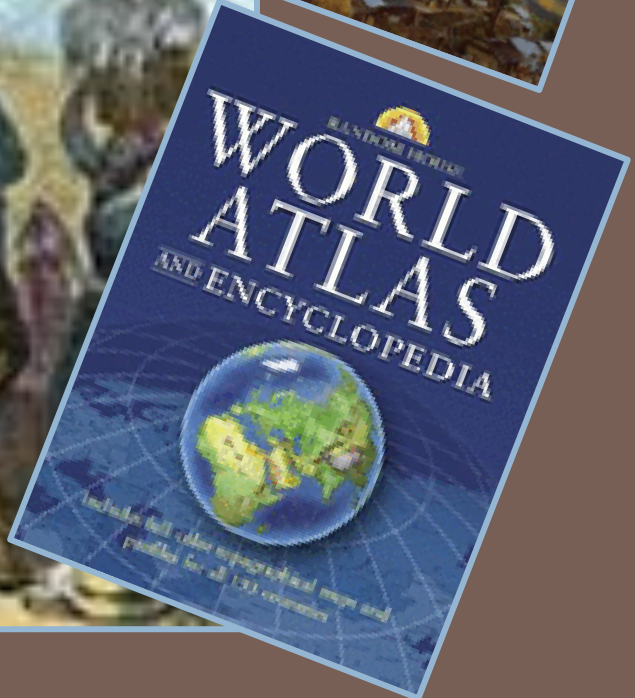
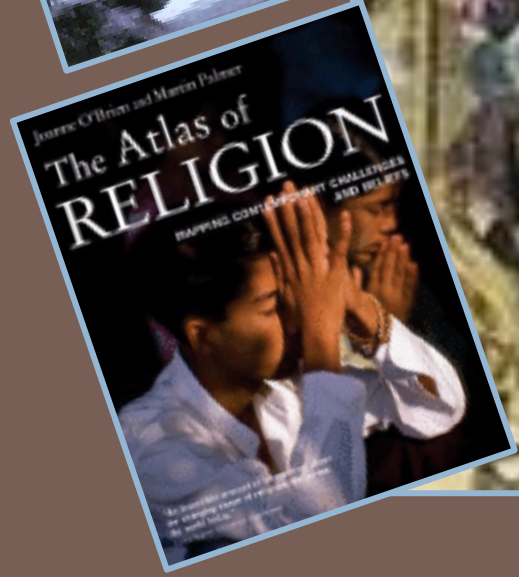
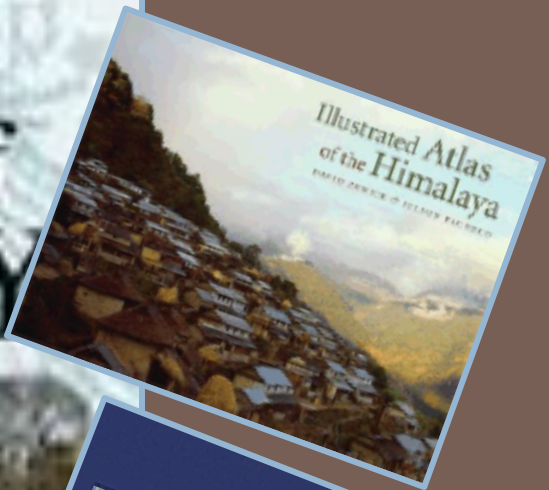
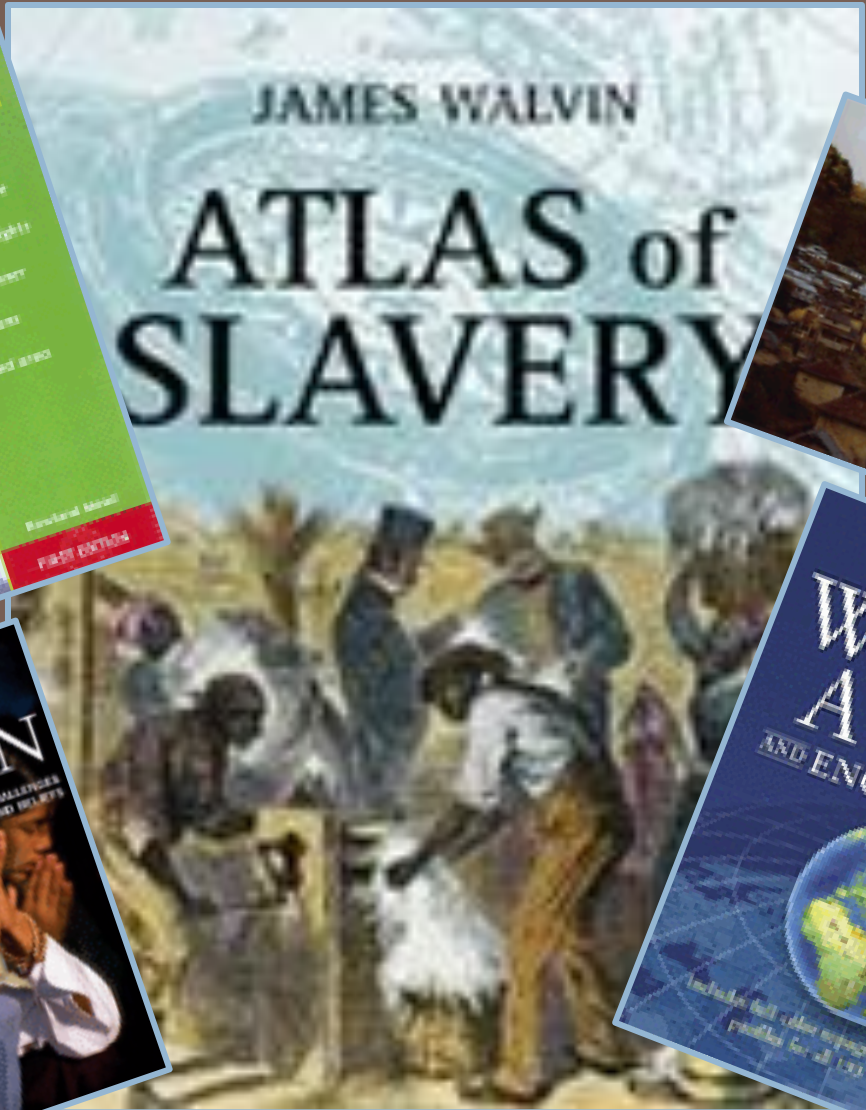
Maps from the GIS Research & Map Collection may be circulated for two weeks or longer. Arrangements can be made for maps to be used in the classroom for semester-long projects. Individual students or classes may also visit the GRMC to use maps in the Collection. Special areas for specific projects may be organized for using maps held on reserve for the entire class.



# Atlas Collection

The Atlas Collection on the second floor of the Library just outside the GRMC has more than 2,000 atlases from around the world. There are atlases about countries, cities, states, counties, and atlases about specific topics. Maps in atlases can easily be scanned for use in a classroom lesson.

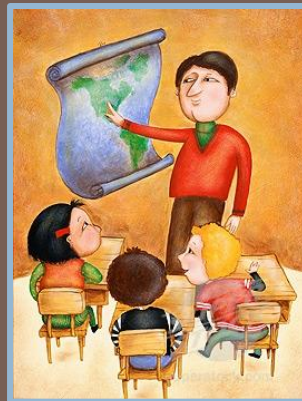




# Why are maps important in teaching?

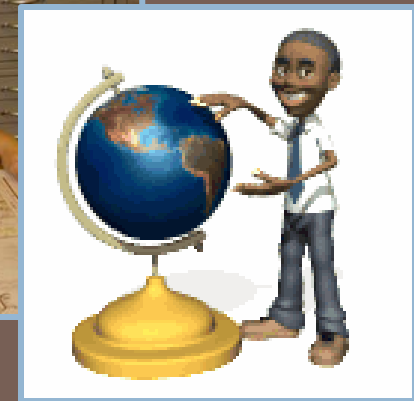
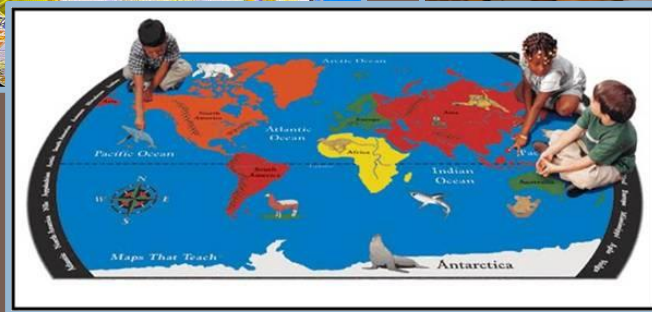
The 2006 National Geographic-Roper *Survey of Geographic Literacy* delivered some bad news about the basic geographic skills of young Americans. “Young Americans” aged 18 to 24 from the United States were tested on geographic knowledge. Respondents answered about half of all survey questions correctly.

- ❖ 63% of the students could not find Iraq on a map of the Middle East.
- ❖ 75% could not find Iran or Israel on a map of the Middle East.
- ❖ Nine in ten could not find Afghanistan on a map of Asia.
- ❖ Half of the young Americans could not find the state of New York on a map.
- ❖ In spite of months of media coverage of Hurricane Katrina, 33% could not find Louisiana on a map of the United States.



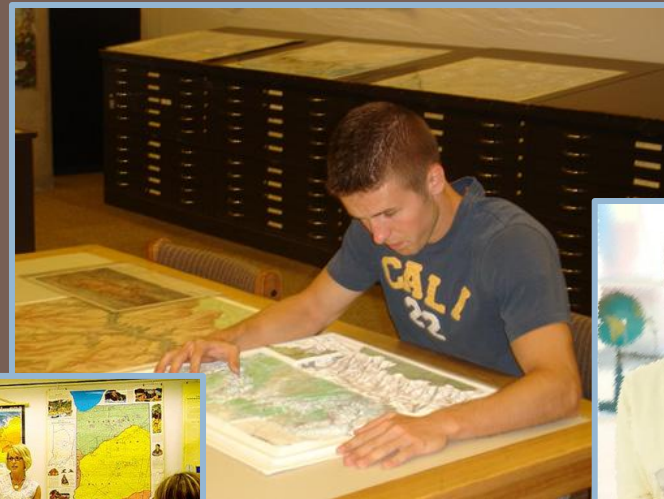
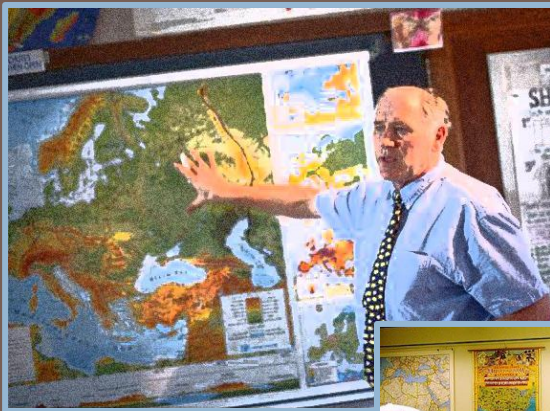
# Why are maps important in teaching?

Geographic knowledge in today's world is critical as the future grows increasingly global. Maps can be an excellent tool for studying current events and helping students become more informed global citizens. Just simply displaying a world map in the classroom helps to increase students' geographic literacy.



# Teaching Using Maps from the GRMC

This guide will provide ideas for lesson plans incorporating maps and atlases from the GRMC. The lessons can be adapted for use with students from kindergarten through high school studying many different subjects.

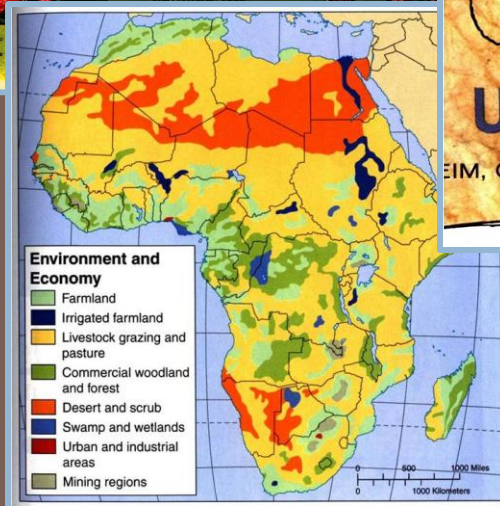


# Learning with Maps



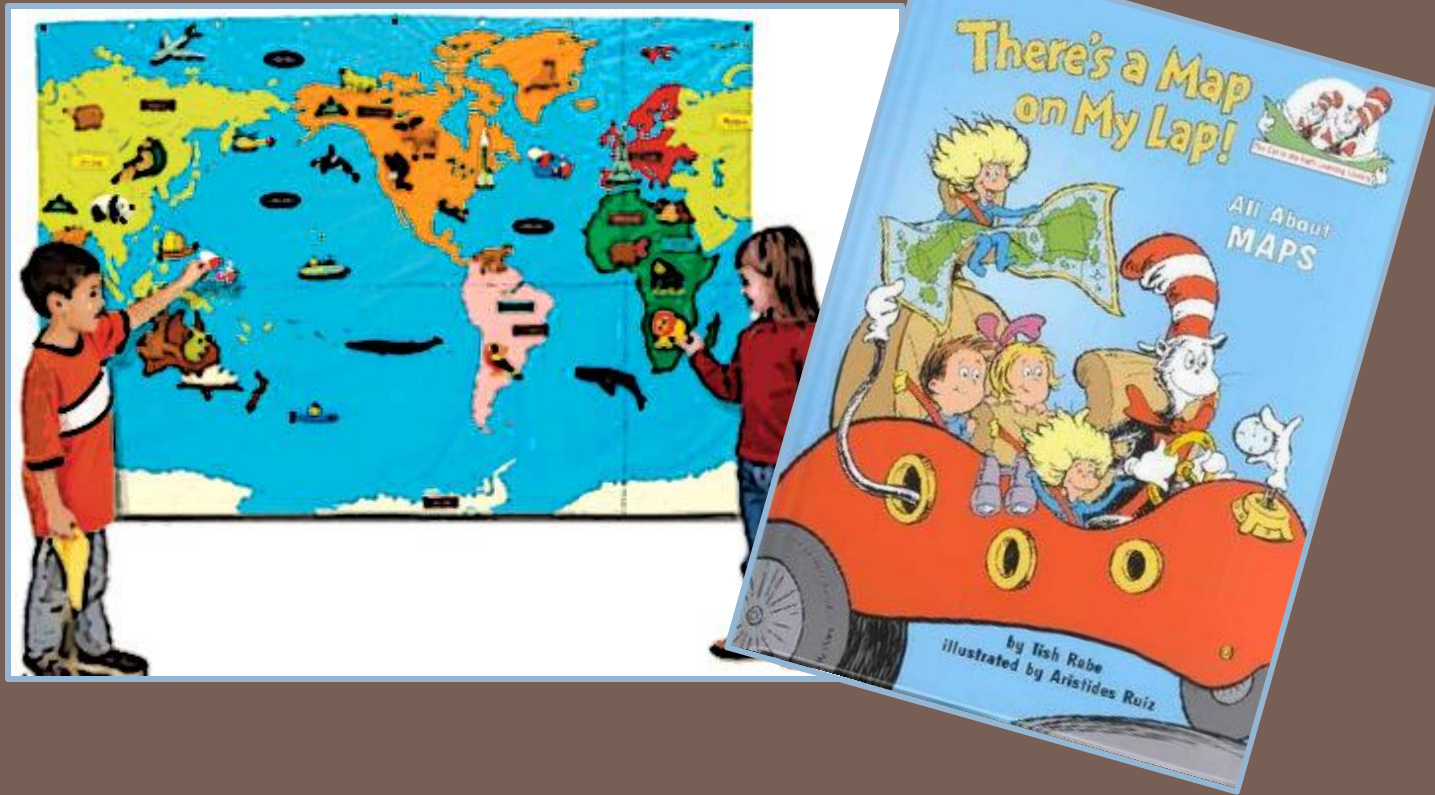
Students learn about the elements of maps using interesting examples: Every map should include a title, a legend or key, a scale, and a directional indicator. Use this map of Narnia from the GRMC as an example.

(Narnia, GRMC, Ball State University Libraries).



Students can learn to identify the elements of a map and improve map reading skills using maps from the GRMC. The images shown are some of the unique scales, legends, directional indicators, and titles featured on maps from the GRMC.

# Maps Are Elementary



*There's a Map on My Lap* by Tish Rabe is a children's book available in the GRMC. This book, part of *The Cat in the Hat Learning Library*, introduces young students to the different types of maps, the tools used for reading maps, and map formats. Elementary teachers could read this book to the class and give a follow-up map assignment or activity.

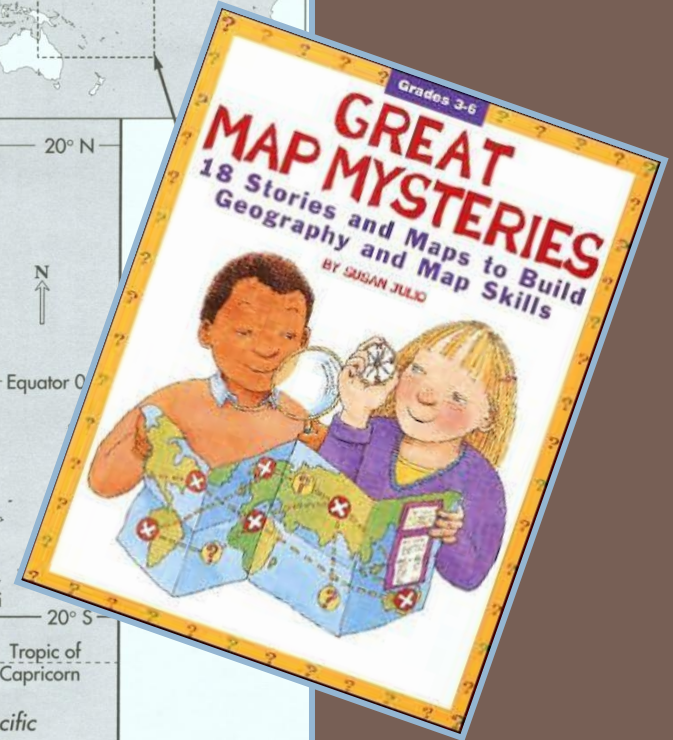
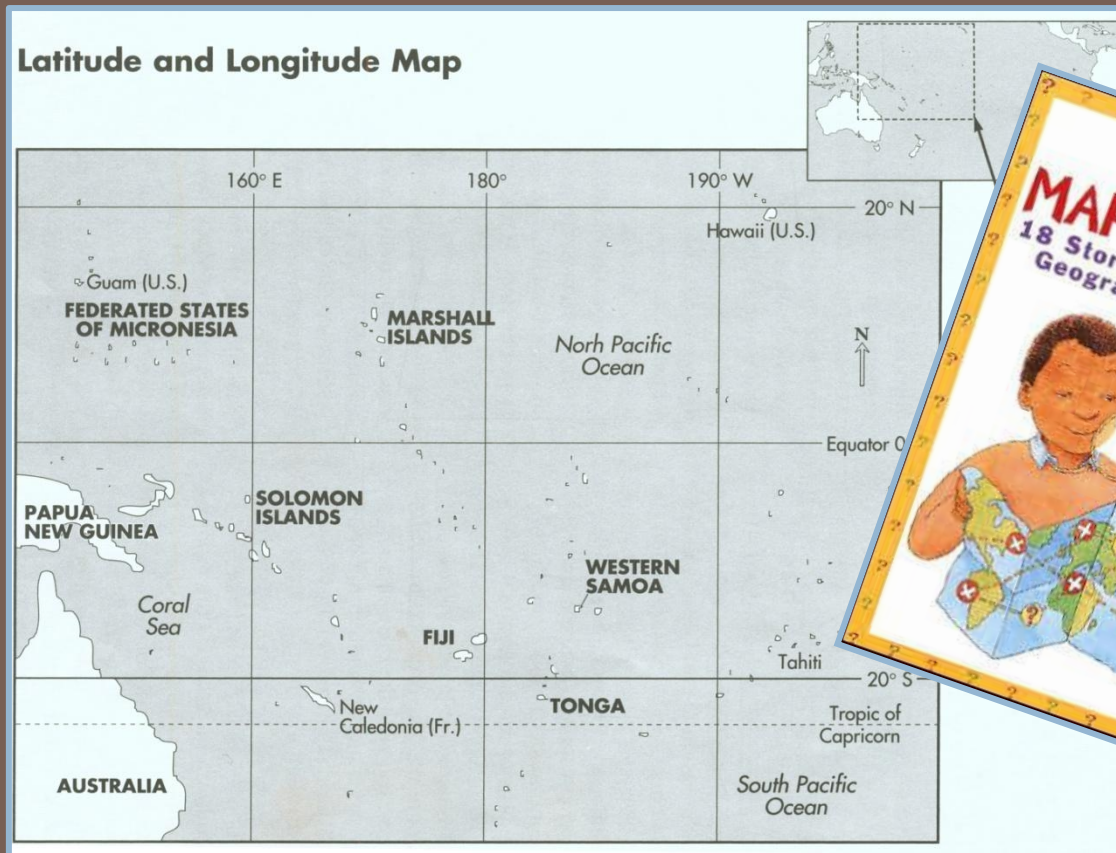


# Map Searches



Teach U.S. geography searching for heroes on this GRMC map. Various heroes (from super heroes to firemen to service dogs to Mom and Dad) are located all over this map of the United States. Make a list of the heroes and ask students to identify the states in which they are located. This lesson teaches students the fifty states and the qualities of a hero. This map is available at <http://cardinalscholar.bsu.edu/300/>.

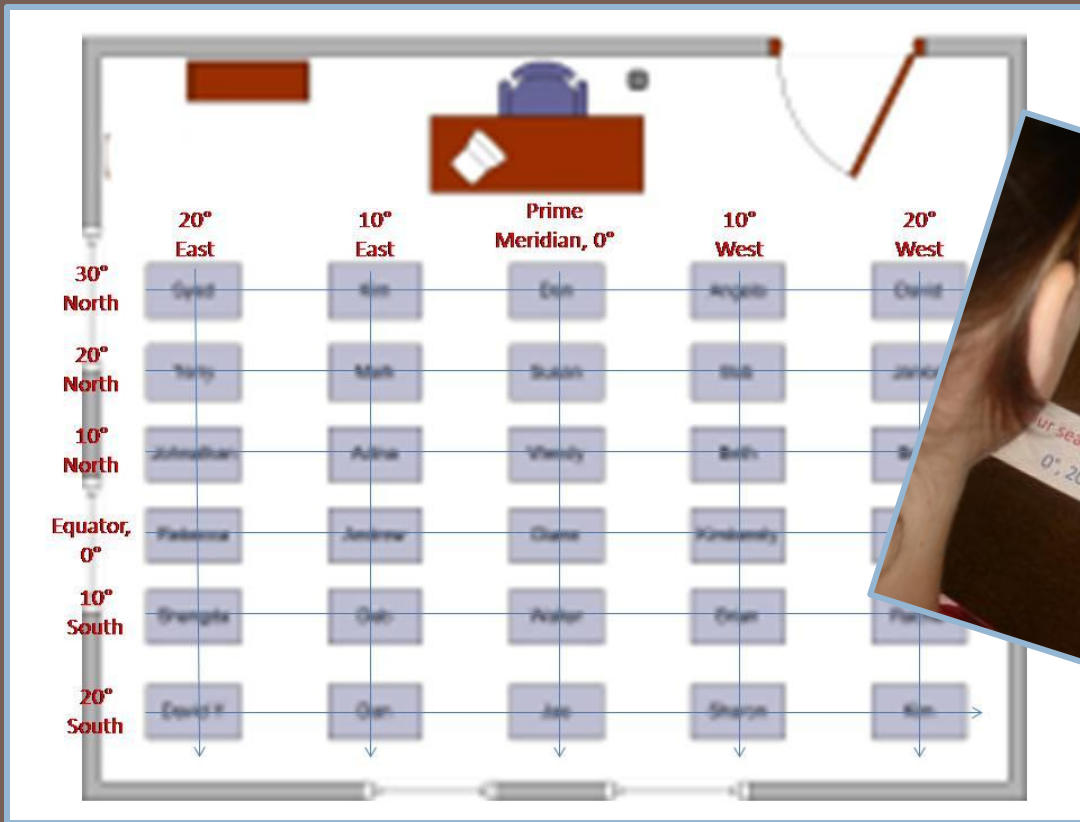
# MAP SKILLS



The Educational Resources Collections in University Libraries also includes maps and books about geography, including textbooks. *Great Map Mysteries* is a book that features detectives trying to solve cases using maps. The book teaches students how to identify items on a map, how to use a compass rose, compare time zones, and determine locations using latitude and longitude.

(*Great Map Mysteries*, Educational Resources Collections, Ball State University Libraries).

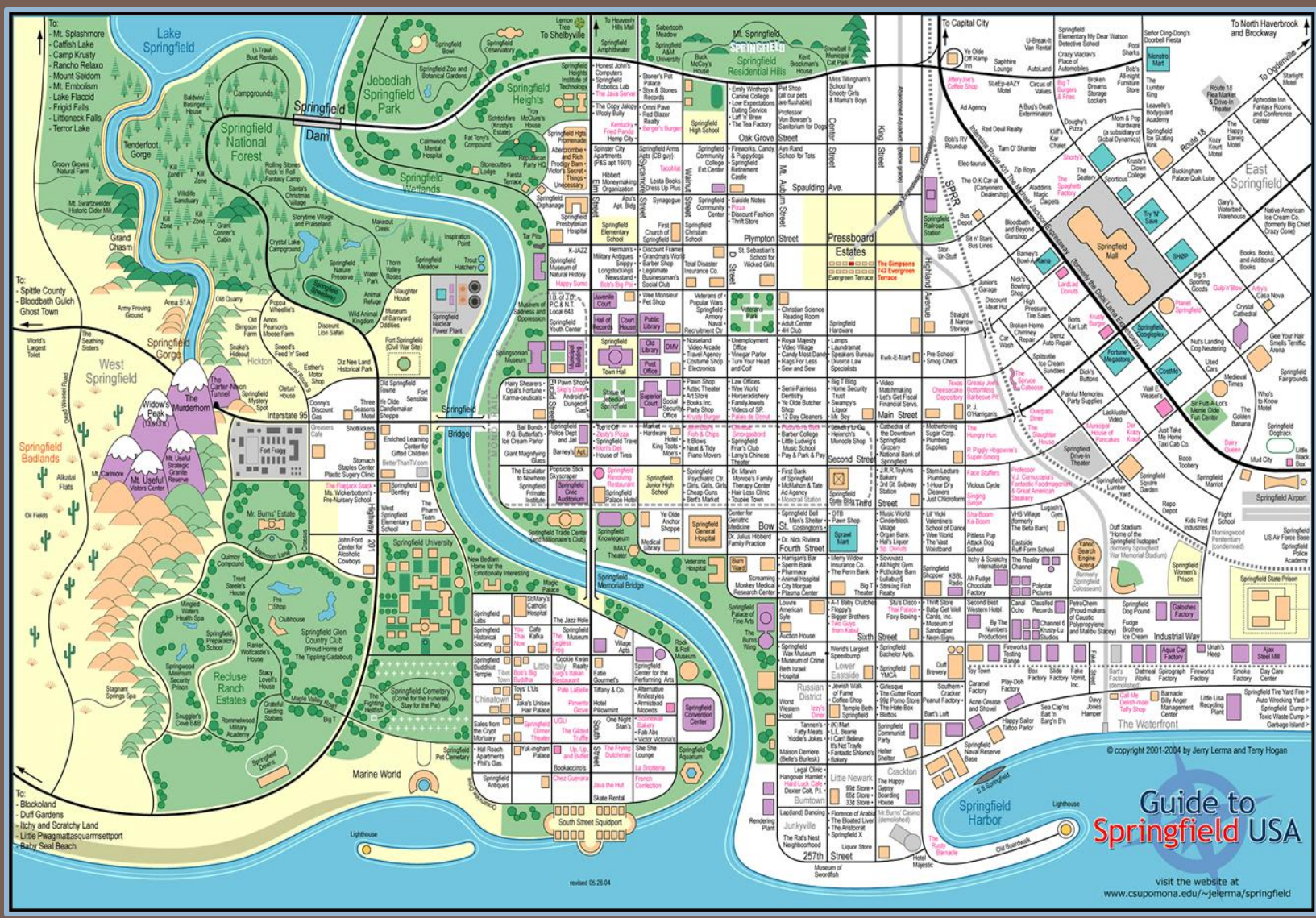
# Using Map Skills in the Classroom



Teachers can assign students their seats by posting signs in the classroom, labeling each row of seats by lines of latitude and longitude. Then pass out slips of paper identifying the location of the student's seat with geographic coordinate numbers.

The students may find this "mad scramble" for seats entertaining.

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Guide to  
Springfield USA

visit the website at  
[www.csupomona.edu/~jlerma/springfield](http://www.csupomona.edu/~jlerma/springfield)

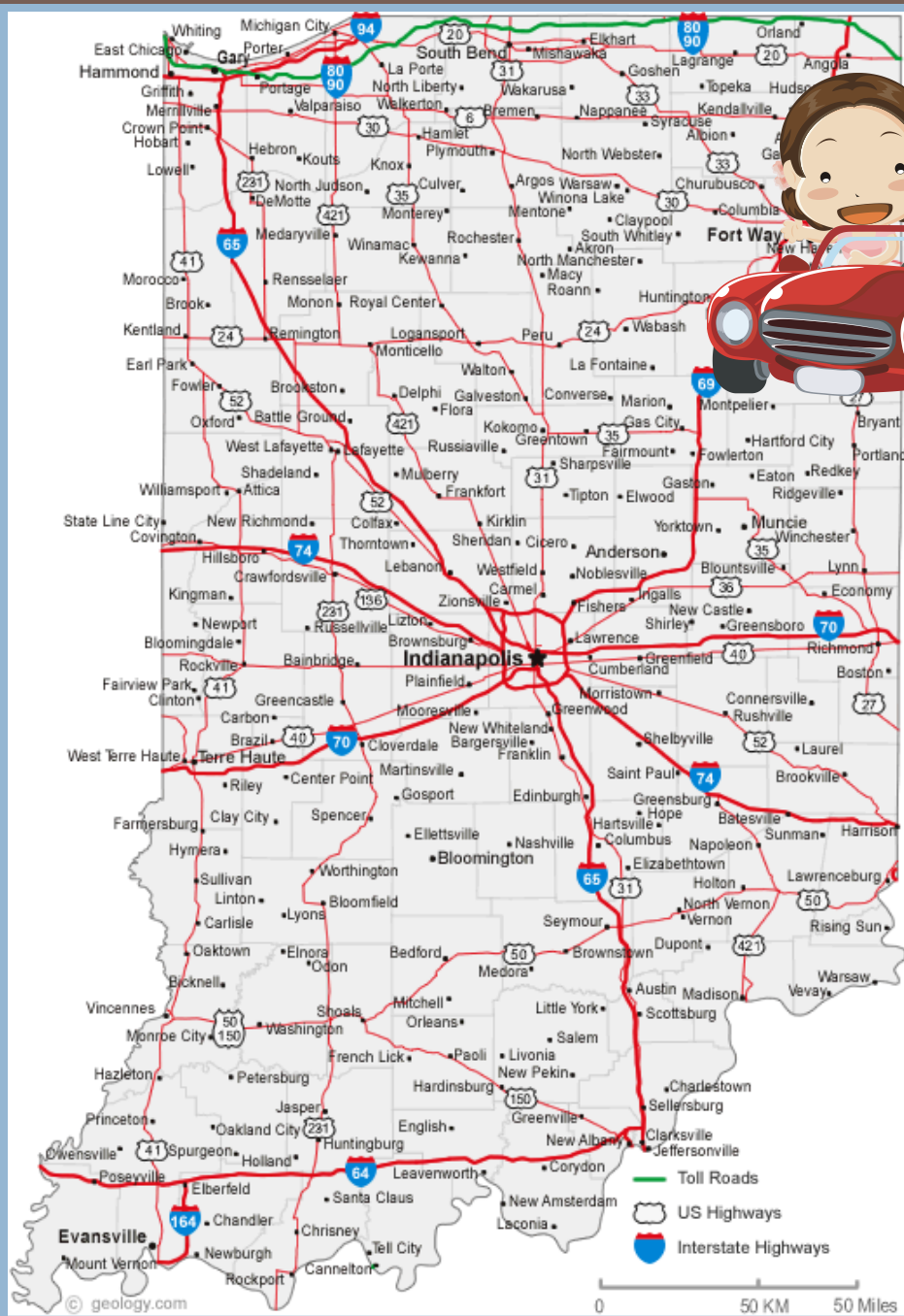
Use a map of Springfield from *The Simpsons*' television show to teach students how to use a map to follow directions.  
(*Guide to Springfield USA*, GRMC, Ball State University Libraries).

# Map Skills: Using Road Maps

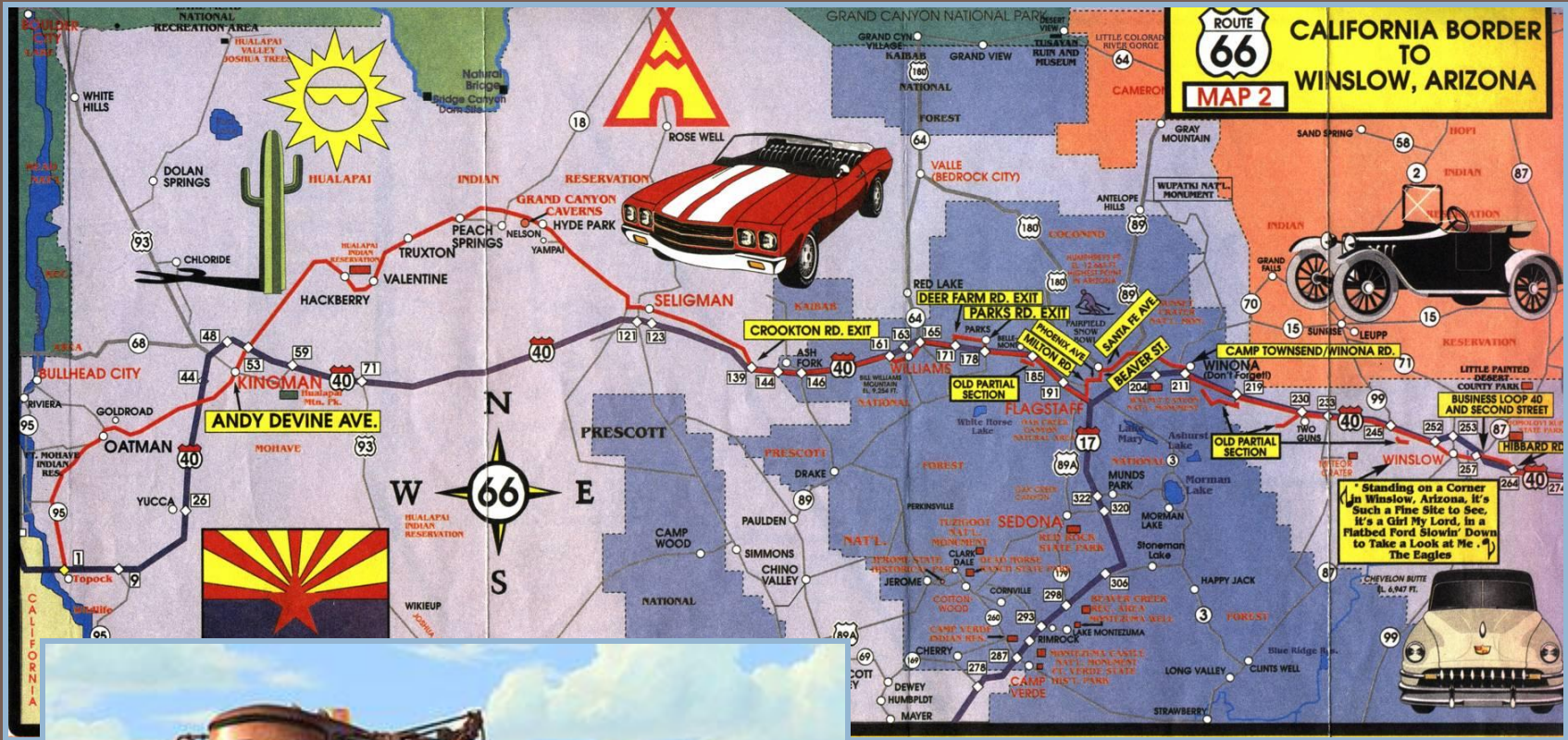


The GRMC includes road maps from all fifty states and cities and countries around the world. Numerous local and international road atlases are also available.

Teachers could teach students to use the scale on the maps to plan a vacation or road trip from one destination to another. Students could implement math skills in determining speeds and distance and time traveled.



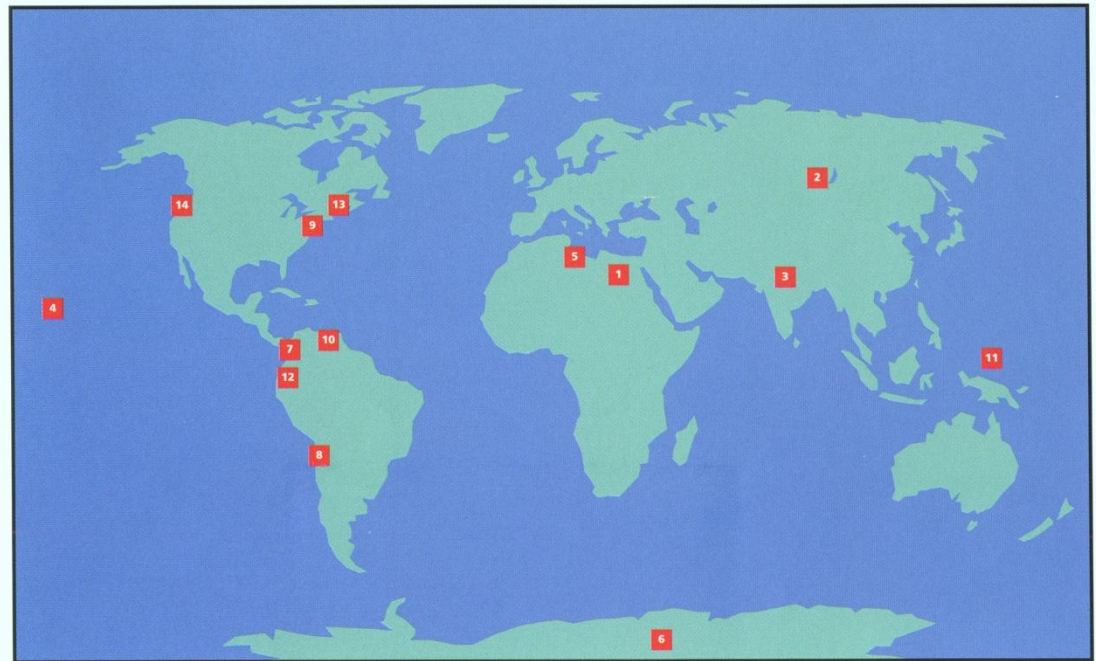
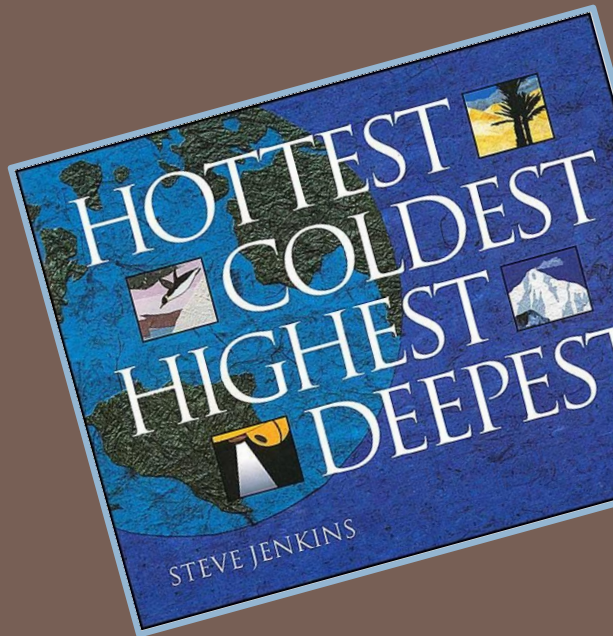
# Cruising Across America



The animated motion picture "Cars" took place on Route 66, the historic highway stretching from Illinois to California. Young students could follow along the map while watching the movie.

(Get Your Kicks on Historic Route 66 map, GRMC, Ball State University Libraries).

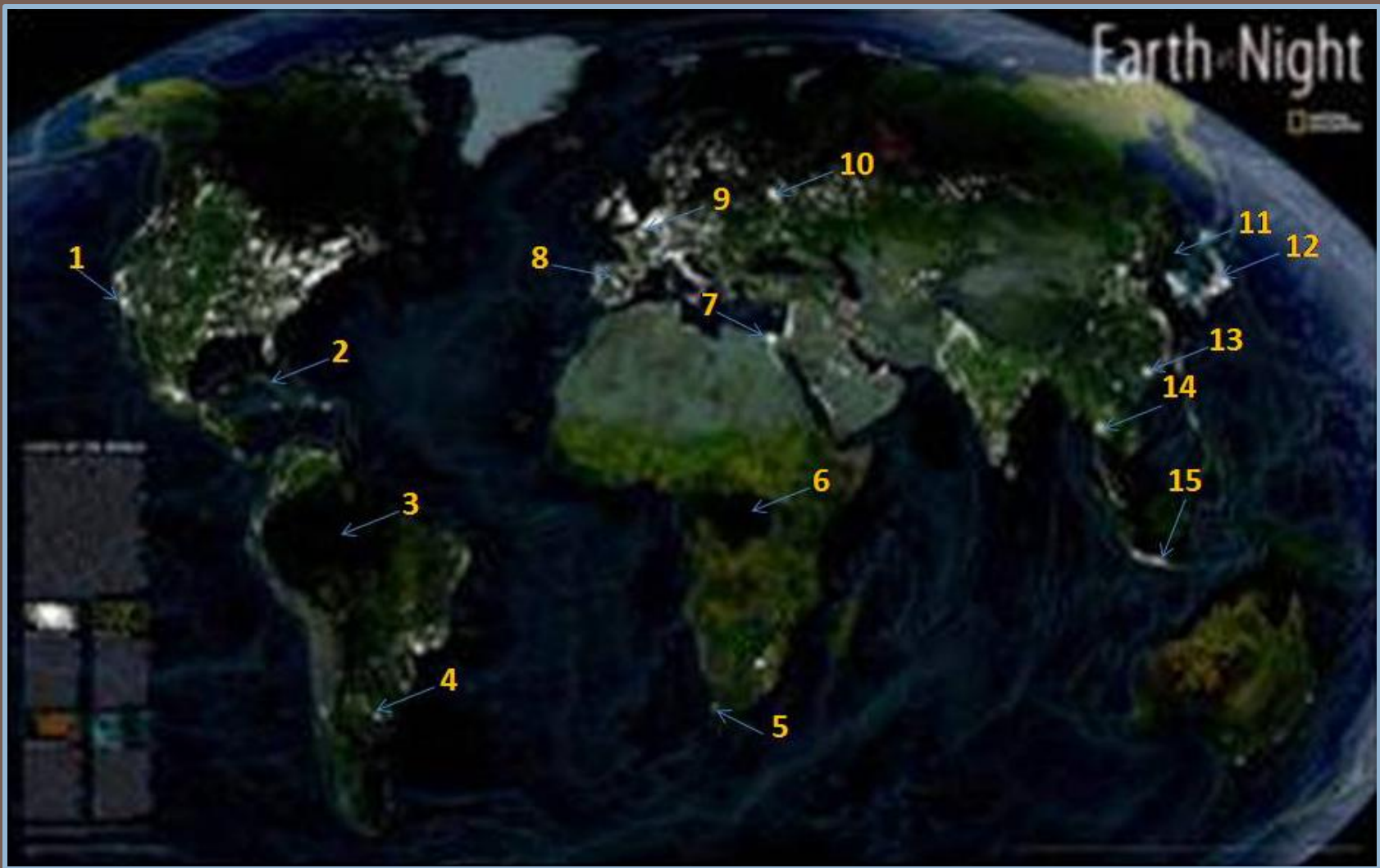
# Marking a Map



- |                        |                                   |                                 |                              |
|------------------------|-----------------------------------|---------------------------------|------------------------------|
| 1 Nile River, Africa   | 6 Vostok, Antarctica              | 10 Angel Falls, Venezuela       | 13 Bay of Fundy, Nova Scotia |
| 2 Lake Baikal, Russia  | 7 Tutunendo, Colombia             | 11 Marianas Trench, Philippines | 14 Mount Rainier, Washington |
| 3 Mount Everest, Nepal | 8 Atacama Desert, Chile           | 12 Sangay, Ecuador              |                              |
| 4 Mauna Kea, Hawaii    | 9 Mount Washington, New Hampshire |                                 |                              |
| 5 Al Aziziyah, Libya   |                                   |                                 |                              |

*Hottest, Coldest, Highest, Deepest* is a book describing the geographical extremes of the world—longest river, driest spot on earth, highest mountain. Teachers could read the book to the class as students find the locations in an atlas and mark the spots on a world map. Learning to transfer a location on one map to another similar map is an important map reading skill.

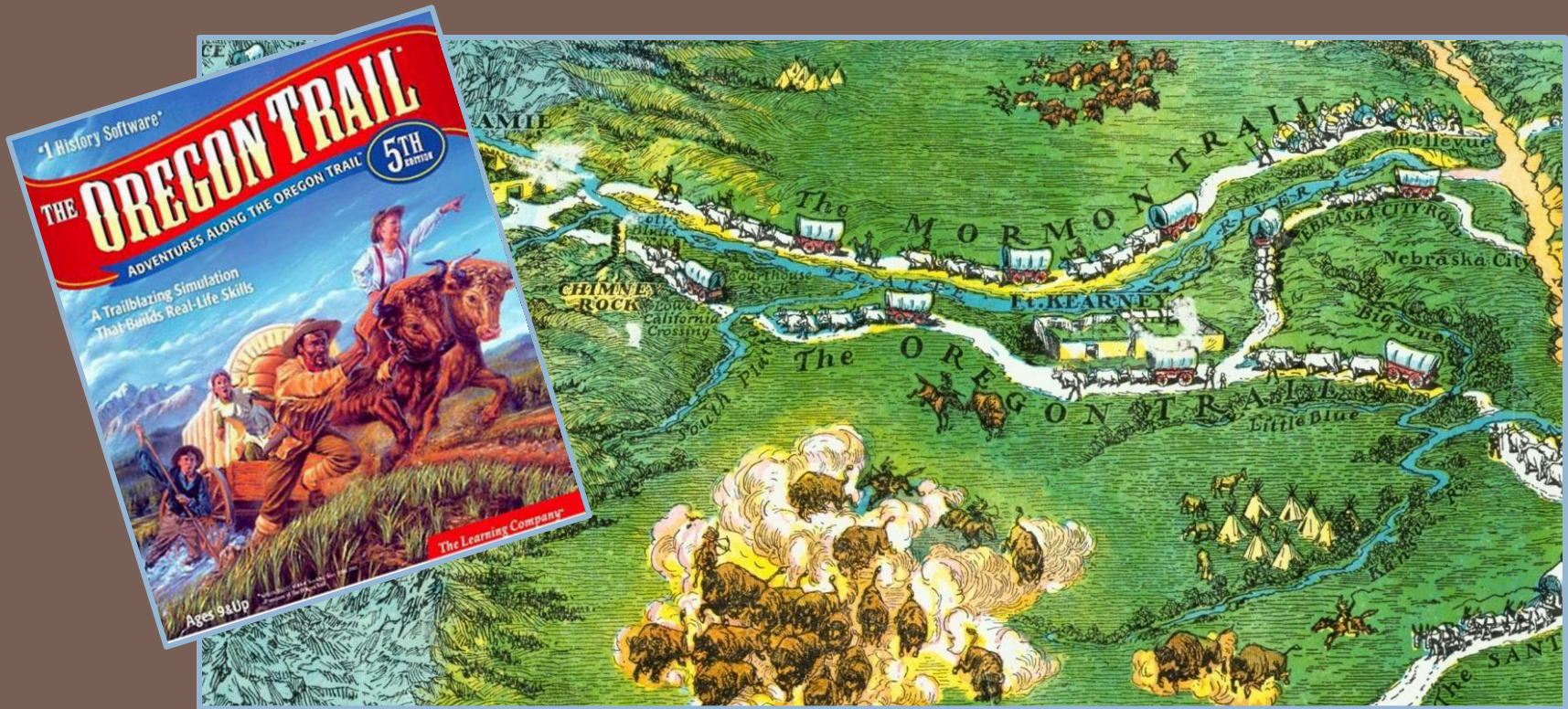
(*Hottest, Coldest, Highest, Deepest*, Educational Resources Collections, Ball State University Libraries).



Teachers could use this satellite map of the world to show students how to transfer points on one map to another map. Students could be asked to identify specific cities, deserts, and rainforests numbered on this copy of the map by searching for the locations on another world map or in an atlas. This map is available at <http://cardinalscholar.bsu.edu/301/>.

(*Earth at Night* map, GRMC, Ball State University Libraries).

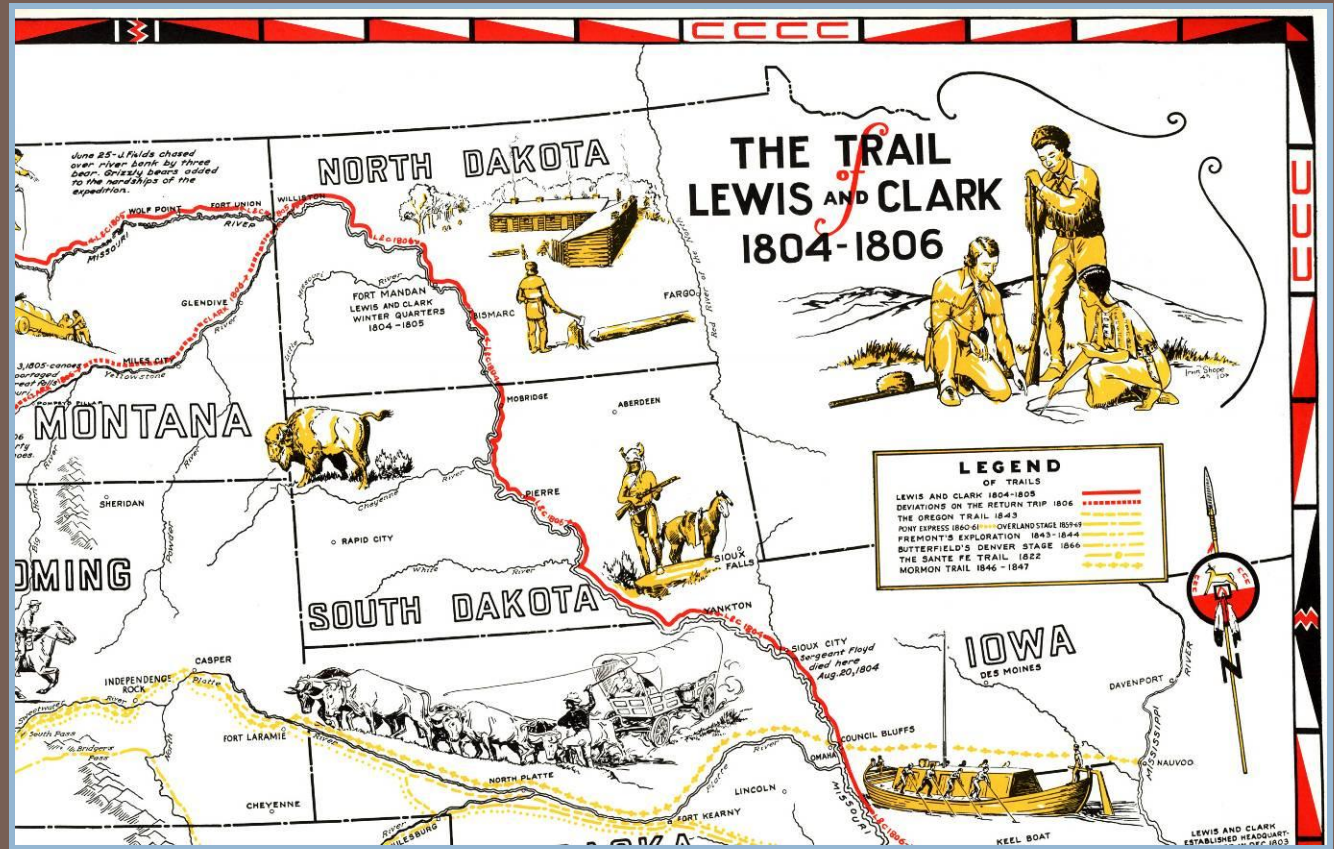
# Following Along: Map Reading Made Fun...



Students enjoy playing *The Oregon Trail* simulation game in the classroom. Using a map of the trail from the GRMC, students can learn to follow along with the game and search for landmarks and other sites on the map.

(*The Oregon Trail* game, Educational Resources Collections; *The Oregon Trail* map, GRMC, Ball State University Libraries).

# Follow the Leaders Using Trail Maps



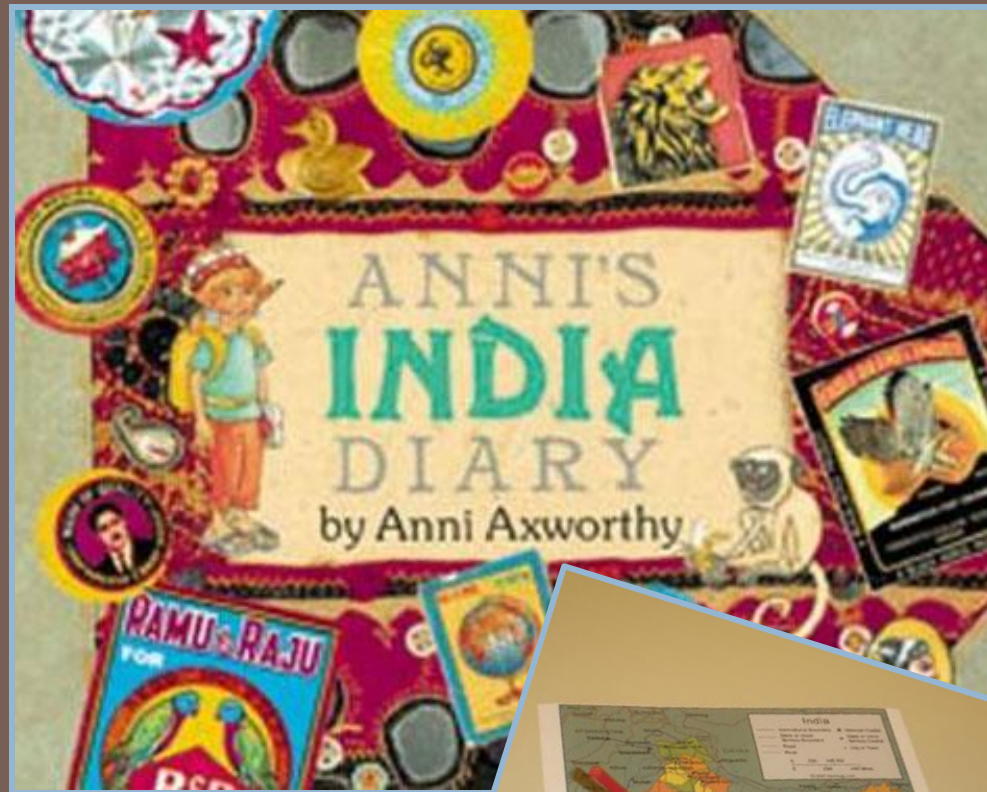
Students make decisions and create maps while traveling across America with Lewis and Clark at <http://www.nationalgeographic.com/west/>

Students could use the maps of the trails of Lewis and Clark from the GRMC or teachers could provide a blank map of the region and have students diagram the trail using sites provided.

(The Trail of Lewis and Clark, GRMC, Ball State University Libraries).

# Following the Story on a Map

Teachers can coordinate the study of geography with literature and reading skills. Even younger students can follow a map from a story. In *Anni's India Diary* by Anni Axworthy, the author describes the travels of a young girl through India. Young students could follow along with the story using a copy of a map of India from the GRMC that shows the city locations mentioned in the story, mapping out the route of Anni's trip.





## Using Map Scales to Follow Marco Polo in China

Students could follow Marco Polo's route through China using this map from *The Great Atlas of Discovery* available from the Atlas Collection. The map shows dates, so students could use the scale of the map to determine the distance traveled over one year in the journey.

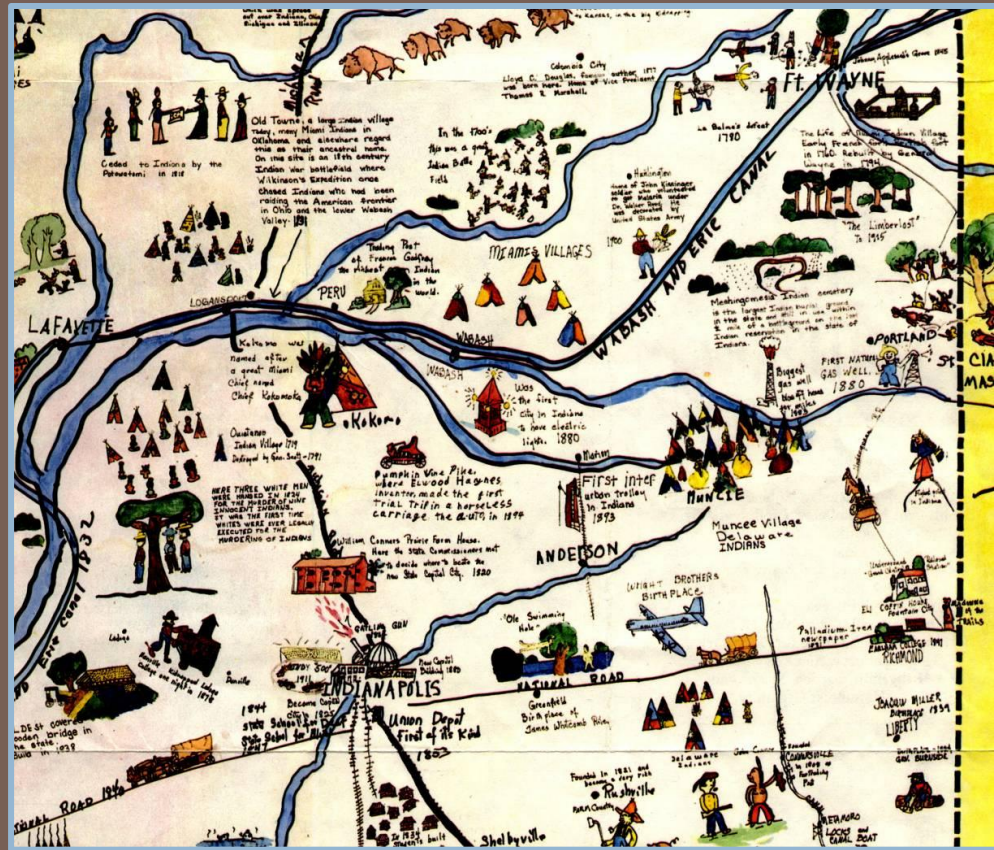
# Student Cartographers



After teaching students to recognize the basic elements of maps and map reading, ask students to create a map of their bedroom at home—using a title, directional indicator or compass rose, scale, and a legend or key. Students could also create a treasure map with an “X” marking the buried treasure.

# Cartography: Creating Custom Maps

After teaching the history of a state, country, or continent, teachers could ask individual students or groups to create a map documenting some of the events studied.



This is a portion of a map of Indiana history from the GRMC created by a sixth-grade class from Liberty, Indiana. A similar map could be created today using computer clip art images and software. Other maps of native birds and wildlife, U.S. folklore, famous European landmarks, or other topics could also be created to serve as a culminating final project.

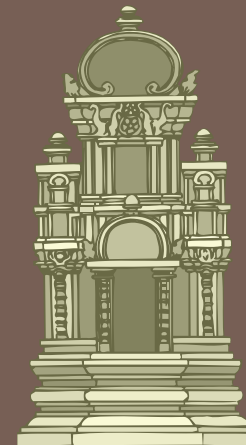
(Indiana, GRMC, Ball State University Libraries).

# Introduction to Southern Asia

Students beginning a unit on Southern Asia could be introduced to the culture, tradition, and history of the region using the *World Heritage Map* from the GRMC. Teachers cut out photographs of numerous world heritage sites located in the countries of southern Asia. (This map poster is available to be copied for the class at <http://cardinalscholar.bsu.edu/311/>).

Students should post the photographs in the proper countries on a map of Southern Asia after referencing the *World Heritage Map*.

(*World Heritage Map*, GRMC, Ball State University Libraries).



# Final Project: Spain

Students completing projects on the economy of Spain could create an economic map or a map of important products of the country. Individual students could be assigned their own European (or other region) country and asked to complete an economic map for their country.

(A map of the agricultural products of Spain from *Spain: Things to Make, Activities, Facts*, Educational Resources Collections, Ball State University Libraries).





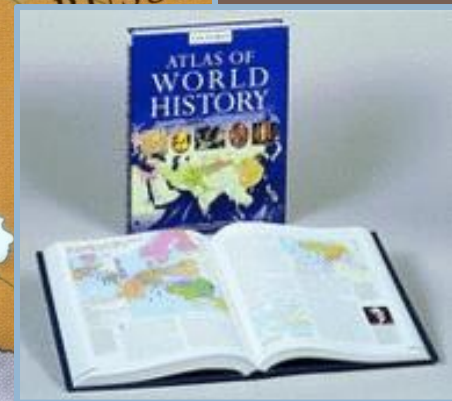


# H I S T O R Y



Maps are an excellent resource for teaching history. The GRMC has a collection of both historic and historical maps that can be used for teaching about world, regional, and United States history. This map shows battles of the Civil War, and the GRMC also includes World War-, Korean War-, and Vietnam-era maps that can be used to help students visualize history.

*(Battles of the Civil War map, GRMC, Ball State University Libraries).*



Atlases can also be an excellent resource for history teachers. Atlases of world history can show how a region looked at a particular time in history—Europe in 1914 is shown. Atlases covering specific historical events are also available from the GRMC and the Atlas Collection in Bracken Library. Maps in atlases can be conveniently scanned for use in the classroom.

*(The Complete Atlas of World History, GRMC, Ball State University Libraries).*

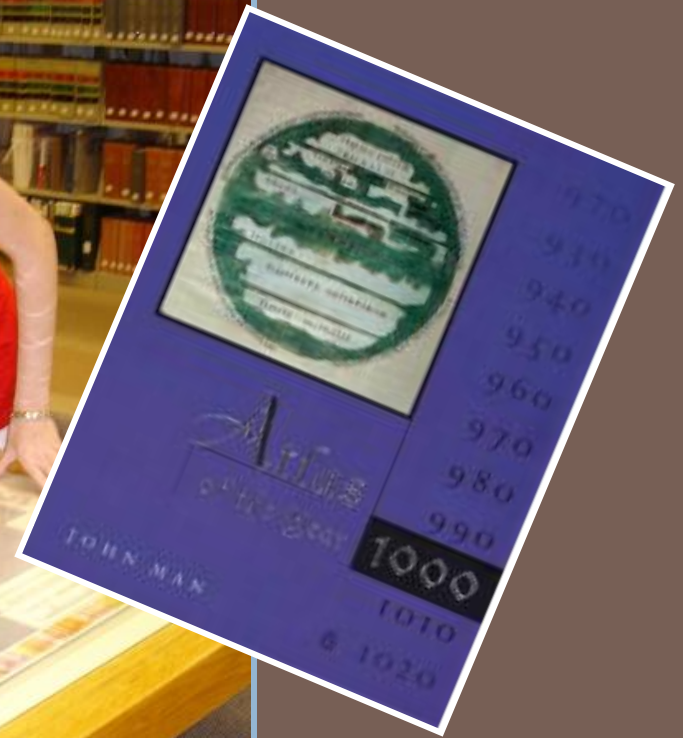
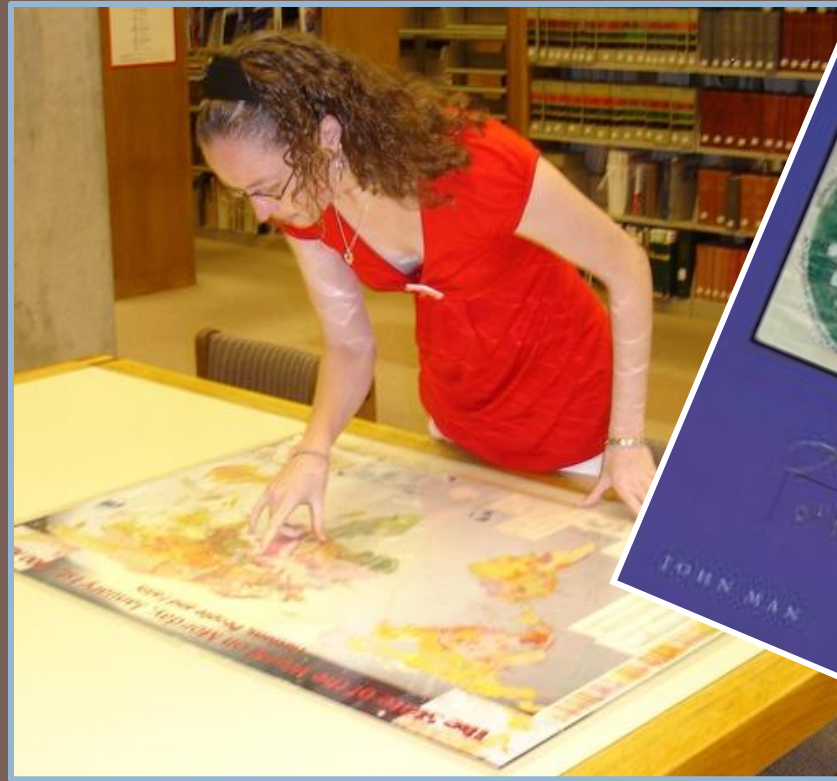
# Life in the Ancient World

This map is a portion of a map of the world showing trade systems of the ancient world taken from the *Atlas of Anthropology* available in the Atlas Collection in Bracken Library.

Exported goods are shown in red, while imported goods are shown in blue. Students could be assigned one or more of the traded products and list countries and cities involved in that commodity's trade. Students could also analyze the location of trade routes around the world and also the countries and regions **not** involved in ancient world trade. A modern trade map could also be analyzed by more advanced students.



# Studying a Moment in Time



*The State of the World on Monday, January 1<sup>st</sup>, 1000 A.D.* is a map in the GRMC that includes information about what was happening in all parts of the world on that date. The map shows the peoples living around the world, the nations and city names, the religions followed in different regions, the sites of walls, pyramids, and other structures and their purposes, and technological activity—including the use of iron and copper casting. The map even shows the staple carbohydrate foods eaten in the year 1000 A.D. This map, along with the *Atlas of the Year 1000* from the Atlas Collection, could be used to recognize concurrent world activities when studying specific peoples, or students could create a similar world map for a different time in history.

# Native American Studies

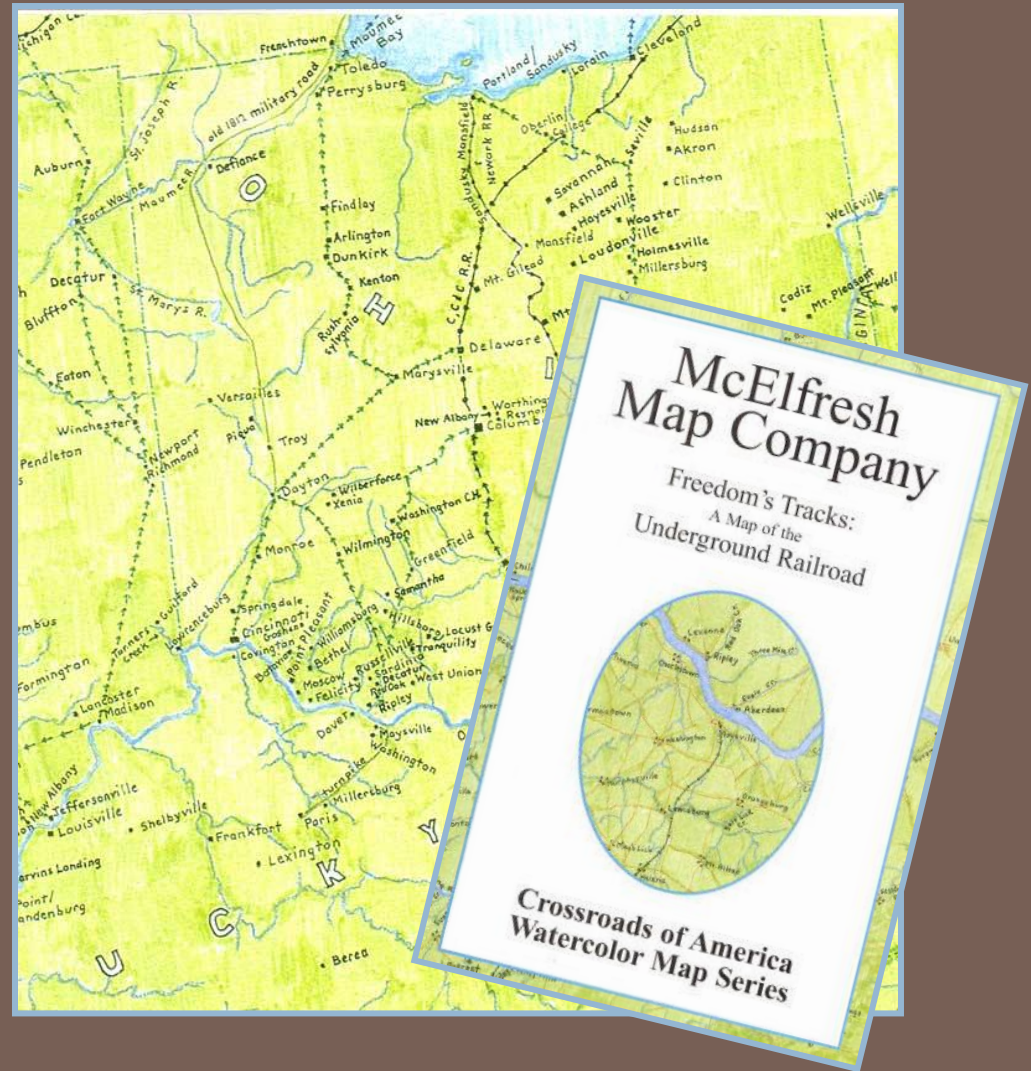


This map shows the location of the reservations and other lands recognized as belonging to American Indians and Alaska Natives. Inset maps show Indian Country over history slowly moving west. Brief biographies of famous Native Americans and information about languages are also included. The verso of the map shows North American Indian Cultures and discusses some of their innovations. This map is perfect for interdisciplinary studies.

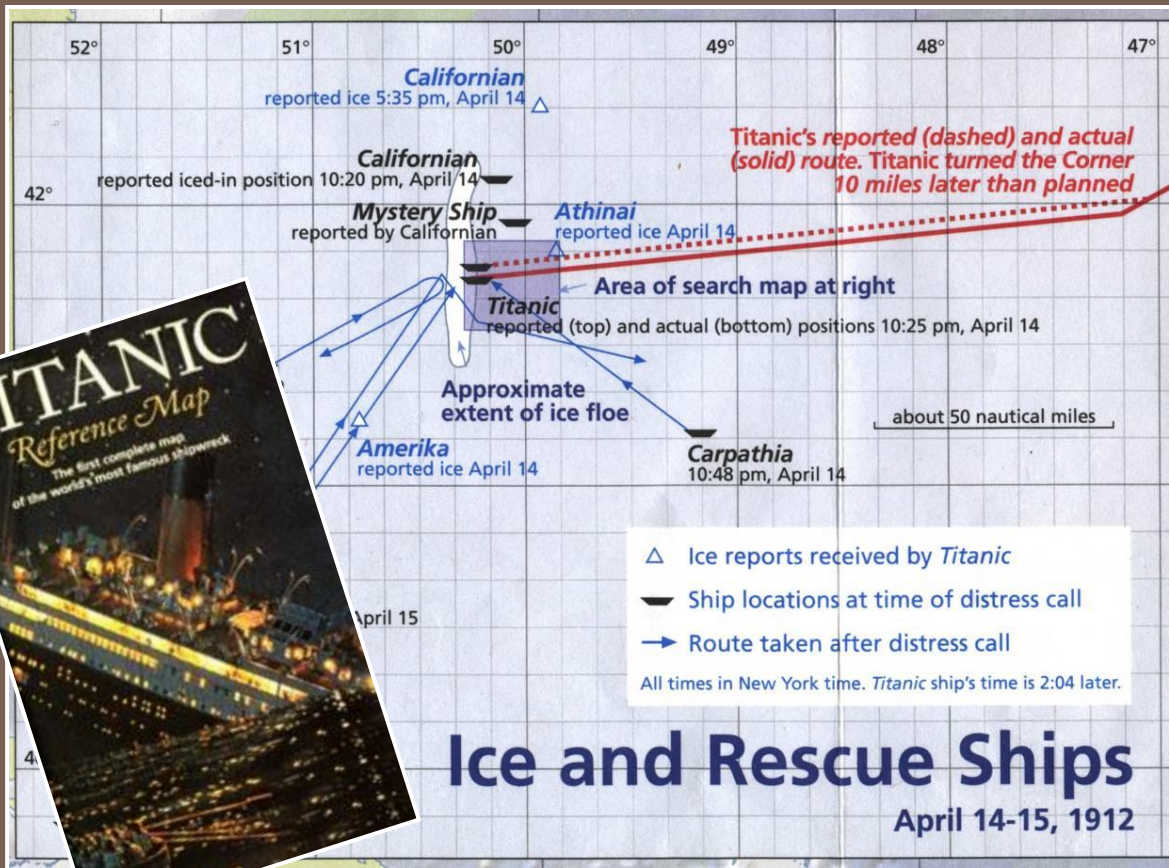
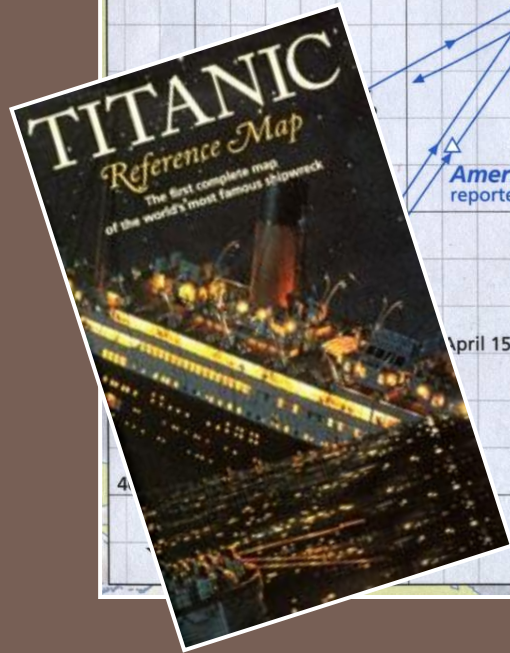
*(Indian Country, GRMC, Ball State University Libraries).*

# Mapping the Underground Railroad

Working in groups or individually, ask students to study a physical map of the eastern part of the United States during the time of slavery. Analyzing elevation and terrain on the map, ask students to create a map of a route that a runaway slave could travel from a destination in the south to a safe haven in the north. Discuss the routes chosen by the students as a group. Then study a map of the actual Underground Railroad system available from the GRMC.



(Freedom's Tracks: A Map of the Underground Railroad, GRMC, Ball State University Libraries).



# Mapping Tragedy: Voyage of the *Titanic*

The *Titanic Reference Map* in the GRMC shows transatlantic passenger steamship routes, the *Titanic* disaster site, the wreckage search site, other shipwreck sites, iceberg occurrence areas/graph, major ocean currents, and locations of *Titanic* memorials. The map also includes deck plans, a cutaway view of the *Titanic*, a comparative size diagram, and portraits with biographical sketches of selected passengers. This map offers a wealth of resources for teachers of numerous subjects.

# A Map of One Day in History



NATIONAL ARCHIVES

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## CALIFORNIA

California was hit fore and aft in the first minutes. Water and oil flooded the ship. When a burning oil slick threatened the ship, the order was given to abandon. Three of her crew were awarded Medals of Honor, posthumously.

**USS CALIFORNIA**  
Battleship  
**SUNK**  
Lives lost 102  
Torpedoes ●●  
Bombs ▼



4

## THE AFTERMATH

Lost at Pearl Harbor were the lives of 2,009 sailors, 109 Marines, 218 soldiers, and at least 68 civilians. The Japanese lost fewer than 100 airmen and 29 planes. The U.S. suffered severe damage to 18 ships, including 7 out of 8 battleships. Of 394 aircraft, 188 were destroyed and 159 damaged.

With coordinated attacks in the Philippines, Singapore, Hong Kong, Malaysia, and Guam and Wake islands, the Japanese began

to assert control of the skies and seas across a quarter of the Earth's surface. In the next six months, they would extend their control from the borders of India to the central Pacific, from Alaskan waters to the northern shores of Australia—until checked in the carrier battles of the Coral Sea and Midway.

As casualty figures of the Pearl Harbor raid mounted on the news tickers in New York's Times Square

and reports were issued over the radio, Americans were in turn stunned, disbelieving, and angry. The raid, launched without a declaration of war, united a divided America. Four days later, Germany and Italy, honoring the Tripartite Pact signed in 1940 with Japan, declared war on the U.S. Now, American industrial might and political resolve were fully committed to the Allied cause.



## MARYLAND

Moved inboard of Oklahoma, Maryland was protected. She was struck by one bomb in the forecabin and a second in the bow, but she was never threatened by serious flooding. She was able to steam to the mainland for repairs.

**USS MARYLAND**  
Battleship  
**DAMAGED**  
Lives lost 4  
Bombs ▼▼



## TENNESSEE

Burning debris from Arizona's explosion did more damage to Tennessee than the two dud bombs that hit her gun turrets. Wedged tightly between the sunken West Virginia and her mooring quay, she had to be blasted free. Like most of the damaged ships, she eventually rejoined the fleet.

**USS TENNESSEE**  
Battleship  
**DAMAGED**  
Lives lost 5  
Bombs ▼▼

## ARIZONA

Never will another ship bear her name, out of respect. An armor-piercing bomb, penetrating deeply and exploding near the forward magazine, deluged the death blow. The blast blew men off decks on nearby ships, threw tons of debris over the harbor, and killed in that instant over 1,100 sailors. Their sacrifice, and that of others lost at Pearl Harbor, is honored by the USS Arizona Memorial, erected over the sunken hull.

**USS ARIZONA**  
Battleship  
**SUNK**  
Lives lost 1,177  
Bombs ▼▼▼▼▼



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The destroyers Cassin and Downes lay in dry dock No. 1, with the Pacific Fleet flagship, Pennsylvania, astern. An incendiary bomb exploded Downes's fuel tanks, causing such fierce fires aboard both Downes and Cassin that the ships had to be abandoned. Thought to be lost, both ships, fitted with new hulls, were ultimately salvaged.

"Praise the Lord and pass the ammunition, boys" was reputedly said by Lt. (jg.) Howell M. Fordy, chaplain on the heavy cruiser, New Orleans, to encourage men passing ammunition by hand in a "shell train" after power was lost to the hoist. The words became the part of a song that soon swept the nation.

A torpedo passed under the old minesweeper Oglala and exploded against the light cruiser Helena. The concussion opened the seams of Oglala, which sank so quickly that some old salts say she died of fright.

Heroism during the 110 minutes of combat earned the following recognition: 16 Medals of Honor; 51 Navy Crosses; 53 Silver Stars; 4 Navy and Marine Corps Medals; 1 Distinguished Flying Cross; 4 Distinguished Service Crosses; 1 Distinguished Service Medal; and 3 Bronze Stars.

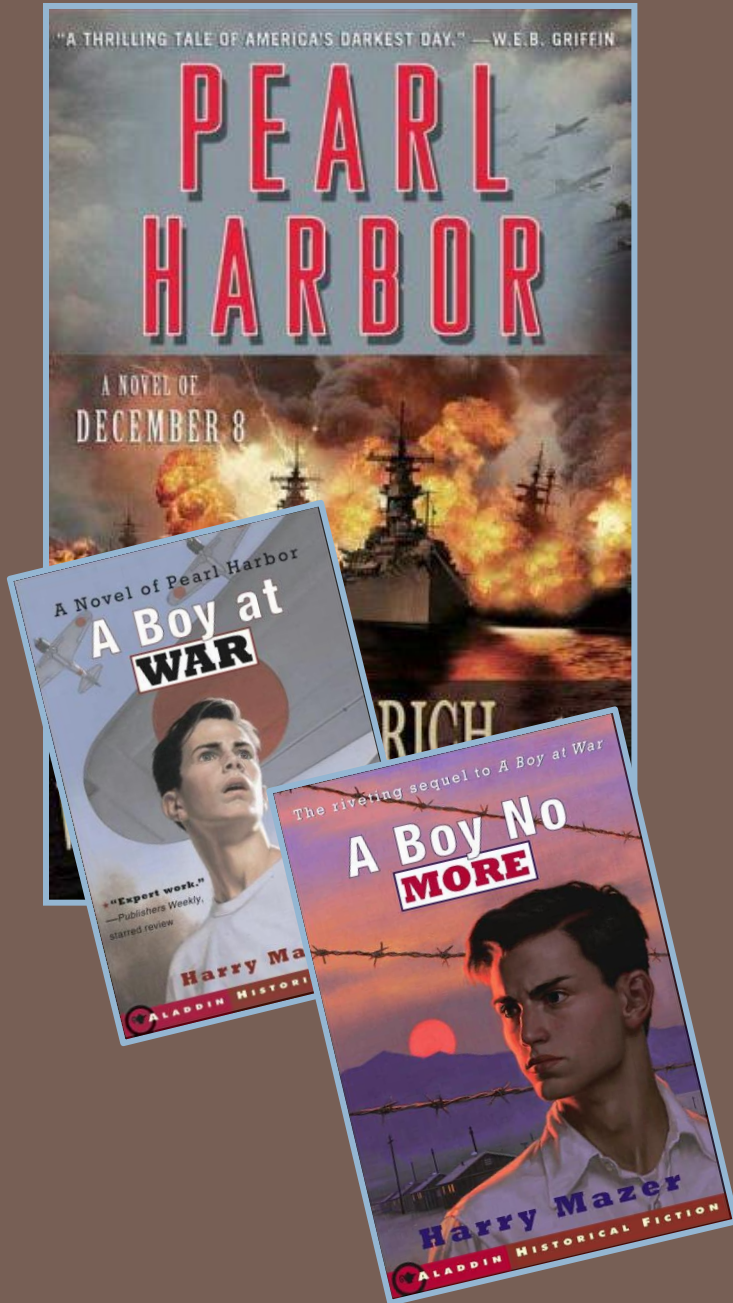
Not all of the U.S. Pacific Fleet was in Pearl Harbor at the time of the attack. Two aircraft carriers, Lexington and Enterprise, almost all the heavy cruisers, and half of the destroyers were at sea. A third carrier, Saratoga, was at San Diego, about to begin a voyage to the Pacific Harbor.

Colorful squadron insignia—many designed by pilots—emblazoned fighting aircraft of the U.S. Army, Navy, and Marine Corps. "The grinnings, lively images are not permitted technically," noted a December 1944 National Geographic publication, "but when a lad sets his eyes to the skies, if he needs a bit of encouragement to go with him, commanding officers have been known to wink at breaking the rule." Selected insignia from the Pacific Theater are reproduced here. For a key to these insignia go to [nationalgeographic.com/pearlharbor/map.html](http://nationalgeographic.com/pearlharbor/map.html)

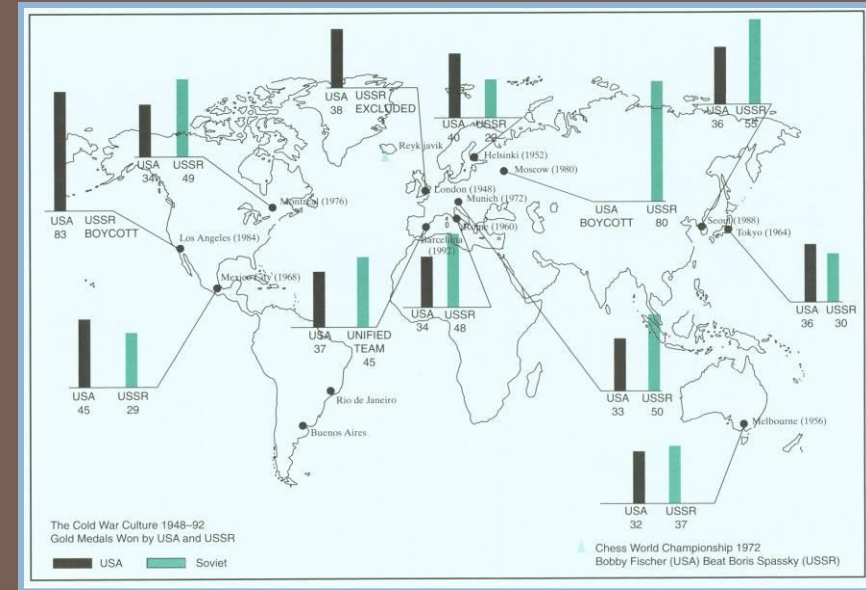
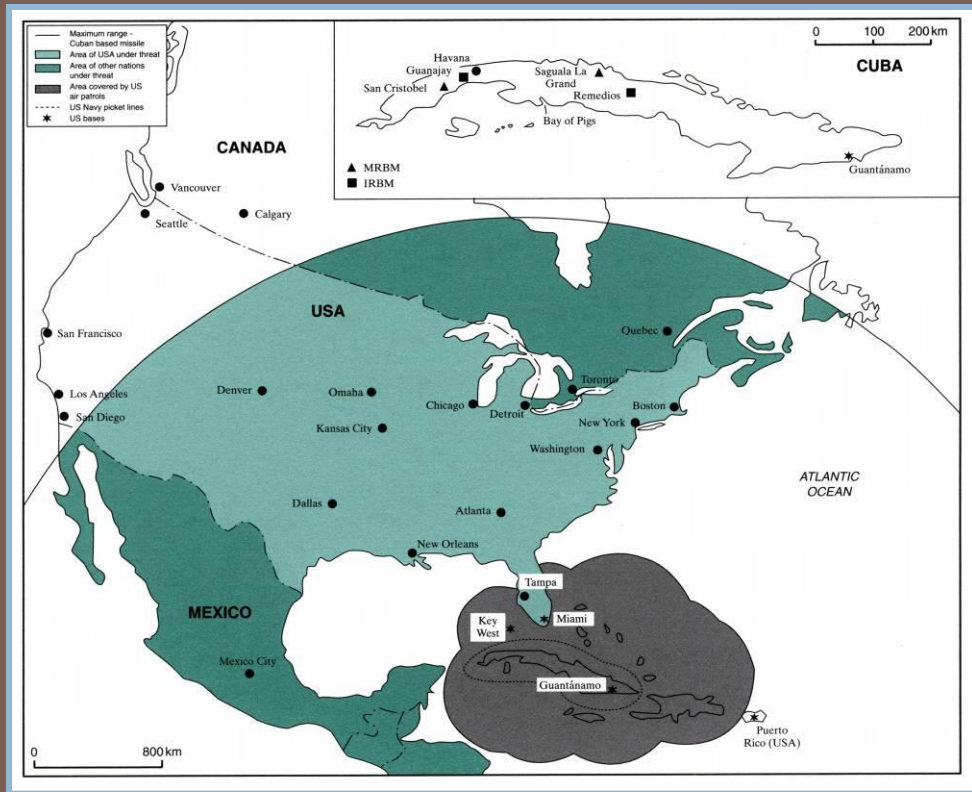
(Theater of War in the Pacific Ocean/Pearl Harbor Commemorative Map, GRMC, Ball State University Libraries).

## ...One Day in History

Teachers beginning the study of the United States' entry into World War II could introduce the topic using novels about Pearl Harbor. *A Boy at War* (available from the Educational Resources Collections) tells the story of a young boy in Pearl Harbor on the day of the attack. *A Boy No More* follows the same boy to California and deals with Japanese-American internment camps. These novels could be used with the map of Pearl Harbor from the GRMC. Students could follow the story using the map showing the locations of battleships and other sites on December 7, 1941. More advanced students could read *Pearl Harbor: A Novel of December 8*. This novel depicts an alternate fictional ending to the attacks where the Japanese actually destroy more of the U.S. Pacific fleet. Students could use the information on the map to analyze which ships suffered more damage in the novel and how this alternate ending could have affected the outcome of the war.

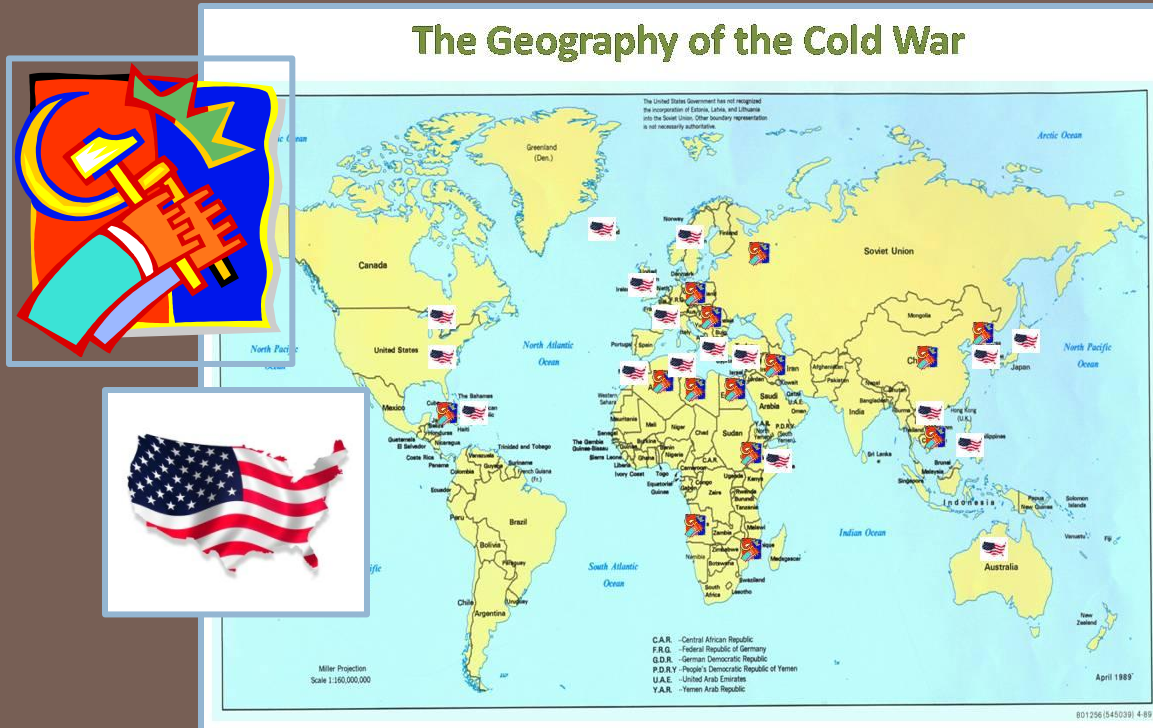


# Mapping the Cold War



History teachers presenting lessons about the Cold War could begin a discussion about the various political events that occurred between the United States and the Soviet Union during this time, ranging in scope from the Cuban Missile Crisis (left) to participation and victories in the Olympic Games and the Chess World Championship in 1972 (right). These maps are from *The Palgrave Concise Historical Atlas of the Cold War* from the Atlas Collection.

# Mapping the Cold War

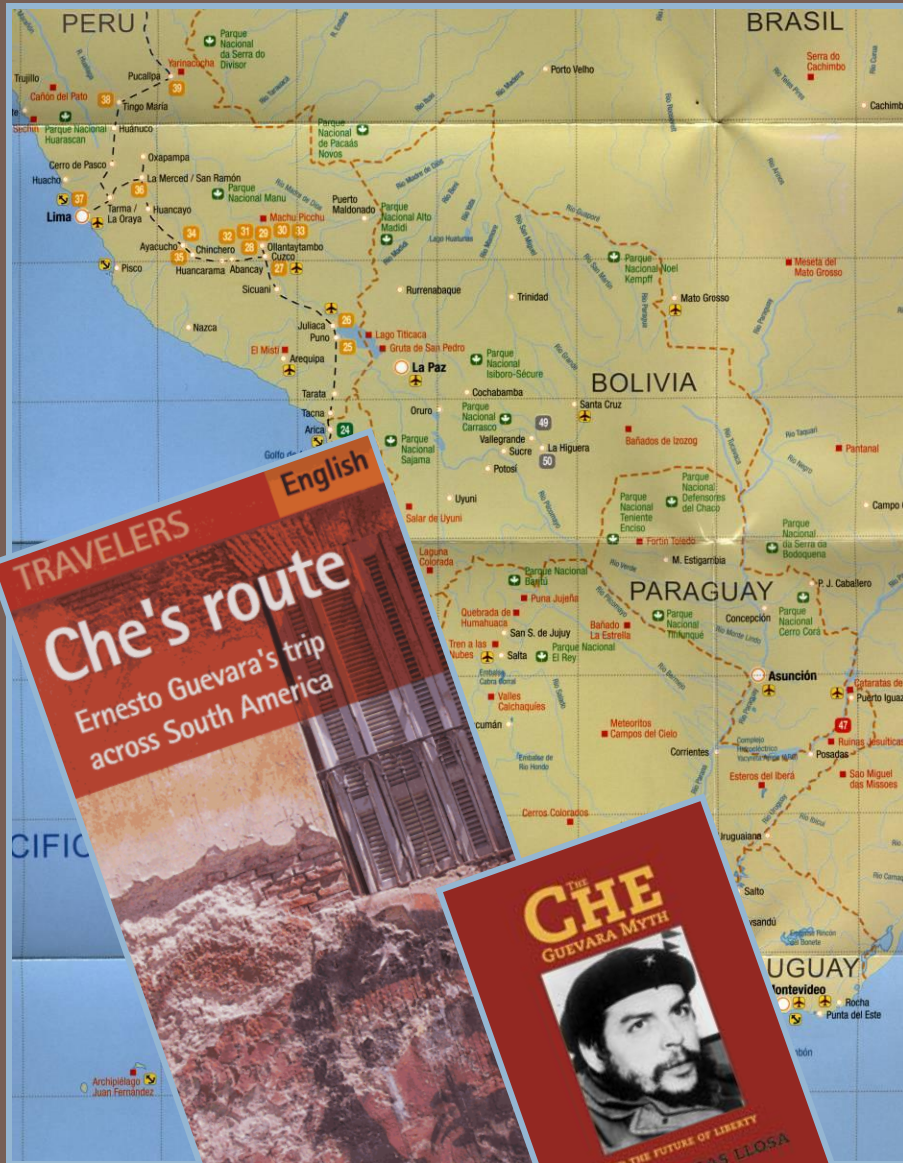


Teachers can highlight the geographic focus of the Cold War by having students map where some of the events occurred around the world. A worksheet, *The Geography of the Cold War*, listing some of the tense events between the United States and the Soviet Union and a Cold War-era world map from 1989 are available as an assignment for middle or high school students at <http://cardinalscholar.bsu.edu/309/> and <http://cardinalscholar.bsu.edu/310/> as “Cold War” and “1989 world map.”

# South American History on the Map

This map from the GRMC, *Che's Route: Ernesto Guevara's Trip across South America*, could be used to enhance a lesson about the Latin American revolutionary, Ernesto Guevara, and his travels around South America.

The map provides historical information about Guevara's time in South America and could be used in conjunction with books about the man, *The Che Guevara Myth* or *Che: The Photobiography of Che Guevara*, both available in the General Collection of Bracken Library. *The Motorcycle Diaries*, a movie based on Guevara's life-changing journey across Latin America, is available from the Educational Resources Collections.



# History and Mythology

The study of Greek mythology and history are intricately intertwined. The influence of the ancient Greeks and Romans on architecture can also be studied.

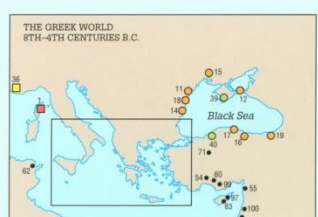
The first map shows the founding cities and colonies of the Greek world during the 8<sup>th</sup> through 4<sup>th</sup> centuries B.C. The lower map shows Hellenistic architecture throughout the classical world with examples of the definitive types of columns.

Dr. Martha Payne, Assistant Professor with the Ball State University Writing Program, shows the locations of classic Greek mythology on modern maps and promotes the understanding of mythology's relationship with history.

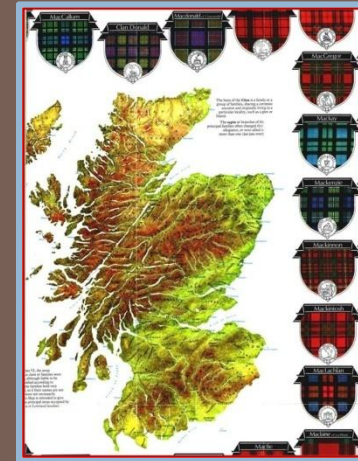
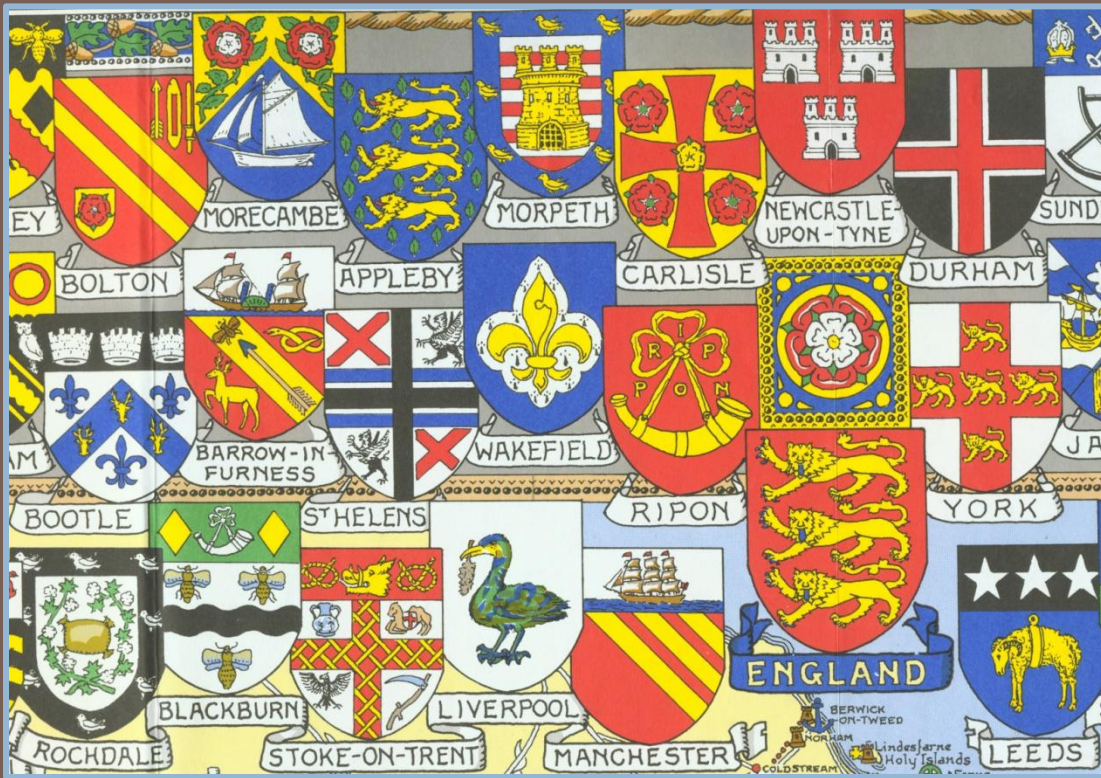
(Atlas of Western Art History, Atlas Collection, Ball State University Libraries).



- |                          |                            |                      |
|--------------------------|----------------------------|----------------------|
| 1 Atala                  | 37 Abdera                  | 73 Ialyssos          |
| 2 Crotona Kroton         | 38 Lokroi Epiphryios       | 74 Izmir Smyrna      |
| 3 Caulonia Kauion        | 39 Chersonesos             | 75 Kaydon            |
| 4 Metaponto Metaponton   | 40 Ergoi Herakleia         | 76 Kameiros          |
| 5 Paestum Poseidonia     | 41 Istanbul Byzantion      | 77 Keos              |
| 6 Sybaris                | 42 Kadikoy Chalkedon       | 78 Kephallenia       |
| 7 Sesto                  | 43 Megara Hyblaea          | 79 Knidos            |
| 8 Sigion                 | 44 Selinunte Selinus       | 80 Kom Geli Assakris |
| 9 Thuri                  | 45 Naxos Naxos             | 81 Labraunda         |
| 10 Beroia Aegion         | 46 Thasos                  | 82 Larisa            |
| 11 Histria Histros       | 47 Agrigento Akragas       | 83 Lamaka Kition     |
| 12 Kanihi Pariklapanon   | 48 Gela                    | 84 Lindos            |
| 13 Nubara Thera Akrotiri | 49 Marmaronegisi Parionnes | 85 Marathon          |
| 14 Odessos               | 50 Samothrace              | 86 Miletos           |
| 15 Olbia                 | 51 Taranto Tarent          | 87 Miletos           |
| 16 Samos Amisos          | 52 Cyrene                  |                      |
| 17 Sinop Sinope          | 53 Agrina                  |                      |
| 18 Tomis                 | 54 Akko Ptolemais          |                      |
| 19 Trapezon Trapezous    | 55 Al Mina                 |                      |
| 20 Catania Katane        | 56                         |                      |
| 21 Cumae                 |                            |                      |
| 22 Himera                |                            |                      |
| 23 Naxos Pariklapanon    |                            |                      |
| 24                       |                            |                      |



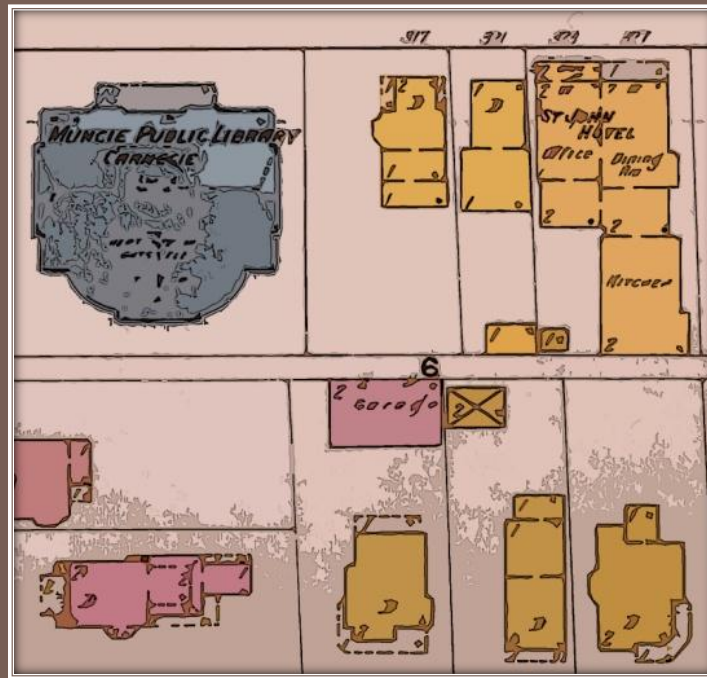
# History and Genealogy



Many of the maps in the GRMC are excellent resources for genealogical research. Historical maps of England, Wales, and Ireland feature family coats of arms, and a map of Scotland features family names and tartans along the border. During a social studies lesson on these countries, ask students to design a modern day coat of arms for their family name. Display the finished artwork on a bulletin board in the classroom.

*(Historical Map of England and Wales; Clans Map of Scotland; Irish Family Names Map; GRMC, Ball State University Libraries).*

# Teaching History with the Digital Media Repository



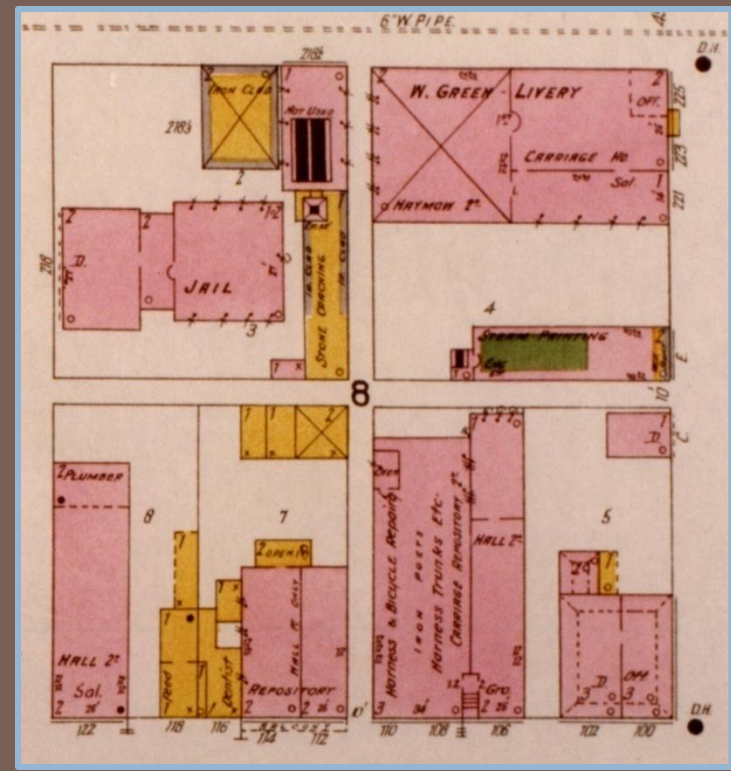
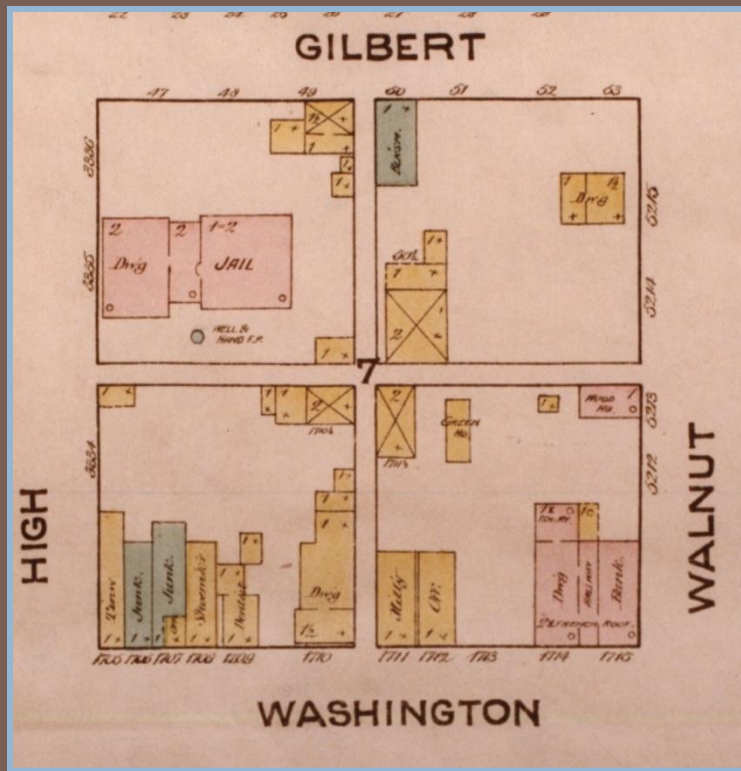
Sanborn® Fire Insurance Maps of Muncie, Indiana, provide an excellent classroom resource for teaching United States history. (Teachers can access copies of the maps from the University Libraries' Digital Media Repository at <http://libx.bsu.edu/>). The Sanborn® Collection includes maps of the city from 1883, 1887, 1889, 1892, 1896, 1902, and 1911. The maps can be used to identify the growth and evolution of industries and structures over time.

# Teaching History with Fire Insurance Maps



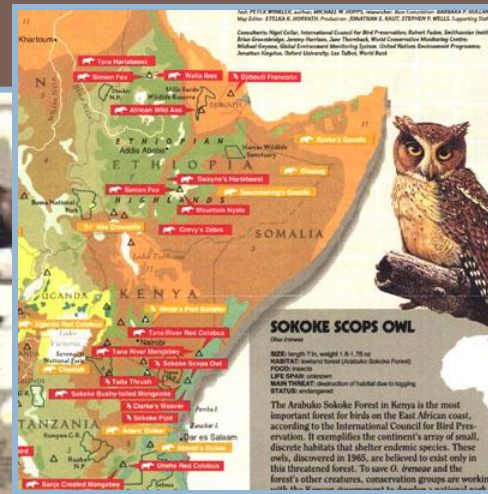
Teachers can learn more about Sanborn® Fire Insurance Maps from an online tutorial about the maps created by the GRMC, *Maps and Cartography: Using Sanborn Fire Insurance Maps*. This tutorial explains the colors of the buildings and symbols used on the maps and is located on the GRMC Web page at

<http://www.bsu.edu/library/article/0,,54747--,00.html>



Students working individually or in small groups can analyze specific areas of the Sanborn® maps to interpret changes over time, researching various social and economic factors affecting those changes. For example, assign students or groups one individual map and have the students analyze the changes in the same area over time using the maps—a livery and harness and bicycle repair shop appear on the 1902 Sanborn® map of Muncie (right) not yet on the map of 1883 (left). Students could focus on the disappearance from the map of horse-related industries and buildings like stables and blacksmith shops.

# SCIENCE



This National Geographic map, *Africa Threatened*, details the plight of some of the vulnerable and endangered species in Africa. The map shows the habitats, vegetation areas, and protected areas in Africa.

Thirteen animals are detailed as case studies. This map could be used when studying habitat destruction or in connection with special reports on the specific threatened animals. Students could use the map to follow along with an article from National Geographic magazine, "Down the Zambezi," in which Paul Theroux travels through six countries by boat and over land, noting the animals he observes.

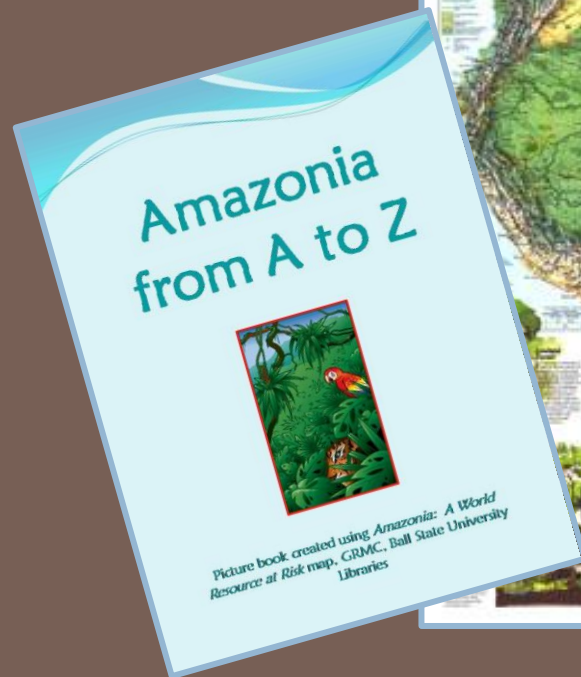
# Prehistoric Science

Students can learn about prehistoric North America using this National Geographic map from the GRMC, *North America in the Age of Dinosaurs*. The map provides historical information and details (such as size, diet and lifespan) about specific dinosaurs that roamed the continent.

A map of North America during the Mesozoic Era is shown over a modern day map of North America with state, provincial, and national boundaries. Students could create a map showing in which states the dinosaurs lived. With further research, major fossil locations in Indiana could also be mapped.

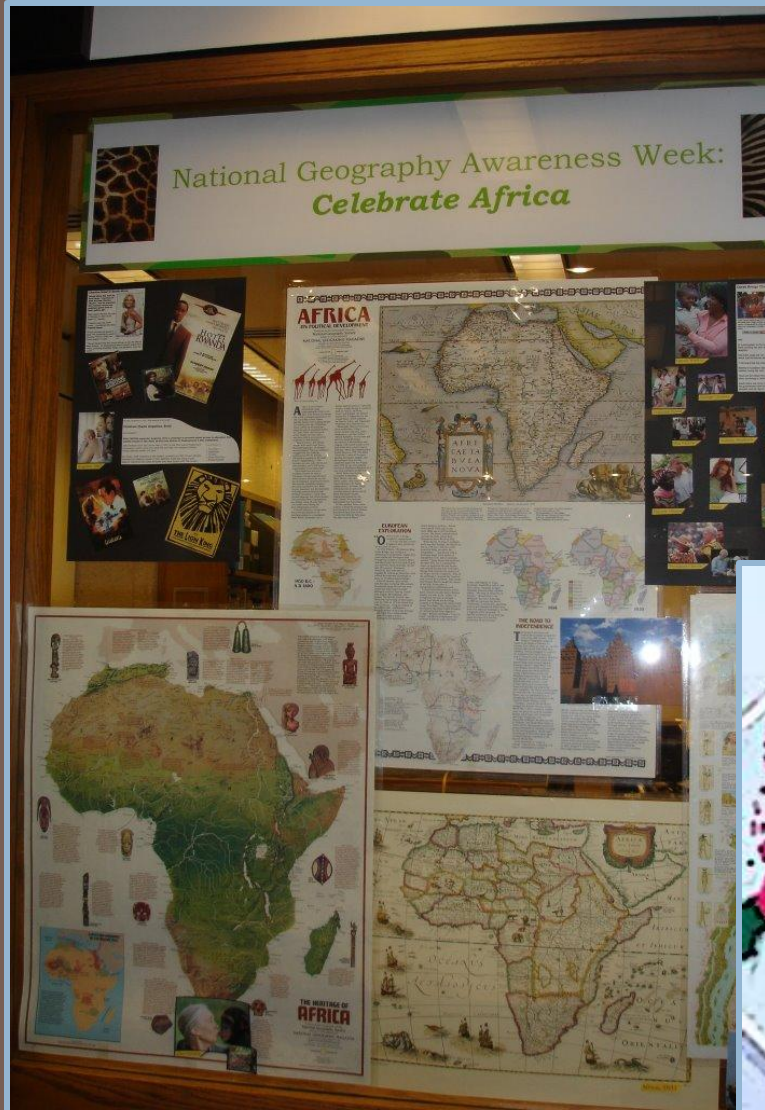


# Environmental Science: Teaching about the Rain Forest

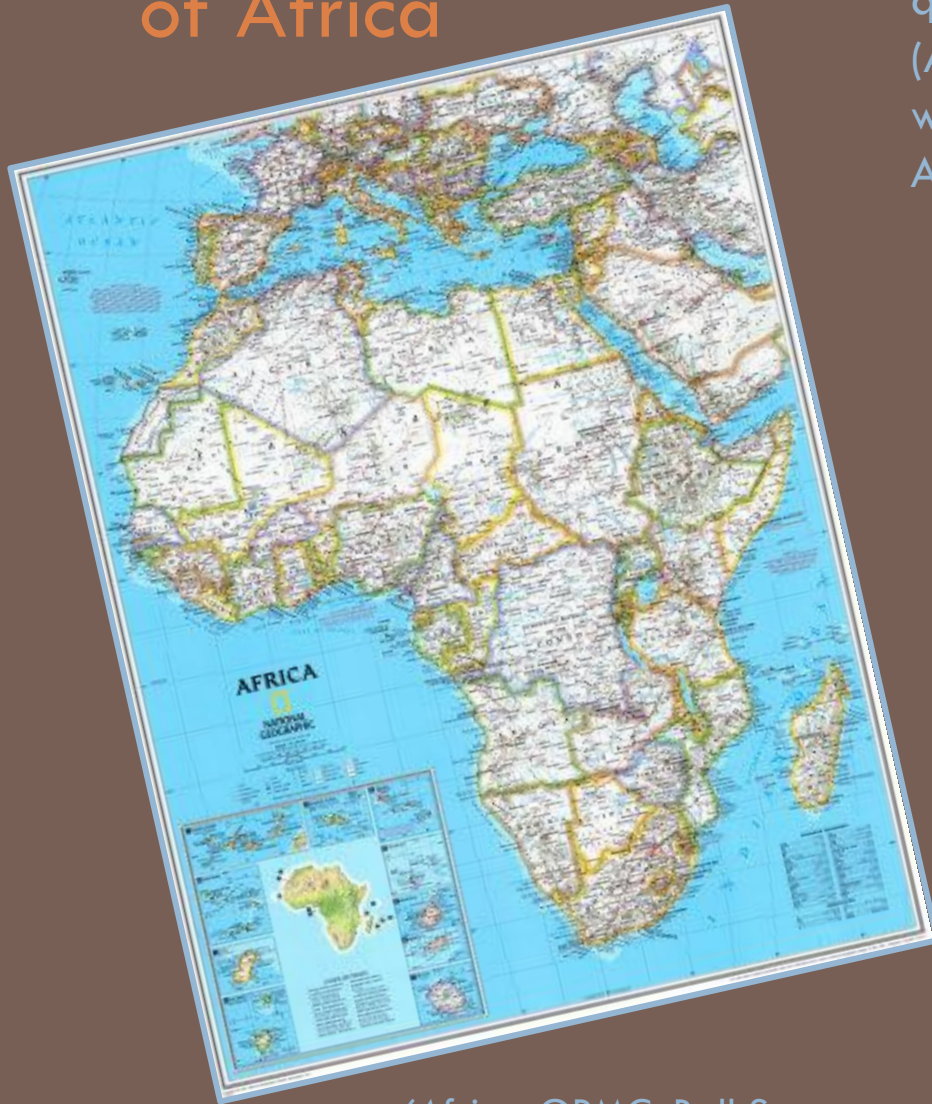


Using the map of South America from the GRMC, *Amazonia: A World Resource at Risk*, students individually or in groups create a picture book telling the “story” of the Amazon rain forest using information and graphics provided on the map. A copy of the sample storybook is available as “Alphabet book” at <http://cardinalscholar.bsu.edu/303/>. (*Amazonia: A World Resource at Risk* map, GRMC, Ball State University Libraries).

# GEOGRAPHY



# Geography of Africa



(Africa, GRMC, Ball State  
University Libraries)

Students work in pairs or individually using the National Geographic map of Africa to answer questions on the *Africa Map Search* worksheet: (As students look for answers on the map, they will become more familiar with the countries of Africa).

- ❖ What country is bordered by Tanzania, Mozambique, and Zambia?
- ❖ List all of the countries that border Niger:
- ❖ What cape is located off the coast near the border between Namibia and Angola?
- ❖ What country has three capitals?
- ❖ What cities in Sudan are located on the Red Sea?

The *Africa Map Search* is available at <http://cardinalscholar.bsu.edu/304/>.



### CANADA MAP SCAVENGER HUNT

Search the political map of Canada to find the province or territory that correctly matches the description: A=Alberta; BC=British Columbia; M=Manitoba; NB=New Brunswick; NF=Newfoundland; NT=Northwest Territories; NS=Nova Scotia; NU=Nunavut; O=Ontario; P=Prince Edward Island; Q=Quebec; S=Saskatchewan; Y=Yukon Territory

- \_\_\_ 1) the city of Alert off of Cape Sheridan and Cape Hecla is located here
- \_\_\_ 2) the Calgary Stampede attracts a million visitors every year to this province
- \_\_\_ 3) Saint John is a city here, but it's not the capital
- \_\_\_ 4) the Klondike Plateau was the site of a gold rush
- \_\_\_ 5) Charlottetown is the capital city
- \_\_\_ 6) Mt. St. Elias is found here
- \_\_\_ 7) Canada's easternmost province
- \_\_\_ 8) Ottawa, the national capital, is located here
- \_\_\_ 9) Lake Winnipeg is here
- \_\_\_ 10) Saskatoon is a city here
- \_\_\_ 11) Iqaluit has an airport and is the capital city
- \_\_\_ 12) the Peace and Athabasca rivers flow here
- \_\_\_ 13) Regina is the capital and headquarters for the "Mounties"
- \_\_\_ 14) includes Baffin and Ellesmere Islands
- \_\_\_ 15) Whitehorse is the capital city
- \_\_\_ 16) the Coast Mountains and the Rockies cross through here
- \_\_\_ 17) the eastern half of Lake Athabasca is here
- \_\_\_ 18) Banks Island is in this part of Canada
- \_\_\_ 19) Winnipeg is the capital city
- \_\_\_ 20) the Toronto Blue Jays play here
- \_\_\_ 21) Halifax is the capital city
- \_\_\_ 22) shares its western border with Maine
- \_\_\_ 23) Canada's westernmost province
- \_\_\_ 24) borders Lake Superior
- \_\_\_ 25) north of North Dakota and Montana
- \_\_\_ 26) tourists flock to Great Slave Lake here
- \_\_\_ 27) the only island province
- \_\_\_ 28) includes Cape Breton Island
- \_\_\_ 29) Yellowknife is he capital
- \_\_\_ 30) Montreal hosted the 1976 Olympic Games
- \_\_\_ 31) lies north of Quebec and borders the Northwest Territories
- \_\_\_ 32) Fredericton is the capital city
- \_\_\_ 33) borders Alaska, British Columbia, and the Northwest Territories
- \_\_\_ 34) more than four-fifths of the people here live near the city of Vancouver
- \_\_\_ 35) includes the mainland of Labrador



Using the political map of Canada from the GRMC, students complete the *Canada Map Scavenger Hunt* worksheet, filling in the name of the province or territory described in the questions. A copy of the worksheet is available as "Canada scavenger" at <http://cardinalscholar.bsu.edu/305/>. (Canada Political/Politique map, GRMC, Ball State University Libraries).

# Using an Atlas to Study Western Europe

## SANTA STOPS HERE!



Santa Claus is a legendary historical mythical figure in the folklore of Western cultures. The legend of Santa Claus is also known as Father Christmas in some European cultures, and Father Christmas resides in Finland, not the North Pole.

In this story, Santa Claus is making some special deliveries to children living in Western Europe. Trace the route Santa follows by looking up the numbered locations in the Goode's World Atlas. Place the number of the location in the correct spot on your map of Western Europe:



Place a star at the North Pole where Santa will begin his journey. Santa's first stop is in Iceland. A young boy who lives in (1) Vestmannaeyjar wants a new Tommy Hilfinger vest. Santa then makes his way to Norway where a bread maker is being delivered in the city of (2) Molde. Nails, preferably nine-inch, will be delivered to a unique teenager in (3) Hammerfest, Norway. Santa's sleigh is kind of crowded due to the request from (4) Jonkoping, Sweden—somebody there wants a ping pong table. It's on to (5) Kotka, Finland, for the delivery of a futon. A young woman in (6) Potsdam, Germany, wants a popcorn pot for her room. It's obvious that the bottle of CK One is going to a girl in (7) Cologne, Germany. Someone in (8) Ringkobing, Denmark, has requested some rollerblades. Santa's sleigh is getting lighter!

A student in (9) Oxford, England, U.K., wants a new dictionary. A little girl in (10) Cardigan, Wales, U.K., has asked for a new sweater. A teenager in (11) Cork, Ireland, has asked for a bulletin board so she can hang up all of her U2 posters. Obviously, someone from (12) Wick, Scotland, U.K., asked for a candle. (13) Zwolle, Netherlands, is where Santa is taking some wooden shoes. Since Belgium is the diamond capital of the world, someone in (14) Brussels has asked for a ring and a necklace. Santa delivers a brand new sports car to a lucky recipient in (15) Luxembourg, Luxembourg. Another car will be delivered to a teenager from (16) Le Mans, France, just in time for racing. Santa delivers paint and glasses to a girl in (17) Bordeaux, France.

Every year they hold the running of the bulls in (18) Pamplona, Spain, so Santa delivers several pairs of running shoes to children there. Some Portuguese girl who lives in (19) Vigo requested some new headphones. Another girl from (20) Valencia, Spain, really wants a CD player so she can listen to Enrique Iglesias. (21) Andorra la Vella, Andorra, is very small—somebody there wants a small computer, a laptop. The French are big fans of Jerry Lewis movies, so someone in (22) Cannes, France, asked for the entire Jerry Lewis DVD collection. Another lucky teenager gets a car in (23) Monte Carlo, Monaco.

Santa has to make a stop in Christopher Columbus' hometown, (24) Genoa, Italy, to deliver someone a new flat-screen television—their old television was too round. A pizza pan was on someone's list—of course it was someone from (25) Lucca, Italy. In (26) Cosenza, Italy, a young girl has asked for an Italian Barbie doll. Khaki pants will be delivered to a boy in (27) Khalkis, Greece.

Santa was surprised to find out that people in San Marino are big football fans—some kid in the capital city (28) San Marino wants a Dan Manno classic football card. Santa's last really large delivery will be in (29) Venice, Italy, where some lucky young man will be waking up to a new speed boat parked outside his house.

A young girl in (30) Wiener-Neustadt, Austria, said "Bitte!" when she asked Santa to deliver a dachshund puppy. A future pianist requested a baby grand piano to be delivered to her home in (31) Bad Ischl, Austria. Santa travels to (32) Vaduz, Liechtenstein, to deliver a young woman a new parka. A skier requested some designer sunglasses to cut down on the glare on the slopes in (33) Glarus, Switzerland. A teenager in (34) Geneva, Switzerland, asked for a peace sign necklace. And finally, Santa will make his last stop in (35) Winterthur, Switzerland, where he will deliver a Rolex watch and some hot chocolate to a lucky young man.

Santa puts his sleigh on auto-pilot for the trip home to the North Pole. He'll need to hurry. Mrs. Claus and the elves have already started watching "It's a Wonderful Life" on television without him!



Teachers may want to investigate purchasing a classroom set of the Goode's World Atlas. This atlas can be used for many class activities and is extremely thorough and comparably inexpensive.

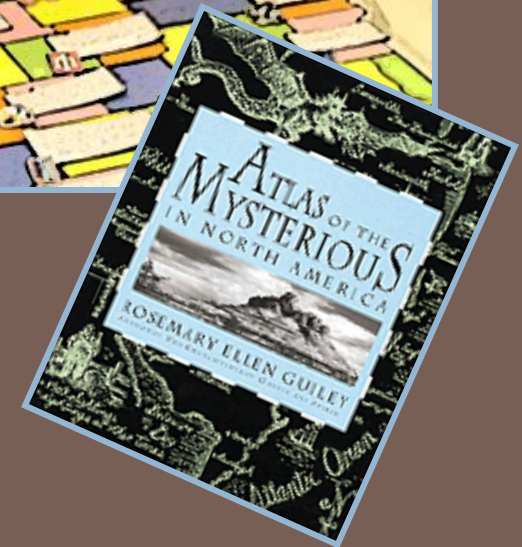
Using the Goode's World Atlas, in this exercise students follow the path of the legendary Santa as described in the story, marking his locations on a map of Western Europe. This worksheet is available as "Santa travels Europe" at <http://cardinalscholar.bsu.edu/306/>.

Teachers could create other stories for worksheets focusing on other regions of the world. Students would gain skills using atlases while learning the countries on the maps.

# Geography of the Paranormal

Geography teachers can add interest to teaching map skills by using unique reference materials. *Atlas of the Mysterious in North America* is an atlas that features information and maps about sacred places, earthworks and mounds, stone works, haunted places, and mysterious creatures in North America.

Students could use this atlas and similar resources to create their own “paranormal” map of a place. For example, students could create a map of allegedly haunted places in their home state using a blank outline map from the GRMC. The student shown is creating a haunted map of Indiana called “Eerie, Indiana.”



(*Atlas of the Mysterious in North America*, Reference Collection, Ball State University Libraries).

# Tracking Down Bigfoot



Students can learn mapping skills using the maps in the *Atlas of the Mysterious in North America*. This map features Bigfoot sightings in the United States and Canada, and descriptions of the sightings are provided in the atlas. Ask students to create a tracking map of Bigfoot that shows the path the creature would have to follow to actually appear in all the places on the map. (*Atlas of the Mysterious in North America*, Reference Collection, Ball State University Libraries).

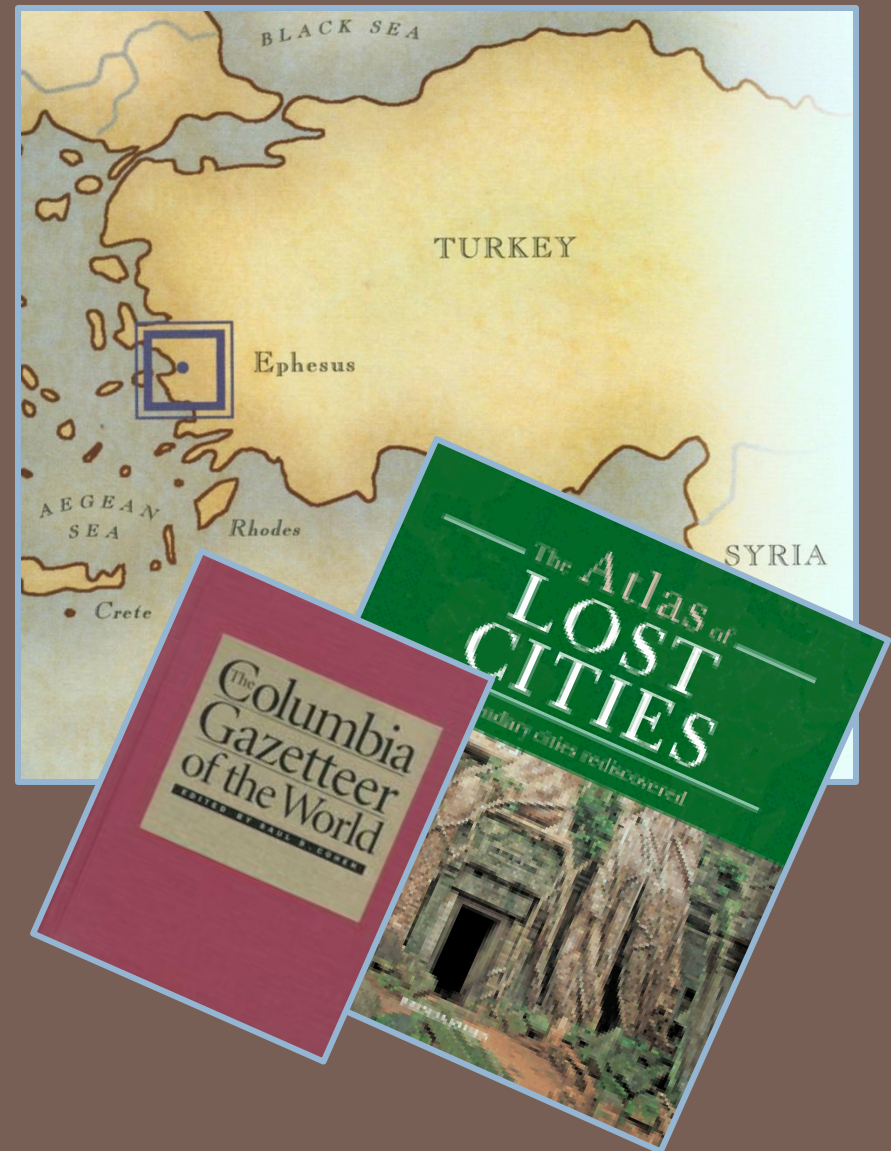
# Using an Atlas and a Gazetteer

*The Atlas of Lost Cities: Legendary Cities Rediscovered from the Atlas Collection in Bracken Library* examines major archaeological sites and recently discovered ancient cities. The atlas details the history and examines the fate of ancient cities.

*The Columbia Gazetteer of the World* in the GRMC provides detailed information about places all over the world, including lost ancient cities.

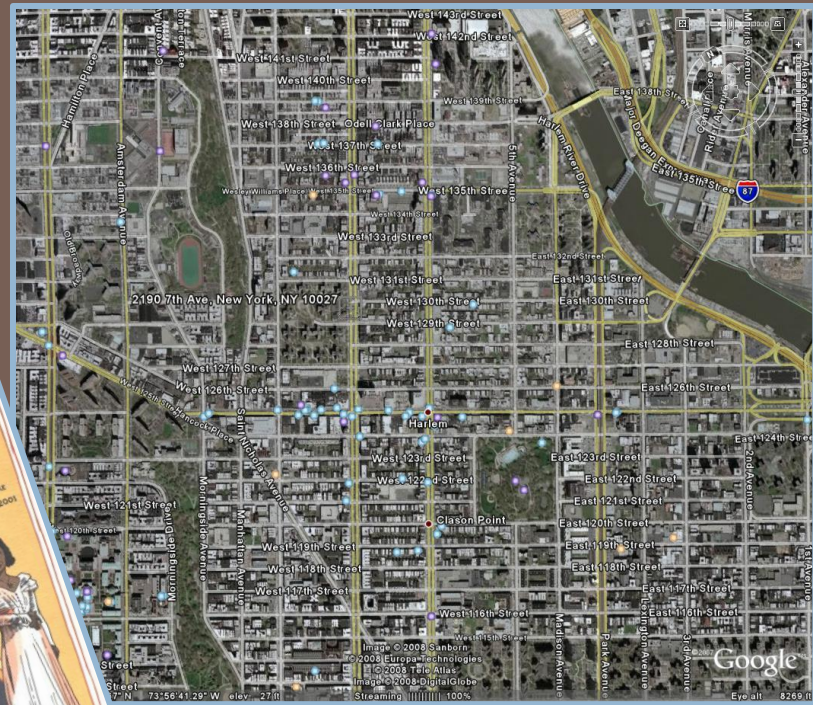
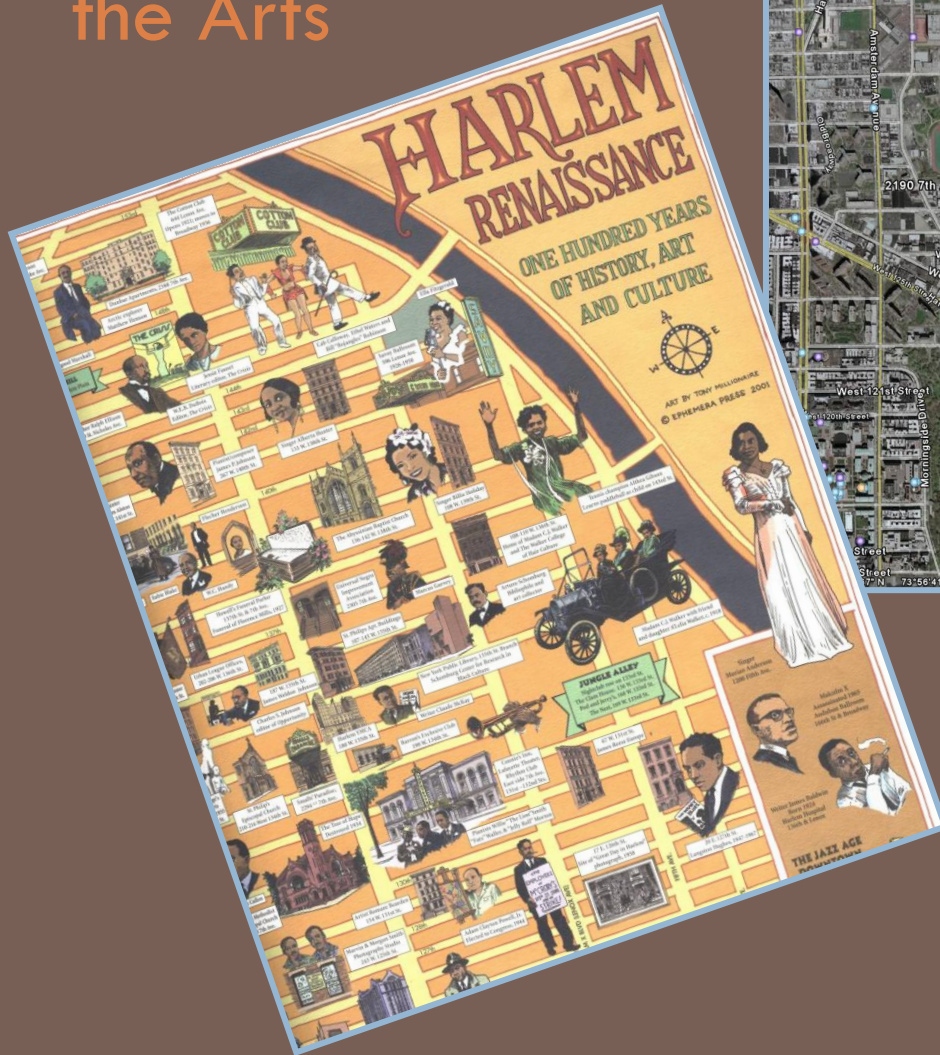
Teachers could ask students to use a gazetteer to create a presentation about an assigned lost city from the atlas:

- *Why was the city created?*
- *How is the city historically significant?*
  - *Which empires ruled over the city?*
- *What significant buildings or architecture were original to the city?*
- *How was the city destroyed or abandoned?*
  - *What is found on the site today?*





# Literature and the Arts



After completing a lesson on the Harlem Renaissance period, students could create a map of Harlem today using Google Earth®. Students could research which landmarks still exist and use photographic images to enhance the map.

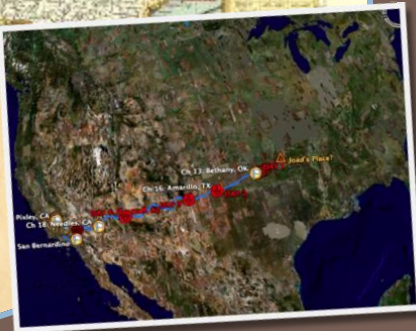
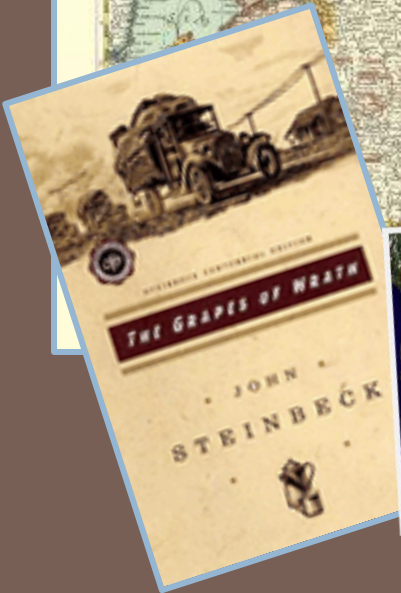
(Harlem Renaissance map, GRMC, Ball State University Libraries).

# Historical Literature

This map, *Shakespeare's Britain*, from the GRMC displays where many of the author's plays took place. This map could be used in the classroom as students are reading the works of Shakespeare.

Teachers could also assign students a project enhancing the idea of this map. Students could map all of Shakespeare's plays on a copy of a historic map of the world from the GRMC. Or perhaps the works of other authors could be mapped over the course of the school year.

Teachers could also assign maps following the characters of a particular work of fiction. For example, students could be asked to create a map following the Joad family on their trip from Oklahoma to California in John Steinbeck's *The Grapes of Wrath*.



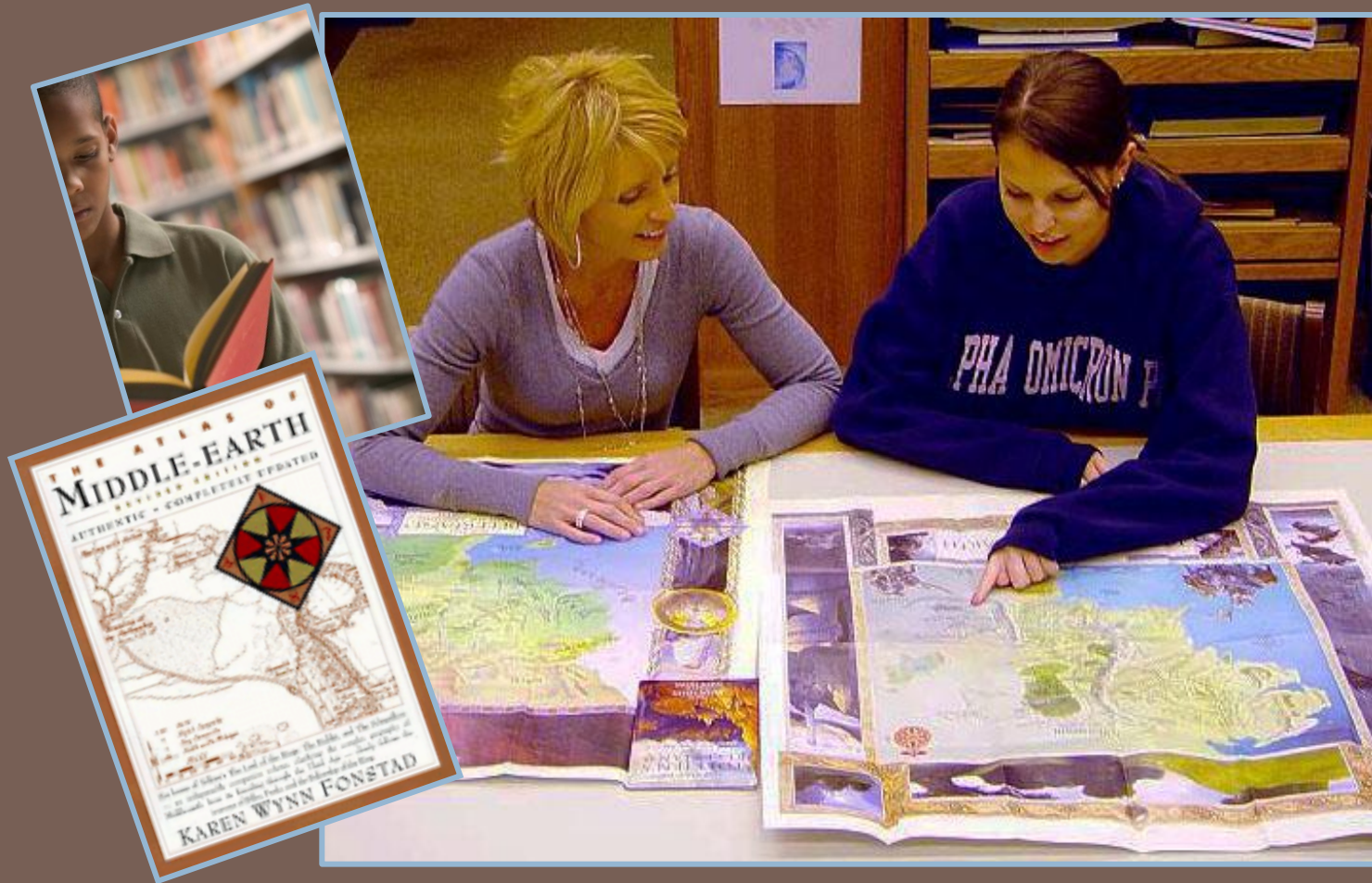
(*The Grapes of Wrath*, Archives and Special Collections, Ball State University Libraries).

# Mapping American Folklore and Literature



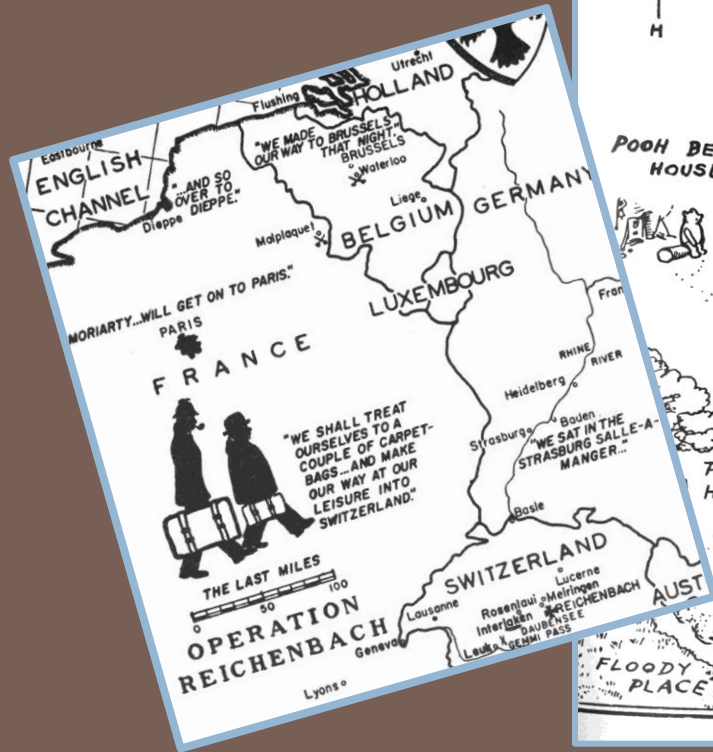
This map, *American Folklore, Legends, and Literature*, created by the GRMC is an updated version of a 1936 map in the Collection. The map features popular children's books, regional legends, and famous Americans. The map is available on the GRMC Cardinal Scholar page at <http://cardinalscholar.bsu.edu/307/>. Teachers could create a similar lesson, mapping the settings of the books read over the school year.

# Popular Fiction on the Map



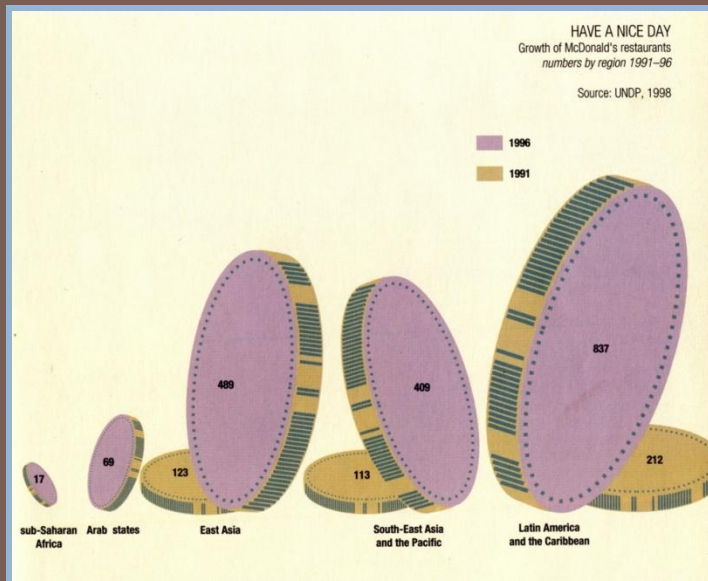
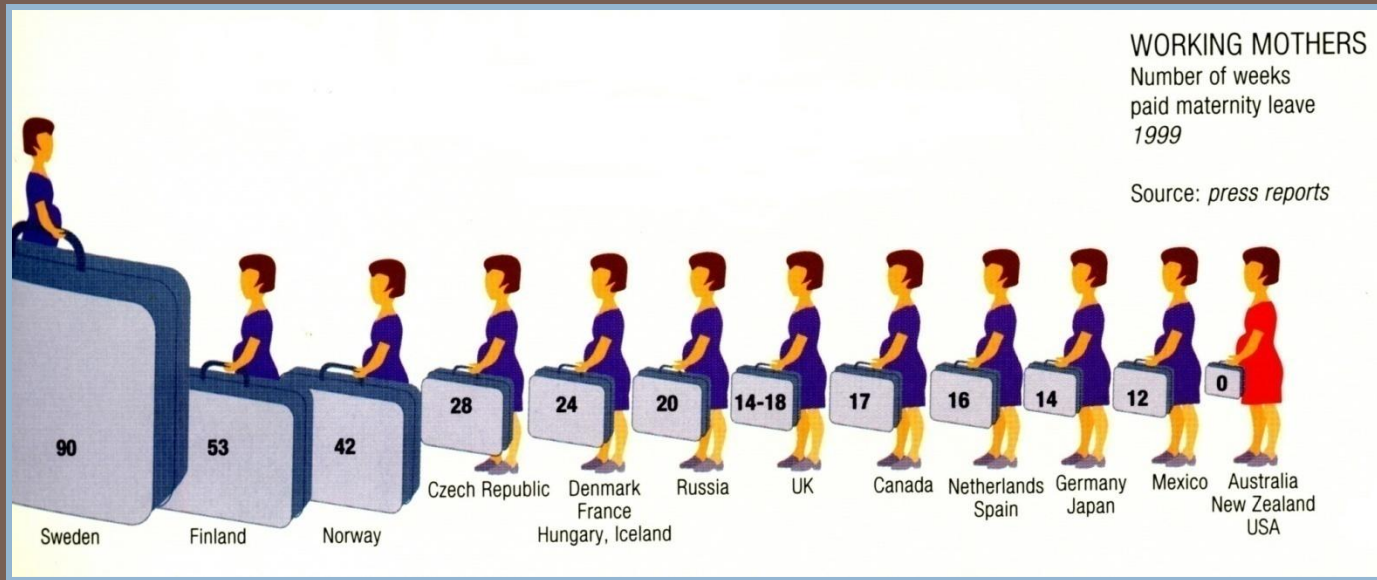
*The Atlas of Middle Earth* is available in the University Libraries' Atlas Collection and features maps from J.R.R. Tolkien's books. *The Map of Beleriand and the Lands to the North* and *The Map of Tolkien's Middle-Earth* are available in the GRMC.

# Imaginary Places...



This map featuring the travels of the character Sherlock Holmes and the map of Winnie the Pooh's "Hundred Aker Wood" are from *The Atlas of Fantasy*. This atlas features maps of numerous imaginary settings from historic and popular literature and is available in the Atlas Collection.

# Economics



Atlases can be an excellent resource for teachers of economics. Many descriptive tables and graphs scanned from atlases can provide a visual reference for students learning about various global economic issues and values. For example, this chart showing the “growth of McDonald’s restaurants” in world regions may provide clues to the economic growth of those regions.

(*State of the World Atlas*, Atlas Collection, Ball State University Libraries).

# Economics in America

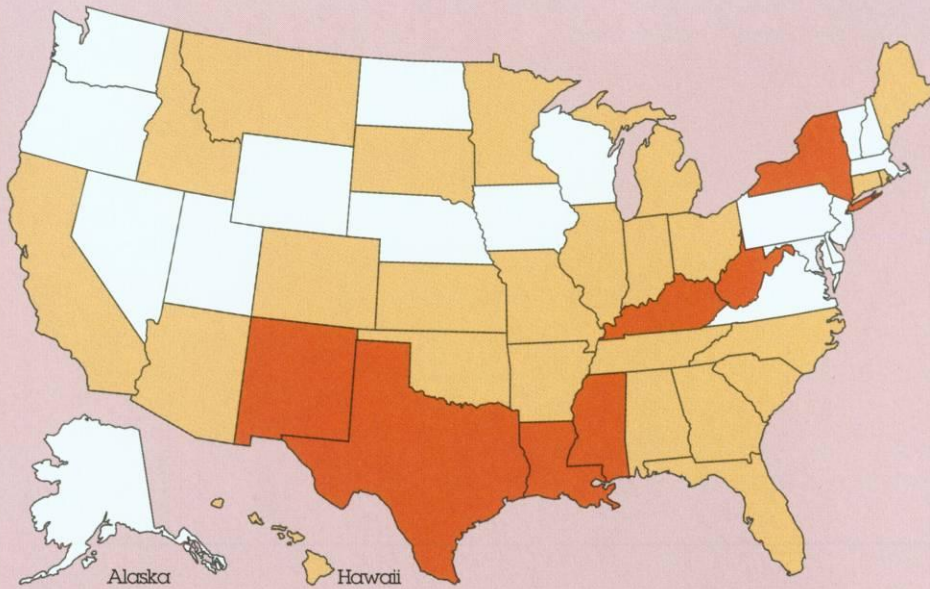
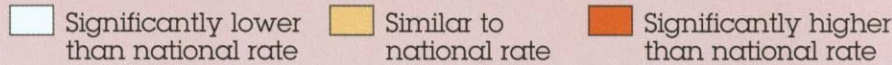
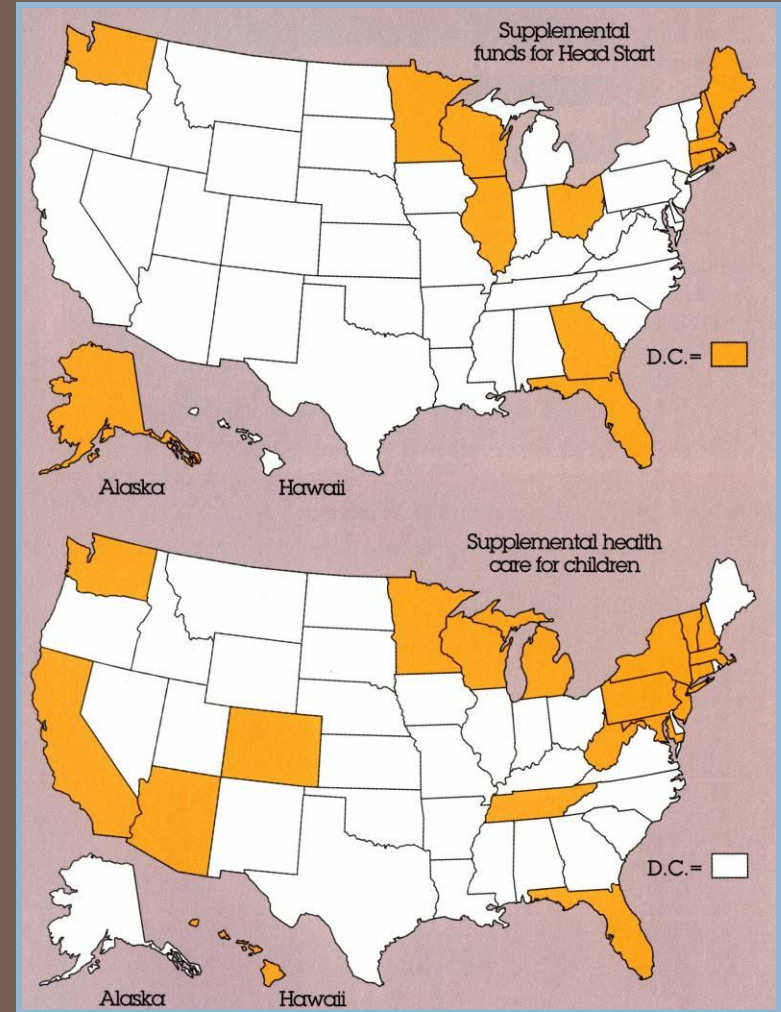


Figure 2.1.3.  
Poverty rates for children under age 6, compared to the national rate, by state, five-year average, 1990-94.

### Data Classification



Students in economics classes could analyze maps about poverty in the United States and how statistics compare in states providing assistance programs and health care.

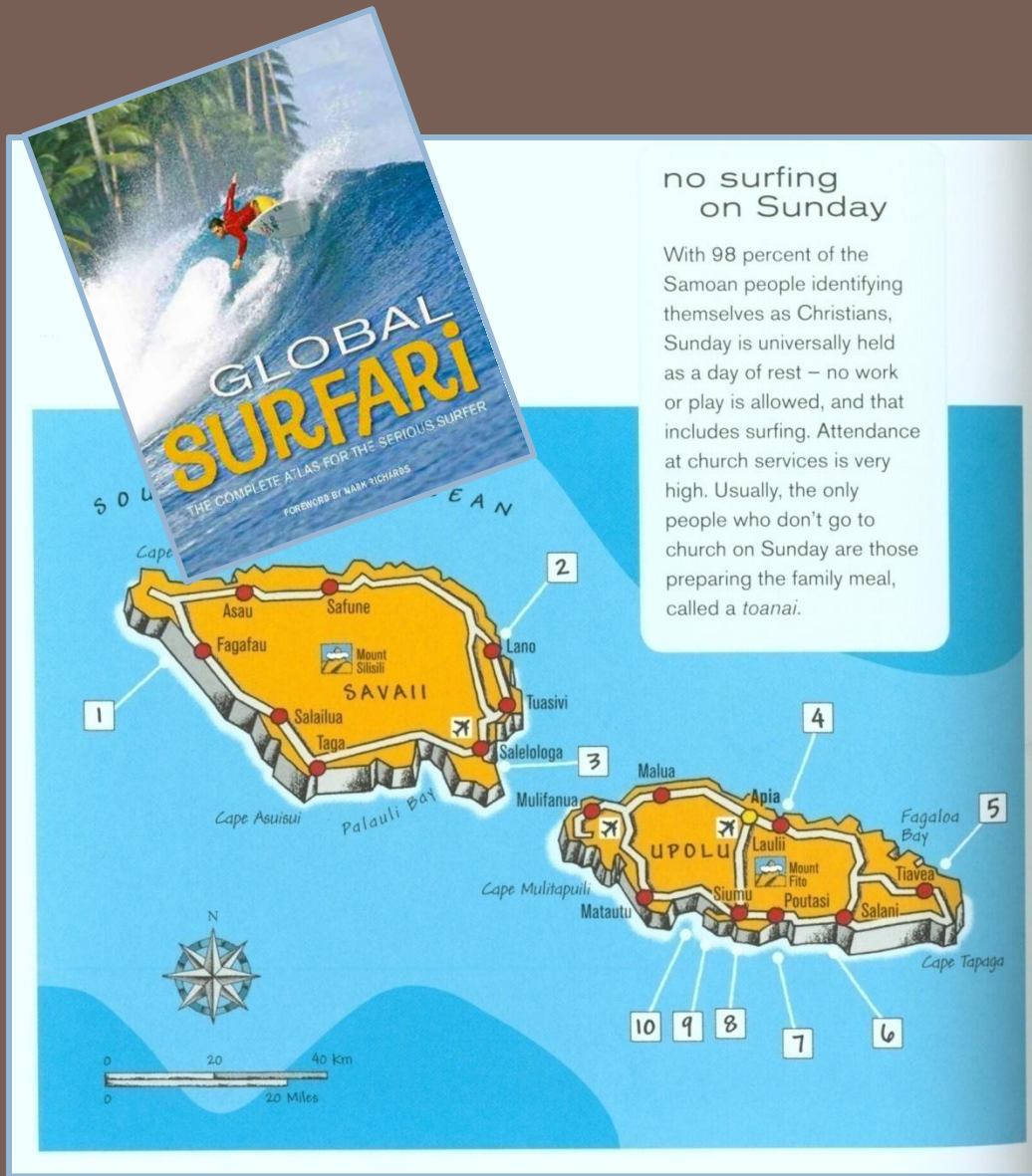


(*Growing Up in America: An Atlas of Youth in the USA*, Atlas Collection, Ball State University Libraries).

# Sociology: Studying Culture through Surfing

The atlas, *Global Surfari: The Complete Atlas for the Serious Surfer*, is a unique resource for teachers studying the culture and lifestyles of a particular region.

The purpose of this atlas was to provide surfing information for beaches around the world. However, the atlas also provides interesting details about the lives of the people living in these areas. Students could use this atlas to provide cultural information for a report or presentation on a country.



(*Global Surfari: The Complete Atlas for the Serious Surfer*, Atlas Collection, Ball State University Libraries).

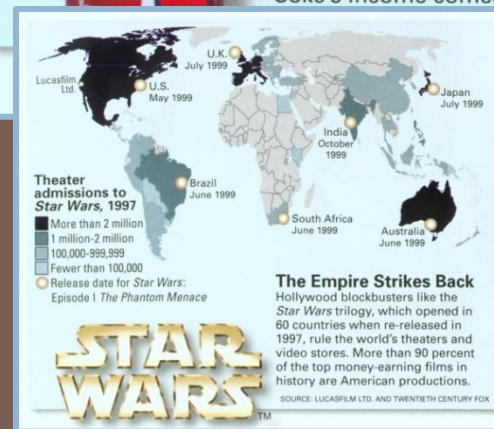
# Studying Culture with One Map

The map, *Millennium in Maps: Cultures/Voices of the World*, features eight inset maps detailing various aspects of world culture, including “Coca-Cola consumption” and “Theater Admissions to *Star Wars*, 1997.”

The map describes the birth of the global village with maps showing global interdependency in the 1960’s and in the year 2000. The ascent of cities is described with a related map, and architecture and food sources are detailed. A cultural timeline from the Ice Age to the Information Age is on the bottom of the map.

The verso of the map features major language families today, vanishing languages, and major religions of the world.

One map from the GRMC serves as an excellent resource for studying cultures around the world.

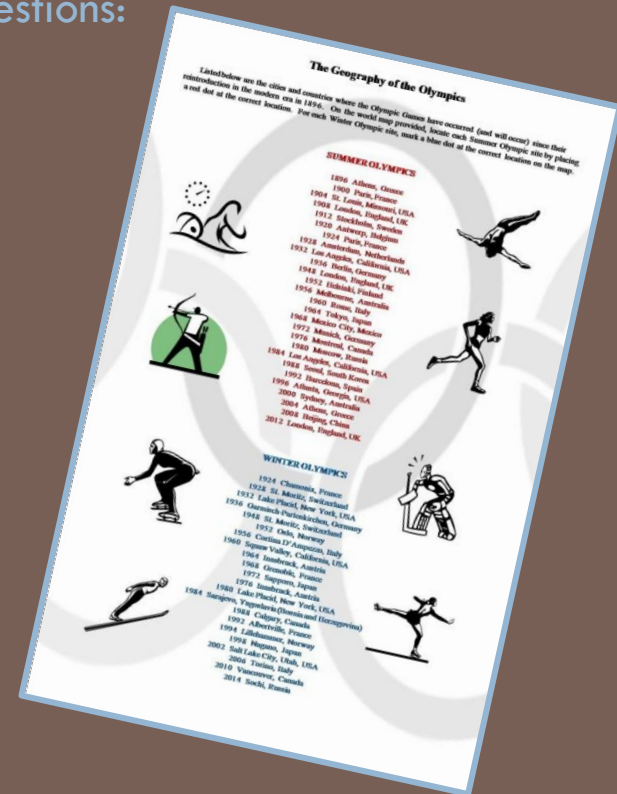




# The Geography of the Olympics

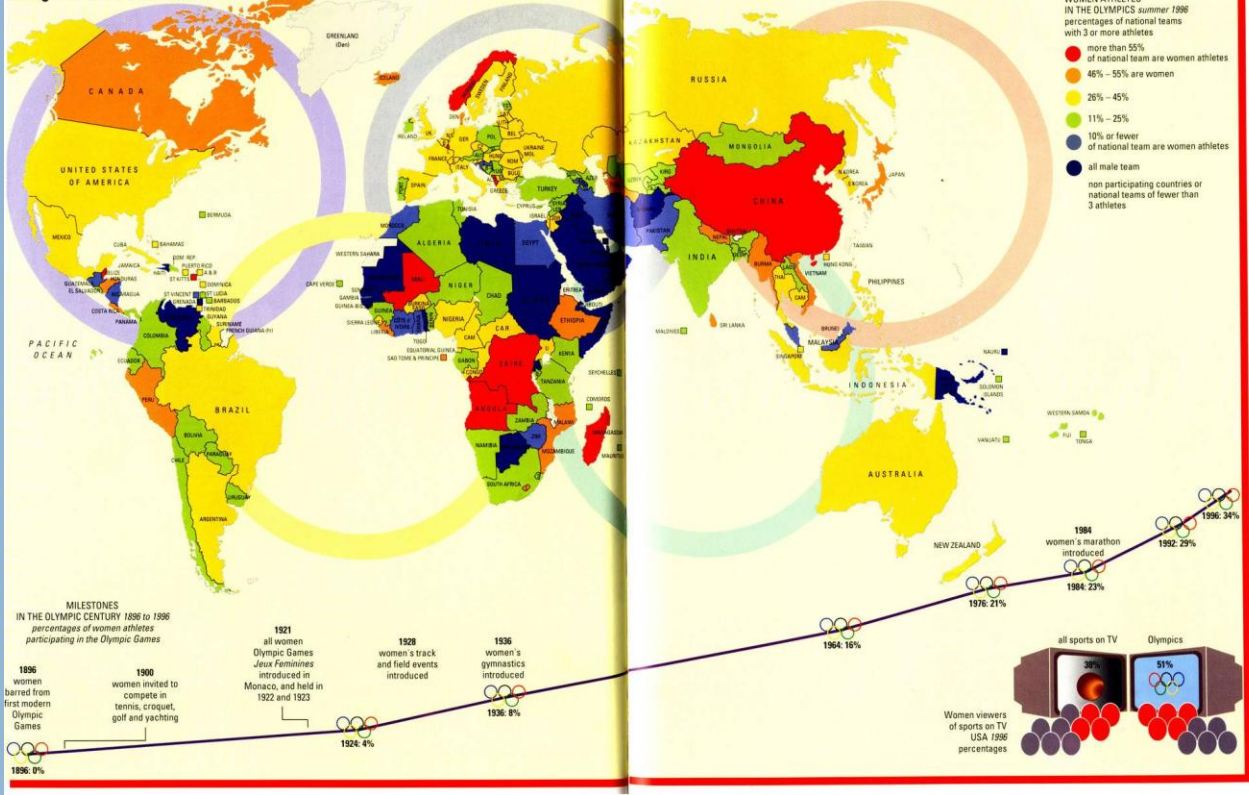
Students can use a world atlas to locate the sites of the Olympic Games on a world map. More advanced students can analyze the locations and dates of the Games to answer follow-up map questions:

- ❖ Why were there no Olympics held in 1916, 1940, and 1944?
- ❖ Name the continents that have hosted the Summer Olympics only, the Winter Olympics only, and both Summer and Winter Games:
- ❖ Name the continents that have never hosted any Olympic Games:
- ❖ List three reasons that may explain why these continents have never hosted any Olympic Games:
- ❖ Look at the pattern of dots on your world map. In what hemisphere have most of the Olympics been held—Northern or Southern? Explain possible reasons.



The Geography of the Olympics worksheet is available at <http://cardinalscholar.bsu.edu/308/>.

Strength and speed challenge traditional notions of femininity. Women still have to struggle to exercise their right to develop strong bodies and athletic skills.



# Women in the Olympics

This map distinguishes countries based on the percentage of women on the national Olympic teams. Which countries have the highest percentage of women on their national teams? Which countries have all male teams? What cultural characteristics do the all male team countries have in common? This map could be used to introduce students to the study of women's rights issues around the world.

(The State of Women in the World Atlas, Atlas Collection, Ball State University Libraries).

# Using Football in U.S. History



Introduce students to the study of United States history or geography by displaying this map of current NFL teams. Ask students to take turns naming a city shown on the map. Then discuss with the class the team's nicknames and how those names can sometimes reveal that city's history. This discussion stimulates interest in the study of United States history and geography:

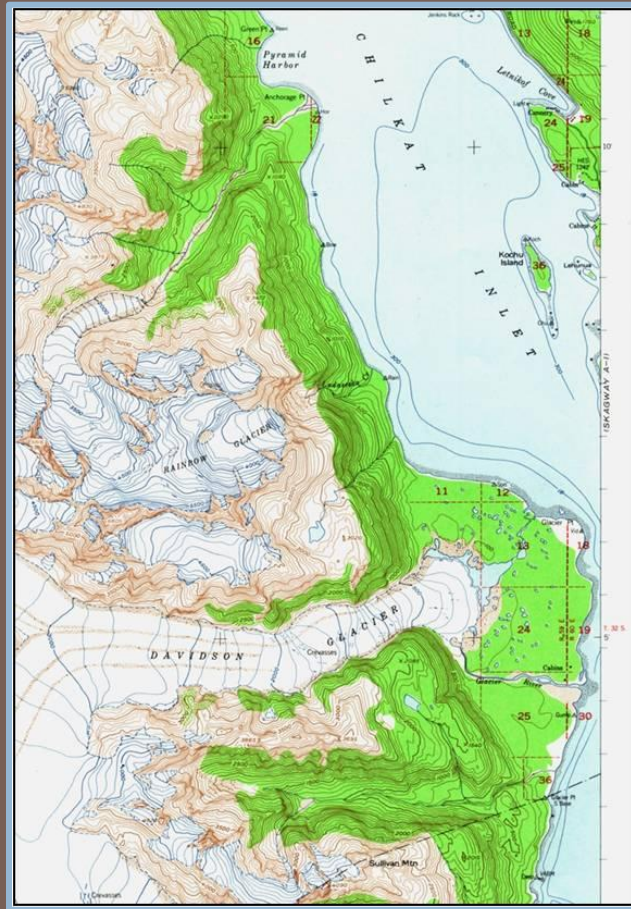
Green Bay Packers (meat packing industry); Minnesota Vikings (Scandinavian history of the region); New Orleans Saints (French Acadian influence in Louisiana); Tampa Bay Buccaneers (Spanish pirates in the region); San Francisco 49ers (gold rush). Discuss how the names fit original cities like the Baltimore Colts (Maryland horse racing). Sometimes the names can be combined with NBA teams like the Bears and Bulls of Chicago (Chicago market). Again account for movement—Los Angeles Lakers (originally from Minnesota) and the Utah Jazz (originally in New Orleans). Which cities have NFL and NBA teams? What does that reveal about those cities?

# Using Topographic Maps in the Classroom



Topographic maps—historical and current—from the GRMC can be used to teach a number of subjects in the K-12 classroom. Teachers can learn more about using topographic maps from an online tutorial created by the GRMC, *Maps and Cartography: Topographic Maps*, located on the Web page at <http://www.bsu.edu/library/article/0,,54747--,00.html>.  
(Battle Lake, Minnesota, 1914, USGS topographic map, GRMC, Ball State University Libraries).

# Mapping a Changing Environment



The GRMC includes a Collection of U.S. Geological Survey topographic maps from all fifty states—both current and historic. These maps can be analyzed to show the effects of global warming. The above maps of the same area over fifty years provide evidence of the recession of Davidson Glacier in Alaska.

(Skagway (A-2), Alaska, 1954 and 2004 USGS topographic map, GRMC, Ball State University Libraries).

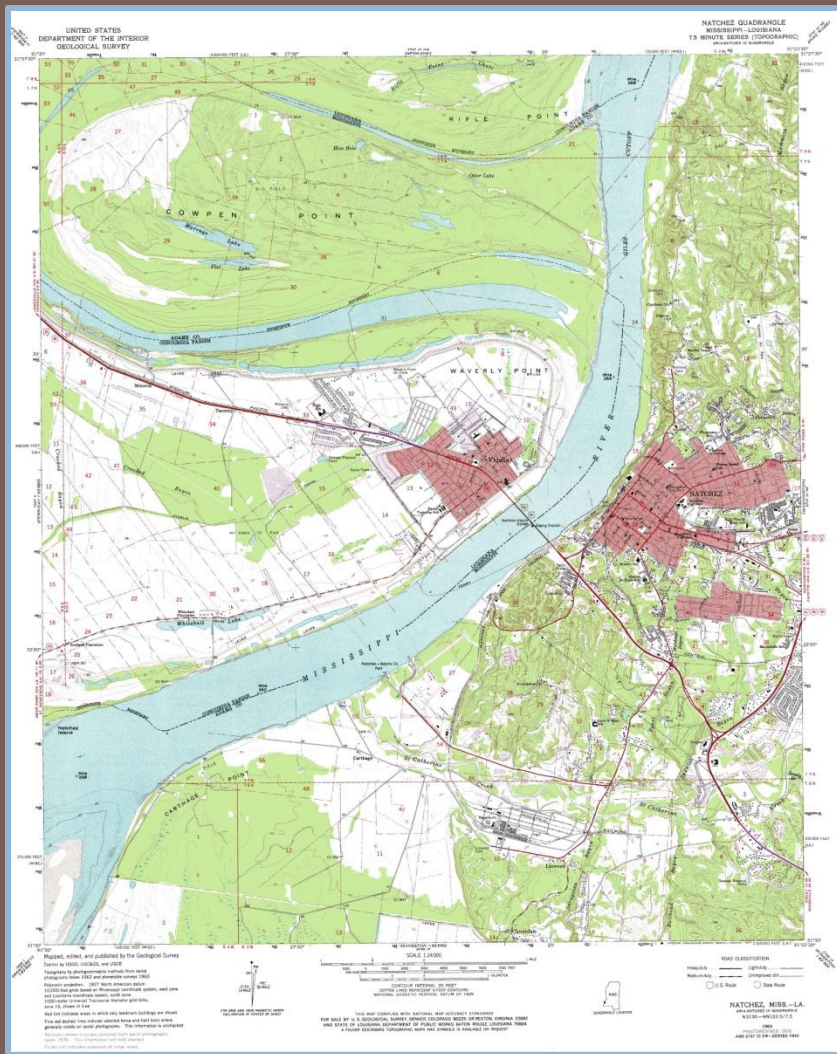
# Mapping a Changing City



These U.S.G.S. topographic maps of the same area of Miami show drastic development in transportation, tourism, healthcare, education, and the environment between 1950 and 1994. The bay has been changed to an aquatic preserve, and manmade islands have been developed. These maps can be used for students to study urban development. Students could work in groups to list all of the changes noted on the topographic maps.

(Miami, Florida, 1950 and 1994 USGS topographic map, GRMC, Ball State University Libraries).

# Fluvial Topographic Maps



(Natchez, Mississippi-Louisiana, USGS topographic map, GRMC, Ball State University Libraries).

Teachers can use topographic maps from the GRMC to study rivers and flooding. Historic and current maps are available to show the changes in the course of rivers. Students at Ball State University in Dr. David Call's geography class were asked to answer several questions using numerous topographic maps:

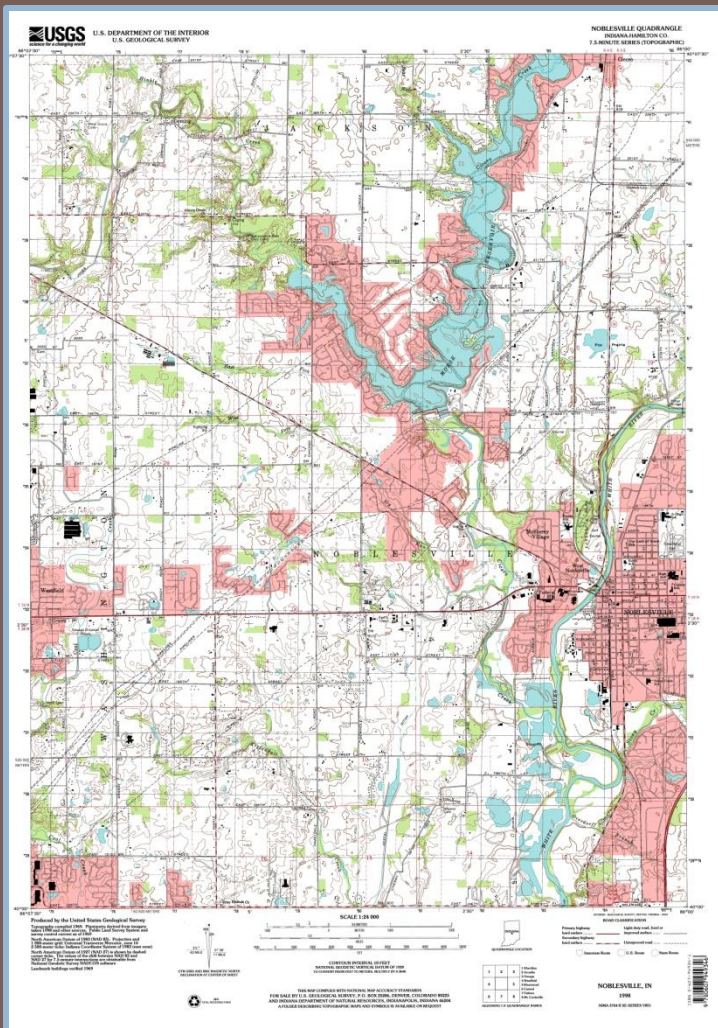
- ❖ In what state is Cowpen Point located? Explain how this oddity could have occurred.
- ❖ What evidence on the map shows that the Mississippi River has followed at least two other paths?
- ❖ Is Vidalia more or less vulnerable to flooding than Natchez? Why?
- ❖ What is the elevation of the land along the river at Carthage Point? Further inland the elevation drops to less than 50 feet. Why is the land along the river at Carthage Point higher? What specific feature of fluvial landforms is suggested?

# Studying the Effects of Man

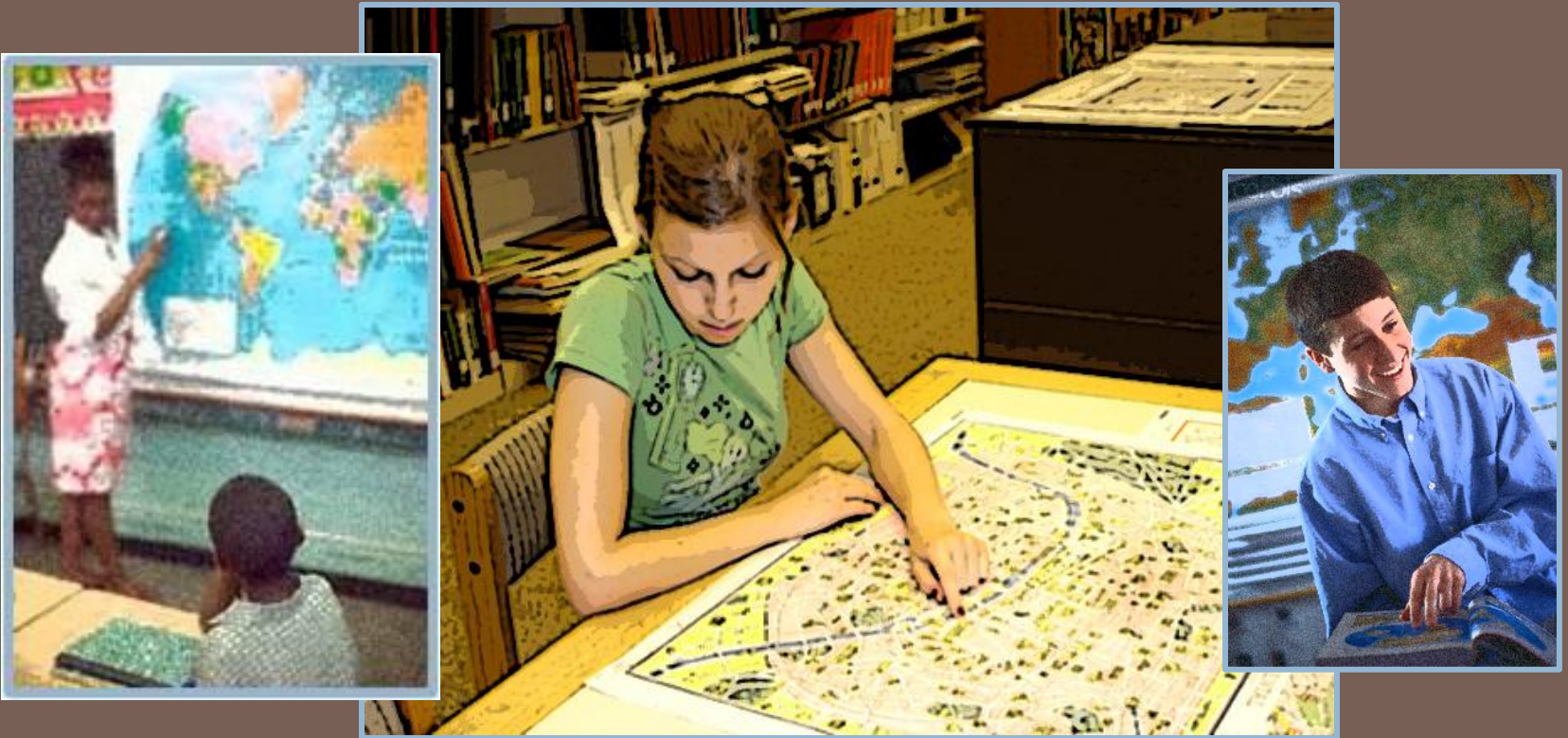
Cultural features of prominence on topographic maps include any works that are manmade. Towns, roads, railroads, cemeteries, buildings, telephone lines, oil and gas pipelines, radio and cell phone towers, and civil boundaries are all cultural features. These features are shown in black on U.S.G.S. topographic maps.

Students working in groups or individually can be assigned different sections of the map and asked to list the cultural features shown.

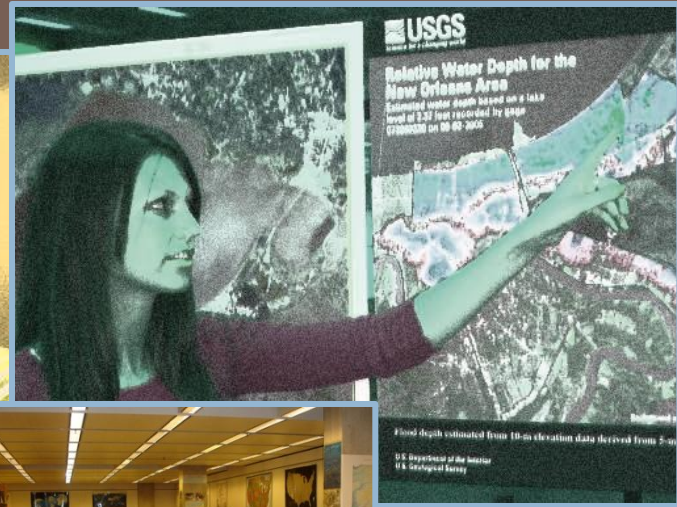
Or teach students how to read grid maps and ask students to locate specific cultural locations at a given point on the map.



(Noblesville, Indiana, USGS topographic map, GRMC, Ball State University Libraries).



For more ideas and information about using maps and atlases in the classroom, view the GRMC online tutorial, *Using Maps and Atlases in Social Studies Lessons*, at <http://www.bsu.edu/library/article/0,,54747--,00.html>



❖ The GIS Research & Map Collection is open Monday through Friday from 8:00 A.M. to 5:00 P.M., but special evening hours can be accommodated for instructional sessions, tours, and classroom visits.

❖ Instructional sessions can be accommodated at the Library or in the classroom.

❖ Maps from the GRMC can be circulated for two weeks or longer. Teachers may borrow maps from the GRMC for long-term use in their classrooms.



For more information about the maps, atlases, and other resources presented in this guide or to schedule a class visit, please contact Melissa Gentry in the GIS Research & Map Collection in Bracken Library, Ball State University, at 765/285-1097.

Click here to complete this lesson plan guide:

<http://www.bsu.edu/library/collections/gcmc/feedbackform/>





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*The End.*