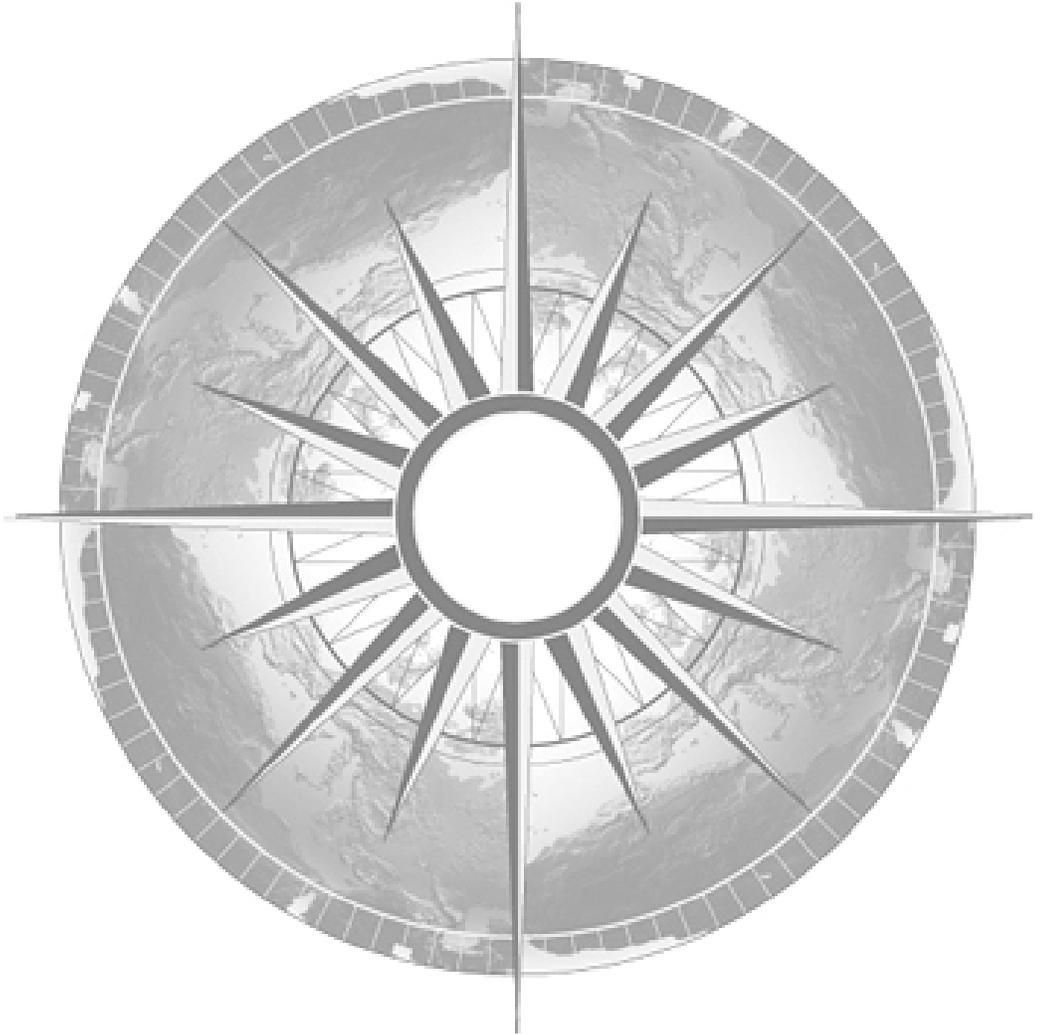


# HEMISPHERES

## People and Place Curriculum Resources on Human-Environmental Interactions



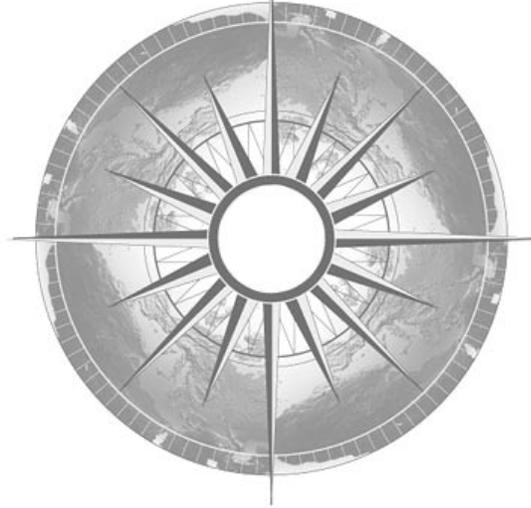
Hemispheres is a joint project of:  
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Center for Middle Eastern Studies  
Center for Russian, East European & Eurasian Studies  
South Asia Institute

in the College of Liberal Arts  
at The University of Texas at Austin



# People and Place

Curriculum Resources on  
Human-Environmental Interactions



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**People and Place**  
**Curriculum Resources on**  
**Human-Environmental Interactions**

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## TEACHER NOTES

### GOALS

This case study focuses on the *zabbaleen*, a sub-class of people who have found work as garbage collectors and recyclers in Cairo. Students will understand that: (1) the growth of Cairo has had a cyclical effect on the *zabbaleen* in that the city growth has caused more people to seek work as *zabbaleen*, many of whom must come from outside the city, thus contributing to the urban growth issue; (2) the rise and success of the *zabbaleen* is a key example of ways in which humans have both adapted to and modified the environment (in this case, the urban environment); (3) new technology and international support for the *zabbaleen's* activity have allowed for efficiency and lowering of pollution levels in Cairo, one of the world's most polluted cities; and (4) planning and maintaining urban infrastructure varies from city to city, but that the basic needs and pressures created by urbanization are similar in all cases.

### ASSESSMENT EVIDENCE

*Designing a Modern Town*: In the capstone project for this lesson, students will design their own town, taking into account the geography of the area and considering what accommodations need to be made in order to cope with a growing population.

### LEARNING ACTIVITIES

- In the *Zabbaleen in the News* reading, students are introduced to the *zabbaleen* and their function in urban areas in Egypt. The brief article is meant to pique student interest in the *zabbaleen*.
- In the introductory *Urban Growth Over Time* activity, students examine aerial photos of the Cairo area and compare the size of the city in 1965 to its size in 1998. They are then asked to brainstorm about the ways in which rapid urban growth strains the available resources and what kinds of environmental and social effects may result.
- The *Who Are the Zabbaleen?* class reading and discussion looks at where the *zabbaleen*, Cairo's "garbage dwellers," came from and how they came to occupy their current positions. Comprehension questions reinforce the knowledge gained in the reading and ask students to consider what programs exist to help homeless and poor people in their own community.
- *The Life Cycle of Cairo's Garbage* class reading and discussion addresses how garbage is collected, sorted, and recycled by the *zabbaleen*, and which products can be recycled for which purposes. Comprehension questions ask students to find out what products are recycled locally and how the recycled products are used.
- *Identifying Local Services* is a multi-day activity that asks students to consider local responses to growth and development by identifying and researching local services such as trash collection and sewage. Students will gain an understanding of the efforts and expense that go into providing services many take for granted.

### *Zabbaleen* in the News

CAIRO, EGYPT (February 2003) – “Can anything worse happen to us?” asks Romany Agaby, one of the traditional garbage collectors, or *zabbaleen*, in the Giza governorate. Agaby has just discovered that the governorate has hired a foreign firm to handle garbage collection in the area where he works.

Giza is the third governorate in Egypt, after Alexandria and Cairo, to hire a foreign company to handle garbage collection. Giza has contracted a Spanish and an Italian company to dispose of the 3,000 metric tons of garbage that are produced on a daily basis.

The Giza Cleanliness and Beautification Authority (GCBA) has been blocking and delaying the issuance of new licenses for the Giza *zabbaleen*. Without permits, which are renewed every year, they cannot work.

Until now, residents in Egyptian cities have depended on the *zabbaleen* to collect their garbage through a door to door service in return for an average of LE 2 to LE 10 (\$ 0.50 to \$2.50) per month. Under the new system, however, residents will be expected to pay a monthly bill for garbage collection that will accompany their electric bill. The cost is determined by taking a percent of the electric bill as a fee for garbage collection. As the household uses more electricity, the garbage collection fee increases.

At the launch of the new system in Alexandria in 2001, many people criticized the high bills they were being forced to pay for the new service. The same is expected to happen in Cairo and Giza when the new system takes effect there.

As many of the *zabbaleen* point out, theirs is a nasty job, but a job for the whole family. The father and the sons collect the garbage from the houses, and the wives and the younger children sort it out in their homes. Sorted garbage is then sold to companies to recycle.

In Alexandria, the problems of a much smaller community of *zabbaleen* was solved by a “gentleman’s agreement” between the community and the French company hired to collect garbage. The company allows them to take the items they want from the garbage containers, so long as they keep the place clean.

Source: Dena Rashed. “Trashed Lives.” *Al-Ahram Weekly* 624 (February 2003): 6-12.

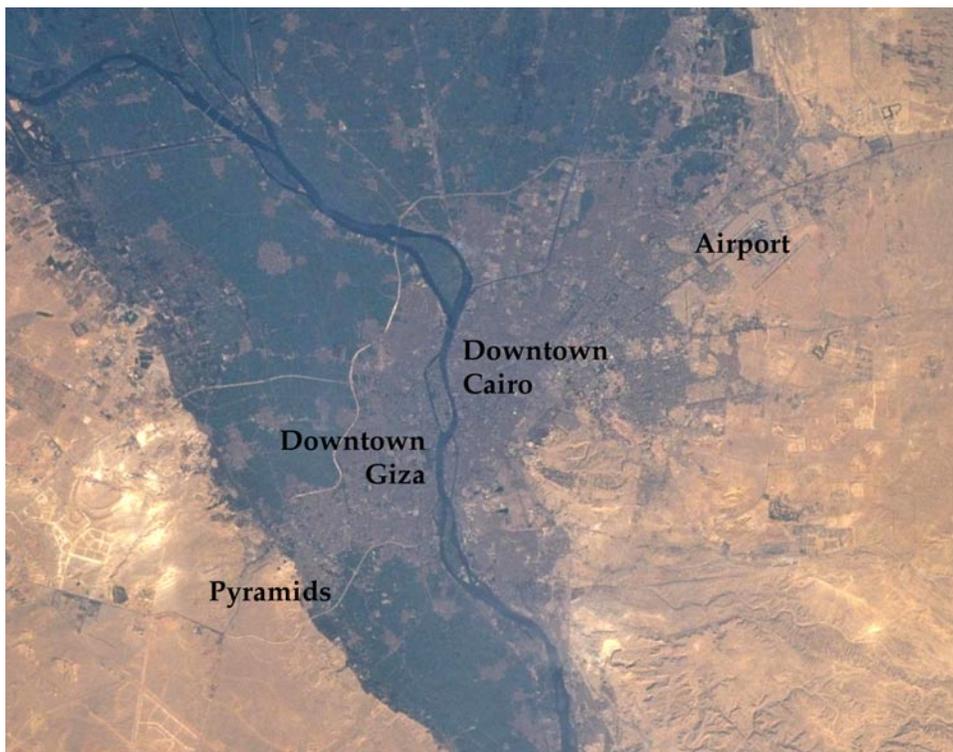
## Urban Growth Over Time

Cairo, 1965



*Taken from the Gemini 5 Spacecraft, August 1965*

Cairo, 1998



*Taken from the Space Shuttle Endeavor, December 6, 1998*  
Photos courtesy of NASA.

Name: \_\_\_\_\_

## Urban Growth Over Time

### Comprehension Exercises

Compare the photographs of Cairo in 1965 and 1998.

(1) How has the city grown?

(2) In 1982, the geographic size of Paris was five times the geographic size of Cairo, but the population of both cities was about the same. What does this say about the quality of life in Paris compared to that of Cairo?

(3) Most of the city's growth has taken place on the fertile land of the Nile River valley rather than in the desert. Why do you think that is? What advantages does building on arable land have over building on desert? What do you think the effect on the agricultural land has been?

(4) What kind of pollution do you think a city of this size generates? What environmental and health issues might face the people who live in a city like Cairo?

## Who Are the *Zabbaleen*?

The *zabbaleen* are a sub-class of poor workers living in the main cities of Egypt. They migrated to Cairo from the Nile Valley in Upper Egypt (the south of the country). Unlike most Egyptians, these peasants were not Muslim, but Coptic Christians belonging to Egypt's native church. They were poor, illiterate people who owned no land. They had worked as hired farm workers, and raised their own animals until they were forced to leave their villages because of several years of poor harvests and a lack of other opportunities. They settled as squatters on land that later became known as "garbage villages."

As late as the nineteenth century, there was no organized system to collect and recycle or dispose of the garbage generated by the residents of Cairo. Most Egyptians burned their garbage to heat water for home use or in the public baths. Garbage that couldn't be burned usually was dumped into vacant lots. In the mid-nineteenth century, a group of migrants from the western desert came to Cairo, and saw an opportunity to make money by collecting the garbage. When the Christians began arriving in the city, the original collectors—called the *waahi* because they came from the oases, or *wahaat*—became the middlemen. They hired the newcomers to collect the trash and sell whatever they could find in it of value. These collectors became the *zabbaleen*.

The middlemen made agreements with tenants and landlords to dispose of their garbage. Then the middlemen hired the *zabbaleen* to work for them. Each household of *zabbaleen* paid a monthly fee to the middlemen, who had complete control over them. The middleman could choose whether or not to give a collector a route, and which route it would be. Since people in the city were wary of strangers, it was necessary for a garbage collector to have the middleman vouch for him and affirm his trustworthiness. The middlemen could also be the only source for a loan if the *zabbaleen's* garbage carts needed to be repaired or replaced.

Cairo's population has grown quickly over the past 60 years, as shown in the aerial photographs in the preceding activity. More and more people have come to Cairo in search of work, and some of them have become *zabbaleen*. As the city has grown, the need for the *zabbaleen* has increased as well. As late as the 1980s, this was still the only household collection service in parts of Cairo. The cities of Giza and Alexandria now have their own armies of *zabbaleen* working their streets as well.

## The Daily Life of the *Zabbaleen*

The *zabbaleen's* day starts early each morning, long before sunrise. Men and children, with their carts or trucks, go out to collect the garbage from their assigned routes. Only boys and young girls go on the routes with their fathers. It is not considered proper for girls to do this once they are grown up. Tenants put their garbage outside for collection, and it is loaded onto the carts and taken back to the *zabbaleen's* village.

There, the women and older girls sort through the garbage, separating the food and other waste from articles that can be recycled. Wooden boards are used to scrape out the garbage to avoid cutting hands on glass or sharp tin. Paper is collected and bundled up. Plastic, cloth, tin cans, and other items are sold to recycling centers outside the village.

In the late 1970s, there was a growing interest in helping the *zabbaleen* improve their living condi-

tions. Their “garbage villages” were essentially squatters’ villages, and the *zabbaleen* were usually forced to move somewhat frequently. The Egyptian Coptic Church helped to form a private organization of volunteers to improve living conditions in the garbage villages. It was called the Association of Garbage Collectors.

As a non-profit organization, they began receiving funds in 1981 to start a credit program. This program lent money to garbage collectors so they could become their own recyclers. The money was spent on machines to crush plastic, compact paper and cardboard, and to grind cloth for recycling.

Another non-profit organization, the Association for the Protection of the Environment, founded in the early 1980s, began community programs for the garbage villages. One village in particular, located in the Mokattam Hills just east of Cairo, became the main recycling center for the city and gained international recognition.

Adapted with permission from *Middle East Resources* 20:1 (January 1999).

Name: \_\_\_\_\_

**Who Are the *Zabbaleen*?**

**Comprehension Exercises**

(1) Who are the *zabbaleen*? Where did they come from? Why did they come to Cairo?

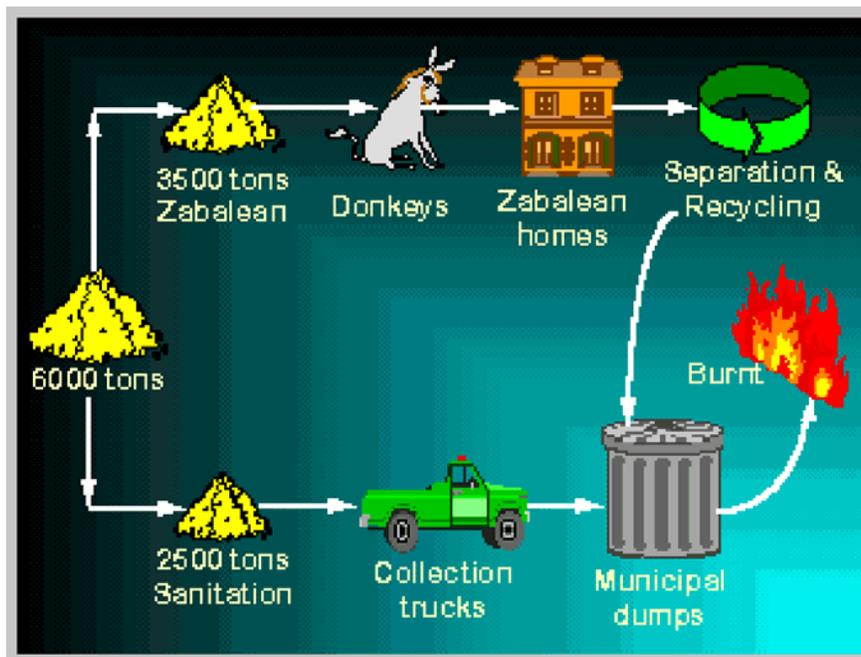
(2) Who are the middlemen, and why are they important?

(3) From reading about what the *zabbaleen* do, what are some of the risks to personal safety and health that they might face? Why do you think they carry on in spite of this?

(4) How has your town grown in the past 60 years? How has it dealt with this growth?

(5) What programs exist to help the poor and homeless people in your community? Who funds these programs?

## The Life Cycle of Cairo's Garbage



Source: Association for the Protection of the Environment

The *zabbaleen* living in the Mokattam neighborhood collect around 700 tons of household garbage on a daily basis. Men and boys go out on the collection route, while girls and women sort it manually and recover many components of solid waste, such as plastic, aluminum, tin, glass, batteries, cloth, animal bones, and food.

The food is fed to animals that the garbage collectors breed in the backyards of their homes. The waste generated by the animals is taken to the composting plant. The other components are processed and cleaned, then separated in the homes of the *zabbaleen* to be taken for recycling. The remaining 10% consists of nonrecyclable components that are trucked to the municipal dump outside of the neighborhood.

### Recycled Items

Plastic is the most common item found in the garbage, particularly food containers, mineral water bottles, and black garbage bags. The plastic food containers and mineral water bottles are cut in half with large scissors, sorted by color, then washed with vinegar and boiling water in a huge tub with a fire beneath it. After the plastic is dried in the sun, it is put into a plastics crusher, then bundled into sacks and sold to merchants. The merchants sell the crushed plastic to small manufacturers, often within the village, who remake it into new usable objects such as clothes hangers, ice cream spoons, and lollipop sticks. These items can be sold at market without having to meet any standards of control. The black plastic bags are washed and crushed and come out as plastic beads that are used to make new shopping bags or trash bags.

Machines for grinding **cloth** are made up of two cogs that move counterclockwise and crush the cloth into cotton stuffing that is used to fill mattresses and pillows. It, too, is sold at the poorer markets because it does not conform to quality hygiene standards.

Storing up small amounts of **paper and cardboard** to be recycled was originally a tedious task. The trucks would not come around until there was a large enough amount to be sold. With help from the loan program, some garbage collectors sold their pigs to buy compactors. Now they are able to prepare the bits of paper salvaged and compact them into large square bales ready for sale.

Shortly after the recycling program started, **aluminum** smelters appeared in the neighborhood. These are constructed by the garbage collectors themselves. They need only a little start-up money, since smelters are made by hand, out of scrap materials. A smelter is only a deep furnace powered by diesel fuel. Old tools are used to push the aluminum scrap into the bottom of the furnace and then a giant ladle is used to pour the molten aluminum through a single hole at the top into square molds. After the aluminum hardens, a flap is opened and the aluminum block is removed with metal tweezers and placed in a pile to cool down. The process is very basic, with dark smoke emanating from a pipe attached to the furnace.

Similar techniques are used for **tin** cans. Large shears separate the tops of aerosol cans from the cans themselves. These are then flattened with a heavy flat hammer and tied up in bunches of fifty or a hundred to sell to the tin middleman. This man then cleans the flattened tins in a barrel of boiling water and potash. The washed tin is placed in a drum with holes pierced into it. It is mixed with ash, hooked up to an electric power source, and rotated. Bits of rust, dirt, and ash fall out of the holes as it spins around. The clean oval, rectangular, and round pieces of tin are sold to manufacturers who use them to make paint cans and other containers.

**Animal bones**, too, are collected and sold to middlemen. They are crushed into a chunky sort of powder and sold as fertilizer to small farmers.

**Glass** is sorted into piles by the garbage collector according to size and color. When the piles are big enough, a middleman from the neighborhood collects the glass and resells it to glass manufacturers outside the community.

Name: \_\_\_\_\_

**The Life Cycle of Cairo's Garbage**  
**Comprehension Exercises**

(1) What happens to the garbage that is collected from your house or school? Who picks it up? Where does it go? What happens to it after that?

(2) Which items are recycled, and what are they used for?

(3) Create a chart, like the one in the reading, describing the life cycle of your garbage.

## Identifying Local Services

### Materials

- Map of the local community
- Graph paper
- Different colored markers
- Overhead projector (optional)

### Objectives

- Students are expected to acquire data from primary and secondary sources related to the location of community services.
- Students will identify common and different factors present in the location of each service.
- Students will make generalizations about the locations of community services.

### Lesson Activities

Day one: Take students on a walking tour of the school grounds or around the block. Discuss why the school is located where it is. What is located around or near the school that can help explain its location? How much land is needed for a school? What other requirements are there for a school site?

Identify city services: Where are the sewer drains? Where are trash dumpsters or trash cans? Phone booths? Libraries? Community centers? Who owns and operates each of these services? What other things can you identify that make up part of the community's **infrastructure**?

Homework: Distribute a community map and a piece of graph paper to each student. Have students plot their home and school locations on the map. Ask students to plot the route they take from home to school.

Have students draw a map of their street or block on the graph paper. Have students draw and label the following:

- Their house
- Other houses on the block/street
- Apartment buildings or condominiums
- Stores or other public buildings
- Libraries
- Community centers
- Police or fire stations
- Sewers and storm drains
- Telephone booths
- Trash cans or dumpsters (identify whether they belong to the city or a private company; there is usually a label on dumpsters identifying who owns them)
- Rivers and creeks
- Vacant lots or park space

Day two: Review the students' ideas about why the school is located where it is. Ask students if they can back up any of their ideas with information on their maps.

Plot the location of the students' homes and the location of the school on a large map of the community or on an overhead transparency. Discuss patterns: Who lives the closest? Who lives the farthest away? Are all the homes closely located around the school? Are there clusters of students living in one area? Do some students travel long distances to school? Ask students why they attend this school and not another one in the community.

Suggested activity: Have students do Internet research or look at old newspapers on microfiche or CD-ROM to find out when their school was built. Were there any issues or controversies about the building of the school at that location?

Use the community map, an overhead transparency, or a large piece of chart paper to plot the community services students have identified in their neighborhoods. Look for patterns. Do some areas have more of one particular service than others?

Ask students to think about the work that goes into planning and maintaining such community services.

Suggested activity: Have students interview someone who works for the local police or fire station, or take a field trip to a local municipal service location (water treatment plant, power station, etc.). Have students ask questions about the number of people who work at the site; which geographic area the site is responsible for; how the location for the site was chosen. How many police, fire, or municipal service stations does it take to serve the entire city?

Afterwards, have students prepare a large chart that lists the information gathered. Plot the location of each service on the map.

### **Concluding the Lesson**

Display the large charts and the community map or transparencies. Write down the students' ideas about the similarities among the sites on the chalkboard or another large piece of paper. Count how many times the same idea was expressed to demonstrate similarities. Ask students to draw conclusions about the amount of labor and infrastructure needed to build and maintain your community, city, county, or state.

## Designing a Modern Town

### Assessing Student Learning

Working in pairs or small groups, students must create a small town. Students can either create a map on a chart or construct a model of the town. Where is the ideal location for their town? Have students select (or assign) a specific geographic location, such as a desert, at the foot of a mountain range, along a river, on the coast, in a forest, etc.

Each town should contain the following structures and features:

- Houses
- At least one school
- A fire station
- A police station
- A market or grocery store
- A library and/or community center
- Roads

Other features that the town may need, depending on its size, are:

- A power plant
- A water treatment plant
- Telephone booths
- Sewers or storm drains
- Municipal trash cans
- Parks
- Sports facilities, such as a stadium or coliseum
- A college or university
- A bank
- A hospital
- Office buildings

Have students present their town to the rest of the class. Ask the group to justify the location of the main features of their town. How will their town cope with a blizzard? A flood? A tornado? How many people will need to live in the town?

Have students rate all of the towns: Which town has the most features? Which town has the highest quality of life? Which town would students most like to live in, and why?

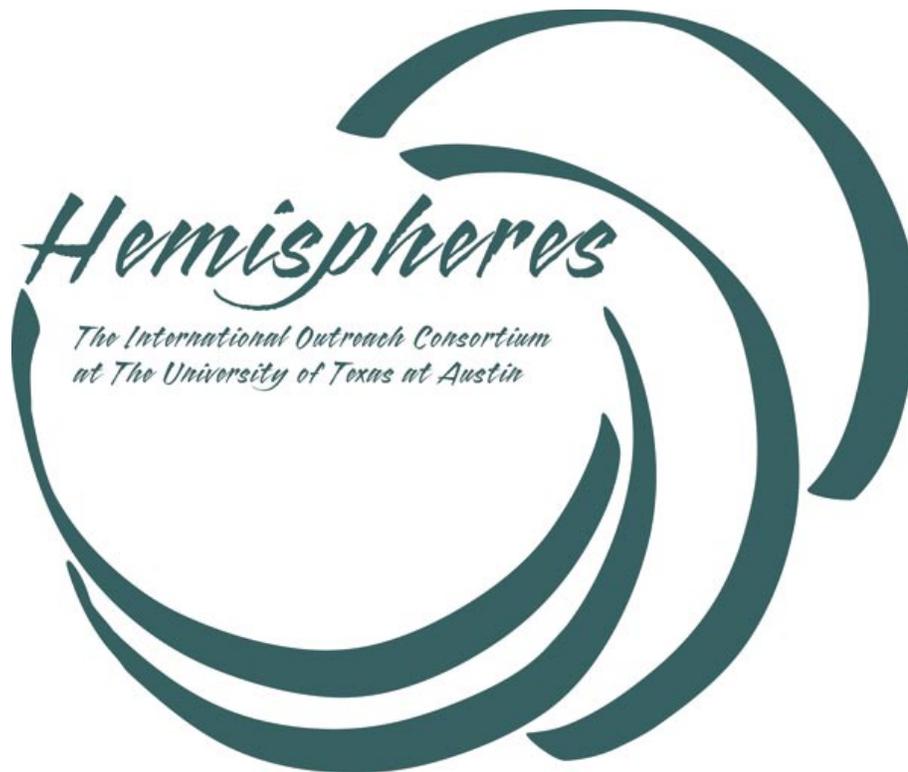
# About Hemispheres

Created in 1996, Hemispheres is the international outreach consortium at the University of Texas at Austin. Hemispheres utilizes University resources to promote and assist with world studies education for K-12 and postsecondary schools, businesses, civic and non-profit organizations, the media, governmental agencies, and the general public.

Comprised of UT's four federally funded National Resource Centers (NRCs) dedicated to the study and teaching of Latin America; the Middle East; Russia, East Europe & Eurasia; and South Asia, Hemispheres offers a variety of free and low-cost services to these groups and more. Each center coordinates its own outreach programming, including management of its lending library, speakers bureau, public lectures, and conferences, all of which are reinforced by collaborative promotion of our resources to an ever-widening audience in the educational community and beyond.

Hemispheres fulfills its mission through: coordination of pre-service and in-service training and resource workshops for educators; promotion of outreach resources and activities via exhibits and presentations at appropriate state- and nation-wide educator conferences; participation in public outreach events as organized by the consortium as well as by other organizations; and consultation on appropriate methods for implementing world studies content in school, business, and community initiatives.

For more information, visit the Hemispheres Web site at:  
<http://www.utexas.edu/cola/orgs/hemispheres/>  
or e-mail: [hemispheres@austin.utexas.edu](mailto:hemispheres@austin.utexas.edu)



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