THE UNITED STATES AND MEXICO: BORDER ISSUES

Elizabeth Acosta
TSL 510
Summer 2017
Introduction
Instructional Unit Introduction

**GENERAL INFORMATION**

<table>
<thead>
<tr>
<th>Student's Name:</th>
<th>Elizabeth Acosta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Title and Number:</td>
<td>Content-based Instruction for English Learners, TSL 518</td>
</tr>
<tr>
<td>Professor:</td>
<td>Dr. Lorrie Verplaetse</td>
</tr>
<tr>
<td>Semester:</td>
<td>Summer 2017</td>
</tr>
</tbody>
</table>

**UNIT INFORMATION**

<table>
<thead>
<tr>
<th>Number of Lessons:</th>
<th>Three Lessons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Title:</td>
<td>The United States and Mexico – Border Issues</td>
</tr>
<tr>
<td>Unit Overview:</td>
<td>Students learn about environmental, political, social/economic challenges between the United States and Mexico border region.</td>
</tr>
<tr>
<td>Grade:</td>
<td>High School/Community College</td>
</tr>
<tr>
<td>Subject:</td>
<td>Social Studies/Environmental Education</td>
</tr>
<tr>
<td>Target Group:</td>
<td>Content-based ESL Class</td>
</tr>
</tbody>
</table>

**Overarching Learning Goals:**

- I want my students to know the challenges faced by people and animals living in bordering cities along the US and Mexico border.

- I want my students to understand the impacts of population growth, industries and infrastructure upon the planet and its natural resources.

- I want my students to understand the relationship between environmental issues and the social, economic and political needs of countries.

- I want my students to know the importance of working together to resolve complex issues in our world.

- I want my students to know the term stakeholders and understand how different stakeholders advocate for their particular view and interests.
Lesson 1
## Unit Title: The United States and Mexico: The Border Region

### Lesson 1

#### Content Objectives

1. Discuss general global environmental, social and political issues and identify their causes and effects.
2. Review a map of the Mexico/US border region and describe the area(s) shown on the map. Provide examples of natural and social systems shown on map.

#### Language Objectives

1. In pairs, students will be able to identify global environmental, social and/or political issues and identify causes and effects. Additionally, students will participate in a collaborative group discussion to elicit background knowledge.
2. Orally, students will be able to describe the various locations shown on the map in a facilitated conversation led by the teacher.

### Performance Indicators

<table>
<thead>
<tr>
<th>Domain/Topic</th>
<th>Level 5</th>
<th>Level 4</th>
<th>Level 3</th>
<th>Level 2</th>
<th>Level 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speaking/Listening &amp; Writing: 1. Identify and discuss environmental, social and political issues in general (in pairs and in whole class discussion)</td>
<td>Identify/discuss 3+ issues, and provide examples of 3+ causes and 3+ effects, using complete concept map with a partner.</td>
<td>Identify/discuss 3 issues, and provide examples of 2 causes and 2 effects using concept map with a partner.</td>
<td>Identify 2 issues and provide examples of 2 causes using modified concept map with a partner. Students will also use sentence frames and vocabulary bank to guide their conversation and answers.</td>
<td>Identify 2 issues and provide examples of 2 causes using modified concept map with a partner. Students will also use sentence frames and vocabulary bank with visuals to guide their conversation and answers.</td>
<td>Identify 2 issues and provide example of 1 cause using modified concept map with a partner. Students will also use sentence frames and vocabulary bank with visuals to guide their conversation and answers. If possible, students will use their L1 to discuss answers with...</td>
</tr>
<tr>
<td>Speaking: 2. Describe locations on a map and categorize certain types of location into natural or social systems</td>
<td>Orally describe 3+ areas on the map by using location-related words, including giving 2 examples of social and natural systems displayed in the map.</td>
<td>Orally describe a minimum of 3 areas on the map by using location-related words, including giving 1 example of social and natural systems displayed on the map.</td>
<td>With guided support and some prompting, orally describe a minimum of 2 areas on the map by using location-related words, including giving 1 example of social and natural systems displayed on the map.</td>
<td>With guided support and prompting, orally describe a minimum of 1 area on the map by using location-related words, including giving 1 example of social and natural systems displayed on the map, using a T-chart and word bank as supports.</td>
<td>With guided support and prompting, orally respond to “yes” and “no” questions about places on the map. Orally reply to yes and no questions about what category (natural or social systems) to put locations such as oceans, highways, mountain range, etc. using T-chart and word bank as supports. Students are encouraged to use their L1 during activities.</td>
</tr>
</tbody>
</table>
### OBJECTIVE 1

<table>
<thead>
<tr>
<th>Function</th>
<th>Situation</th>
<th>Expression</th>
<th>Words</th>
<th>Grammar</th>
<th>Activities</th>
</tr>
</thead>
</table>
| Identify/Classification | Identify general global environmental/social/political issues and explain what causes the issue(s) | **Level 3:**  
___1___ and ___1___ are affecting the planet.  
___1___ is caused by: ___2___ and ___2___.  
___1___ is a ___3___ issue.  

**Level 1 and 2:**  
___1___ is a problem in our planet.  
___1___ is caused by ___2___.  
___1___ is a ___3___ issue. | 1. Water pollution, poverty, overpopulation, air pollution  
2. Lack of water treatment facilities, contaminants in the water, lack of jobs, lack of educational opportunities, lack of family planning, better technological advances in medicine, the desire of everyone to have a family  
3. Environmental, political or social | Present tense, Additive conjunction, nominalization, adjectives, articles, possessive adjective form "our" | Pair work and whole group discussion |
<table>
<thead>
<tr>
<th>Function</th>
<th>Situation</th>
<th>Expression</th>
<th>Words/Phrases</th>
<th>Grammar</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locate/Describe/Provide</td>
<td>Describe various locations shown on map</td>
<td><strong>Level 3:</strong></td>
<td>1. The city/state of, Arizona, California, New Mexico, Yuma, San Diego, The Tijuana River</td>
<td>Present tense, adjectives, proper nouns, capitalization, nominalization, compound sentences, prepositions, directional words</td>
<td>Whole Group Discussion</td>
</tr>
<tr>
<td>Examples</td>
<td></td>
<td><em>1</em> is located between <em>1</em> and <em>1</em>.</td>
<td>2. North, south, west, east</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td><strong>Level 3 (continued):</strong></td>
<td>3. Yuma, Arizona, Ciudad Juarez, Tijuana, California, San Diego, The Tijuana River</td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>1</em> is <em>2</em> of <em>1</em>.</td>
<td>4. City, state, country</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td><strong>Level 1 and 2:</strong></td>
<td>5. Highways, borders, cities, states, countries (social systems)</td>
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<tr>
<td></td>
<td>Give examples of social and natural systems shown on the map</td>
<td><em>3</em> is between <em>3</em> and <em>3</em>.</td>
<td>6. Mountains, rivers, oceans (natural systems)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td><em>3</em> is in <em>3</em>.</td>
<td>7. City, country, highway (social systems)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td><em>3</em> is a <em>4</em>.</td>
<td>8. River, mountain, national park, ocean (natural systems)</td>
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<td></td>
<td><strong>Level 3:</strong></td>
<td>9. Social, natural</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td><em>5</em> are a type of/an example of a social/natural system</td>
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<tr>
<td></td>
<td></td>
<td><strong>Level 1 and 2:</strong></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>A (an) <em>6</em> is a <em>7</em> system.</td>
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</tbody>
</table>
Lesson 1

Words in bolded in blue represent modifications for English learners (ELs). Modifications can include modified written materials, use of visual aids, sheltered content teaching strategies (teacher talk, pace of speech, repetition, questioning techniques) and more.

Total duration of this lesson is 40 minutes.

Activity 1

<table>
<thead>
<tr>
<th>Duration: 10 minutes</th>
<th>Student Materials: Modified concept maps for Levels 4&amp;5, 3 and 1&amp;2 (Pages 9, 10 and 12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grouping Type: Pairs and whole group</td>
<td>Modified vocabulary and sentence frames for Levels 3 and 2&amp;1 (Pages 11 and 13)</td>
</tr>
<tr>
<td>Strategy: Building Background</td>
<td>Teacher Materials: Board/ flipchart &amp; chalk/markers</td>
</tr>
<tr>
<td>Primary Goal: To brainstorm global environmental, social and political issues facing humans today (animals and living organisms can also be included)</td>
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</tr>
</tbody>
</table>

Teacher will introduce the unit’s theme and get students to start thinking of some of the issues (or problems) that affect our world today. Teacher will give examples of environmental, social and political problems we face as a city, state, and/or country. The initial conversation should be framed in general terms, but should be contextualized more so around environmental and social challenges affecting humans and natural systems (parks, oceans, water supply).

**Suggested Teacher Questions:** 1) What do you think are the biggest threats to the planet? 2) Can you think of problems we face in our state/city or country? Can you think of problems we hear about in the news, in our neighborhood?

Teacher will distribute a concept map to help students organize their brainstorming and ideas.

In pairs, students will be asked to think together and concept map by grouping their ideas into the following categories: 1) environment issues (or problems), 2) social issues (or problems) and 3) political issues (problems).

If students in levels 5 and 4, think that one or several of their identified issues fit into more than one category, they are encouraged to do so, but must be ready to provide an oral explanation during whole group discussion.

Level 5, 4, 3, 2 and 1 students are asked to fill in the circles on their concept maps with key words or short phrases describing the issues/problems they identified. For levels 3 and 2&1, a modified vocabulary and sentence frames handout is also provided (I suggest not copying this handout onto the back of the concept map, but instead copy it onto its own page—this way, students can easily look at it and refer to it during the pair work and whole group discussion). Level 5&4 students are not given this resource, but are encouraged to provide longer sentences on their concept maps and oral responses (and expanded oral questioning by teacher).

When students are done, teacher will debrief activity by capturing students’ answers on the board/flipchart. For levels 3, 2, 1, teacher should reinforce (orally) the vocabulary and sentence frames included in their handouts during the activity debriefing to maximize the participation and learning of lower language level students.

Activity 2

<table>
<thead>
<tr>
<th>Duration: 10 minutes</th>
<th>Student Materials: Modified concept maps for Levels 4&amp;5, 3 and 1&amp;2 (Pages 9, 10 and 12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grouping Type: Pairs</td>
<td>Modified vocabulary and sentence frames for Levels 3 and 2&amp;1 (Pages 11 and 13)</td>
</tr>
<tr>
<td>Strategy: Building Knowledge</td>
<td>Teacher Materials: Board/ flipchart paper &amp; chalk/markers</td>
</tr>
<tr>
<td>Primary Goal: For students to think and write down examples of causes and effects resulting from global environmental, social and political issues</td>
<td></td>
</tr>
</tbody>
</table>
In the same pairs, students will be asked to return to their concept maps and complete them by including causes and effects for their identified issues or problems. Students are asked to place their answers outside the circles of their concept maps (they can draw lines and use different colors to help them keep track of the causes and effects they list—students can use a red pen for causes and blue to write down the effects. Levels 1 and 2 will not be asked to identify effects, only causes for their identified issues.

The modified sentences and vocabulary of the handouts should be modeled and reinforced by the teacher during the debriefing. During this activity teacher can also slow down her/his pace and use repetition to create additional learning opportunities for Level 3, 2&1.

Suggested example of modeling for Levels 4 and 5: For example, if I identified air pollution as one of my issues, I can think about what is causing the air pollution in China, as an example. One of the causes could be the large number of factories in the country. An effect could be that Chinese citizens living in major metropolitan cities are now forced to wear facemasks to protect their lungs from the heavy air pollution.

For the levels 3 and 2&1, the teacher can review the referenced handouts above and pick out which sentence frames/vocabulary they will model.

Activity 3

<table>
<thead>
<tr>
<th>Duration: 10 minutes</th>
<th>Student Materials: Modified T-chart with vocabulary and sentence frames for Levels 1 &amp; 2 (Page 14 and 15).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grouping Type: Pairs</td>
<td>2-D Color Border Region Map (Page 16)</td>
</tr>
<tr>
<td>Strategy: Building Knowledge</td>
<td>Teacher Materials: T-chart to record student answers under social or natural system. Visual aids: T-chart visual (page 15) and Border Region map on (page 16)</td>
</tr>
<tr>
<td>Primary Goal: For students to describe locations on a map of the US/Mexico border region and categorize certain types of locations into natural or social systems</td>
<td>Optional (for teachers): Google Earth</td>
</tr>
</tbody>
</table>

After debriefing Activity 1 and 2, teacher will introduce lesson and tell students that the focus of the lesson will be on the environmental, social and/or political issues (points to the list of brainstormed issues on the board) found in one specific part of the world. Teacher will read the following facts to see if the students can predict the part of the world they will be studying.

To contextualize relevance of lesson, teacher can use the following points as informational key points about the region:

- They are our neighbors.
- The area is 1,956 miles long and 124 miles wide.
- It is one of the most active areas in the world.
- The United States and ______ formed the area following the _________ War in 1848.
- The area is heavily policed in certain parts.

Other key facts that can be mentioned after students have guessed the area:

- The southern part of the United States that touches the northern part of Mexico is referred to as the U.S./Mexico border region.
- The border is 1,956 miles long, from the Pacific Ocean to the Gulf of Mexico, and 124 miles wide all along that distance.

Once students have predicted the area of the world they will study, the teacher will project the Mexico/US Border Region map on the board and hand out a color copy of the same map to all students.
Hand a copy of the border region to each student and ask students to orally describe some of the things that are obvious from just looking at the map (possible answers will include: oceans, rivers, parks, US states: Arizona, New Mexico, Texas, legend, directional image of east, west, north and south, etc.).

Teacher can call the students’ attention to the map’s legend and ask students to focus on the last three items listed (highways, interstate Highway and International Border). Teacher will ask students if they notice anything different about them? Teacher will listen to the various answer and stir the conversation towards what makes them different: They are not “natural systems”. They are man-made systems, also known as “social systems”.

At this point, the teacher can clarify the difference between natural and social systems and provide a few examples (natural systems are ecosystems, mountains, oceans, seas. Social systems are: highways, borders, cities, states). The teacher hands-out T-chart for Level 3, 2&1 and encourages them to copy the items she is writing on the T-chart she has on the board. The teacher will also project/post the T-chart visual aid so lower level students can get additional access to the content of discussion. To include them in the discussion, the teacher will ask them yes and no questions about where a certain system should be placed on the chart.

**For example:** Should mountains go here or here, pointing to the two categories on the T-chart. Should mountains be in the natural systems category? Should highways be in the social systems category? Level 4 and 5 students will be in charge of coming up to the board and writing theirs answers and the other students’ responses on the front of the room T-chart.

Next, the teacher will ask individual students to orally practice describing the things we are able to see from the map. Students are encouraged to use location-related words and phrases in their responses. The teacher models this example: Ciudad Juarez is located in the Northern part of Mexico. It is located near El Paso, Texas.

For the higher level students, the teacher can ask one student to describe certain aspects of the map (not just to use the directional language) in one question to increase higher order thinking. **For example:** Emily, can you tell me which two bodies of water border Mexico on the west and east sides? Scott, can you name some of the National and State parks we can see on the map?

**Technology Enhancer:** Teachers can also use the internet to go to Google earth and get a 3-view of these areas (in real time). This will create a more engaging lesson overall for all students and enrich the learning environment. If you have students from Mexico, you can ask them to tell you the cities where they lived and you can go in and see their old neighborhoods, schools, parks where they used to play, etc.

The color-coded visual map gives the class the opportunity to notice the large natural resources, which both countries share (examples: the Sonoran Desert, the Chihuahuan Desert, the Colorado River, etc.). The teacher should point out that these natural systems don’t fit neatly into the established borders of both countries. Therefore, it is important for countries bordering each other to work together to find solutions to the numerous environmental, social and political challenges in these regions.
Lesson 1: Materials, Visual Aids & Narrative
CONCEPT MAP

**Part A:** Think about what environmental, social and political issues are currently affecting our planet. List your ideas inside each of the circles, under the appropriate categories (environment, social and political). If you think one or more issues fit into several categories, list them under both categories.

**Part B:** Listen to the teacher for directions. Listen and have your **RED** and **BLUE** pens ready.

RED = Causes
BLUE = Effects

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**ENVIRONMENTAL ISSUES**

**POLITICAL ISSUES**

**SOCIAL ISSUES**
Student’s Name: ____________________________

CONCEPT MAP

Activity 1a: What environmental, social and political problems (issues) are affecting our planet? List your ideas inside the circle, under the listed categories: Environment, social and political.

Activity 1b: What causes the problems? Give examples...

Write with your red pen. Write your examples outside the circle.
VOCABULARY & SENTENCE FRAMES

OVERPOPULATION
SEWAGE
POVERTY

SENTENCE FRAMES

Part A: Problems/Issues

1: _______ and 1: _______ are affecting the planet.

These types of problems (issues) are affecting our planet: 1: _______________ and 1: _______________.

Part B: Causes

1: _______ is caused by 2: _______________ and 2: _______________.

Part C: Issue Types

1: _______________ is a 3: _______________ issue.

1: _______________ is a 3: _______________ issue.

VOCABULARY

1: Water Pollution
   Air Pollution
   Poverty
   Overpopulation
   Immigration

2: - Lack of water treatment facilities,
   - Contaminants in the water
   - Lack of jobs
   - Lack of educational opportunities,
   - Lack of family planning
   - Better technological advances in medicine
   - People’s desires to have a family
   - Lack of economic opportunities
   - When people move for better economic opportunities

3: Environmental, social and/or political
Activity 1a: What problems are affecting our planet?

Activity 1b: Use your RED pen. What causes the problems?
VOCABULARY & SENTENCE FRAMES

POLLUTION

POVERTY

CONTAMINATION (Draw a picture)

Activity 1a – Problem:

1 or 2: _______ is a problem in our planet.

1 or 2: _______ is a serious problem.

Activity 1b - Causes:

1: _______ is caused by 2: _________________.

Activity 1c – Types of Problems:

1: _______________ is a 3: _________________ issue.

1: _______________ is a 3: _________________ issue.

VOCABULARY

1. Water Pollution
   Air Pollution
   Contamination

2. Garbage in rivers
   Industrial waste in rivers
   High levels of traffic Smoke from factories and cars

3. Environmental, social or political
**MAP T-CHART**

<table>
<thead>
<tr>
<th>NATURAL SYSTEMS</th>
<th>SOCIAL SYSTEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. _____ is located between _____ and _____.

2. _____ is _____ of _____.

**VOCABULARY**

1. The city of...
   The state of...
   Arizona
   California
   New Mexico
   Yuma
   San Diego
   The Tijuana River

2. North
   South
   West
   East
MAP T-CHART
Copy the words from the board onto your paper.

<table>
<thead>
<tr>
<th>NATURAL SYSTEMS</th>
<th>SOCIAL SYSTEMS</th>
</tr>
</thead>
</table>

Where is ......

_____ 1 ____ is between _____ 1 ____ and ______.

_____ 1 _____ is in _______ 1 ____________.

_____ 1 ____ is a ________ 2 ____________.

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VOCABULARY

1. Yuma
   Arizona
   Ciudad Juarez
   Tijuana
   California
   San Diego,
   Pacific Ocean
   Calexico
   New Mexico
   Hermosillo
   Mexico

2. City
   State
   Country
TYPES OF SYSTEMS

NATURAL SYSTEMS

Mountains

Rivers

SOCIAL SYSTEMS

Cities

Highways
This lesson's primary focus is to introduce key concepts, while building and explore the background knowledge of the students. The main sheltered content strategies used are: 1) Visuals 2) Talk together 3) Share history.

A concept map (which is also known as a graphic organizer) is the primary brainstorming tool where students can start to think about the theme of environmental, social and political issues in the planet. This allows the teacher to easily engage the students in an introductory conversation while being able to gauge the students’ prior knowledge.

The concept map is a very non-threatening tool and allows for free thinking during pair work and provides a quick and easy way for students to summarize their ideas. I modified the concept map for Levels 3 and 2&1. I also included the concept map for levels 4 and 5. In the level 3 modified concept map, I simplified the language for the activity directions. I also underlined and included a few visuals to clarify the directions. Additionally, the Level 3 concept map includes a few sentence frames and a word bank/vocabulary, which were directly taken from the functional/notional chart.

In all of the modified tools, I paid great attention to font size, use of color, white space, spacing between text and visual and linguistic load. I also tried to select images that would appeal to older learners since this is the audience for the lesson.

Additionally for levels 1 and 2, I included a few labels under the photos used in the T-charts. Selecting the right photo(s) was very important (For example, I did not want to include a photo of mountains with snowcaps to visually represent the word mountain range. I also did not want to include a river with too many mountains, hills or trees around it because I felt that I would add more information that would not obscure the word I was trying to illustrate).

In the Lesson Plan you will also see that I mention other types of strategies such as teacher talk, slower teacher speech pace, repetition, questioning techniques and the use of technology.
Lesson 2
### Content Objectives


2. Students will explore the causes and effects of poor air, soil and water quality on humans and animals in the region.

3. Students will predict how Mexico and the US could offer solutions to the identified environmental issues in each scenario.

### Language Objectives

1. Students will read a short text about a specific region and in pairs, prepare written responses to specific questions about the region's location, climate, physical geography, and specific environmental causes and effects presented in the text. They will also be asked to identify 1-3 “confusing” words from the reading.

2. In small groups, students will come up with original solutions to the identified issues and prepare a 3 to 5-minute oral presentation for the whole group.

3. For homework, students will read a text about the Rio Grande River and answer questions on a GO. This will serve as preparation for Lesson 3.

<table>
<thead>
<tr>
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<th>Level 4</th>
<th>Level 3</th>
<th>Level 2</th>
<th>Level 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speaking/Listening &amp; Reading/Writing:</td>
<td>Students will read the text independently and in pairs answer <strong>four</strong> comprehension questions, using complete sentences and a combination of simple and complex sentences. Students will also be asked to circle and discuss 1-3 “confusing” words from the reading in pairs.</td>
<td>Students will read the text independently and in pairs answer <strong>three</strong> comprehension questions, using complete sentences and a combination of simple and complex sentences. Students will also be asked to circle and discuss 1-3 “confusing” words from the reading in pairs.</td>
<td>Students will read a modified text independently and in pairs answer <strong>three</strong> modified comprehension questions, using complete sentences and a combination of simple and complex sentences. Students will also be asked to circle and discuss 1-3 “confusing” words from the reading in pairs.</td>
<td>Students will read a modified text independently and in pairs answer <strong>two</strong> modified comprehension questions, using one to two simple sentences. With support from the teacher, students will also be asked to circle and discuss 1-2 “confusing” words from the reading.</td>
<td>Students will read a modified text independently and in pairs answer <strong>two</strong> modified comprehension questions using phrases or single words. With support from the teacher, students will also be asked to circle and discuss 1-2 “confusing” words from the reading.</td>
</tr>
<tr>
<td>Domain/Topic</td>
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<tr>
<td><strong>Speaking &amp; Writing:</strong></td>
<td>Oral presentation will include an introduction of the geographic area a minimum of <strong>three</strong> identified issues and <strong>three</strong> solutions involving both countries. Group will prepare a visual outline or graphic as part of their presentation.</td>
<td>Oral presentation will include an introduction of the geographic area, a minimum of <strong>two</strong> identified issues and <strong>two</strong> solutions involving both countries. Group will prepare a visual outline or graphic as part of their presentation.</td>
<td>Oral presentation will include a brief introduction of the geographic area, a minimum of <strong>two</strong> identified issues and <strong>one</strong> solution involving both countries. Group will prepare a visual outline or graphic as part of their presentation.</td>
<td>Oral presentation will include a <strong>title</strong> of the geographic area, a minimum of <strong>one</strong> identified issue and <strong>one</strong> solution involving both countries. With teacher support, students will complete sentence starters as part of their presentation prep.</td>
<td>Oral presentation will include a <strong>title</strong> of the geographic area, a minimum of <strong>one</strong> identified issue and <strong>one</strong> solution involving both countries. With teacher support, and yes and no questions, the students will state the title of the region they read about, and the issue and solution they identified. Use of Spanish L1 will be encouraged.</td>
</tr>
<tr>
<td><strong>Reading &amp; Writing:</strong></td>
<td>Students will read original text independently and <strong>thoroughly</strong> complete the related original graphic organizer.</td>
<td>Students will read original text independently and <strong>thoroughly</strong> complete the related original graphic organizer.</td>
<td>Students will read the modified text independently and mostly complete the modified original graphic organizer.</td>
<td>Students will read the modified text independently and complete some of the modified original graphic organizer.</td>
<td>Students will read modified text with support and complete some of the modified original graphic organizer.</td>
</tr>
</tbody>
</table>

2. *In small groups, students will propose original solutions to the issues presented in the text and in their written responses and prepare a 3 to 5-minute oral presentation.*

3. *For homework, students will read a text about the Rio Grande River and answer questions on a GO. This will serve as preparation for Lesson 3.*
## OBJECTIVE 1

Levels 3, 2 and 1 will read and discuss the text scenario entitled: *Ciudad Juarez-El Paso Border Crossing*

<table>
<thead>
<tr>
<th>Function</th>
<th>Situation</th>
<th>Expression</th>
<th>Words</th>
<th>Grammar</th>
<th>Activities</th>
</tr>
</thead>
</table>
| Describe/Identify/Synthesize/Summarize | Students will read a short text and in pairs, prepare written responses to specific questions about the region’s location, climate, physical geography, and specific environmental causes and effects presented in the text. | **Level 3:**  
The border crossing is located between ____1____ and ____2____.  
The geographic area is ____3____.  
The border crossing in located in an ____4____ area.  
The environmental problems are ____5____ and ____6____.  
The air (or air quality) is _7_.  
The ____8____ in the area is caused by ____9____.  
The people most affected are ____10____ and ____11____.  
The effects of the ____12____ are ____13____ and ____14____.  
**Level 2 & 1:**  
The border crossing is located between ____15____ and ____16____. | 1. Ciudad Juarez and El Paso, Texas  
2. Dry, hot  
3. An urban, a heavily populated  
4. Poor air quality, low air quality, bad air quality, air pollution  
5. Polluted, declining  
6. Emissions from trucks, emissions from heavy traffic, pollutants, from trucks’ emissions  
6a. Respiratory infections, health problems  
7. Infants and children | Proper and regular nouns, adjectives, evaluative language, Spanish cognates, possessives | Independent reading and pair work |
<table>
<thead>
<tr>
<th>Function</th>
<th>Situation</th>
<th>Expression</th>
<th>Words/Phrases</th>
<th>Grammar</th>
<th>Activities</th>
</tr>
</thead>
</table>
| Predict, brainstorm, formulate, come up with original ideas | In small groups, students will formulate original solutions to the issues presented in the text and in their written responses and prepare a 3 to 5-minute oral presentation | **Level 3:**  
The geographic area _7_ _8_ was ____9___.  
The issues we identified were ____10__ and ____10__.  
Both countries should work together to ____11__ and ____11___.  
**Level 2 & 1:**  
The border crossing is located in ____9___.  
The area’s climate is ____2___.  
The problem is _12_.  
One solution is for ____13__ to ____13a_____. | 7. We, our group  
8. Looked at, read about, studied  
9. Ciudad Juarez/El Paso Border Crossing, the border checkpoint in Ciudad Juarez and El Paso  
10. Poor air quality, low air quality, air pollution  
11. Find ways to process cars faster, ask cars to turn off engines while waiting, invest in new technologies | Pronouns, present and past tense, proper nouns, adjectival phrases, imperative sentences, possessives | Small group [this means that you will need to have at least two groups reading the same scenario] |
<table>
<thead>
<tr>
<th>Function</th>
<th>Situation</th>
<th>Expression</th>
<th>Words/Phrases</th>
<th>Grammar</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HOMEWORK</strong> Describe/Identify/ Explain</td>
<td>For homework, students will read assigned article independently and use graphic organizer to organize responses similar to those done in class. The homework will introduce the concept of stakeholders and</td>
<td>Level 3: The article is about <strong><strong>14</strong></strong>. People who are affected by environmental, political or social problems can be called <strong><strong>15</strong></strong>. <strong><strong>15a</strong></strong> and <strong><strong>15a</strong></strong> are examples of stakeholders in the Rio Grande River. The solutions are complex because <strong><strong>16</strong></strong>.</td>
<td>14. The Rio Grande River region 15. Stakeholders 15a. The US government, The Mexican government, poor communities, indigenous groups, farmers and colonia residents</td>
<td>Proper nouns, nominalization</td>
<td></td>
</tr>
</tbody>
</table>
| HOMEWORK (Continued) | Level 2&1 | 16. Both countries need to work together, both countries need to negotiate agreements, both countries require financial support (money) to create solutions.  
17. farmers, residents of the area  
18. water quality  
19. work together, negotiate together, create agreements together, pay for the cost together. |
|------------------|----------|-------------------------------------------------------------------------------------------------|
| explore the complexity of finding solutions to the types of issues identified in the article | The article is about __14___.  
____ and ____ are affected by the ____17____ of the River.  
The solutions are complex because both countries need to 19__. |
Lesson 2

Words in **bolded in blue** represent modifications for English learners (ELs). Modifications can include modified written materials, visual aids, sheltered content teaching strategies (teacher talk, pace of speech, repetition, questioning techniques, modeling, opportunities for students to negotiate meaning/answers/responses) and more.

Total duration of this lesson is 40 minutes.

**Activity 1**

<table>
<thead>
<tr>
<th>Duration: 20 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grouping Type:</strong> Whole group and pair work</td>
</tr>
<tr>
<td><strong>Strategy:</strong> Contextualize Lesson, Make Text Comprehensible, Change Traditional Classroom Talk</td>
</tr>
<tr>
<td><strong>Primary Goal:</strong> To introduce lesson topic with videos and various scenarios depicting common environmental and social issues/problems along the border region.</td>
</tr>
</tbody>
</table>

**Student Materials:** Original environmental scenarios for levels 5 & 4 (Pages 10-12). **Modified environmental scenarios** for Level 3, 2 & 1 (Pages 13-14).

Original comprehension questions for Levels 5 & 4 (Page 15). **Modified comprehension questions** for Levels 3, 2 & 1 (Pages 16-17).

**Optional Student Tools:** Spanish/English Cognates for Levels 3, 2 and 1 (Page 18). **Simple but Important Words Chart** (Page 20).

**Teacher Materials:** Videos of Mexico/US Border Region, Board/flipchart & chalk/markers

**Materials to prepare ahead of time:** Cut and copy environmental scenarios.

To get the lesson started, the teacher will show three short videos to introduce the US/Mexico border area and the El Paso/Ciudad Juarez Border Crossing and introduce some of the environmental challenges students will read about in their texts. The total number of minutes needed to show the videos is 10 minutes.

Debrief for 1-2 minutes. **Ask big questions.** Examples: Which country do you think has more resources from just looking at the videos? What do you think is needed to find solutions to these problems/issues? Why is it important to find solutions to these issues?

After the debriefing, the teacher will assign pairs, then hand out environmental scenarios of the various areas along the border and ask students to read it independently for a few minutes. Make sure that at least two pairs have the same scenario, since you will need groups of 4 to work on the next activity (Activity 2).

Level 5, and 4 can read any of the scenarios available, but the Ciudad Juarez-El Paso Border Crossing scenarios is **only** for students in levels 3, 2. Both the reading text and the comprehension questions for the Ciudad Juarez-El Paso Border Crossing have been modified for these levels.

The videos were also intentionally selected to provide additional visual clues to the lower level students. They correlate with the same topics in the **modified reading text**.

After each student has read their scenarios independently, they will be asked to get into their assigned pairs. In pairs, students will be asked to **think together** and answer the comprehension questions on the handout (To add additional scaffold for everyone, the teacher may choose to review the list of comprehension questions to make sure everyone knows what they have to do). They will compare their answers and **negotiate meaning by discussing their responses**.
Orally and asking clarifying questions. They will also circle a few “confusing/unfamiliar” words from the reading and we the whole class will create a list of these words towards the end of the lesson (in Activity 2).

Teacher will walk around the room and assist in any additional scaffolding that may be necessary for the lower groups.

**Activity 2**

<table>
<thead>
<tr>
<th>Duration: 20 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grouping Type:</strong> Small groups (4 students per group)</td>
</tr>
<tr>
<td><strong>Strategy:</strong> Students’ Voice</td>
</tr>
<tr>
<td><strong>Primary Goal:</strong> For students to think and write down examples of causes and effects resulting from environmental, social and political issues mentioned in their scenario and come up with their own ideas of what kind of solution(s) each country could bring to the table.</td>
</tr>
</tbody>
</table>

**Student Materials:** Students will reference their comprehension graphic organizer from Activity 1 for this activity.

**Graphic organizer for oral poster presentation** – for all levels (Page 21).

Homework original text for Levels 5 & 4 (Page 22), Modified homework text for Level 3 (Page 23), Level 2&1 (Page 24).

Modified graphic organizer for Level 5 & 4 (Page 25), Level 3 (Page 26), and Levels 2&1 (Page 27).

**Teacher Materials:** Board/ flipchart paper & chalk/different color markers.

**Prepare ahead of time:** Five flip chart sheets with teams 1-5. **Prepare a Model** (flipchart sheet) of what an oral presentation poster could look like.

Photocopy new reading text and graphic organizers for homework.

The teacher will ask for students with scenario 1, 2, 3, 4, and 5 to raise their hand and get together in a group. Groups will be directed to move to the specific areas of their room with a blank flip chart piece of paper with their number of it.

Teacher will review the graphic organizer and directions by telling students that they will work in groups to prepare a one-page poster and brief orientation about their scenario, they need to include a visual or prepare their poster in a visual way (using bullets, different color markers, etc.). They will follow the format provided by the graphic organizer, which will help them organize and gather their thoughts.

The teacher will write down the list of roles for team members and teams have to decide which roles they will play within their teams. **Roles for group activity:** 1) Writer – Writes information on the flip chart paper (poster), 2) Illustrator – comes up with a graphic for the poster or decides on the visual presentation of the information, 3) Coordinator – Juts down ideas to the various questions and seeks consensus from the group on the team’s answers 4) Presenter – Presents poster orally. All team members should be ready to answer questions from the audience (peers).

Ahead of time, teacher should prepare each of the groups flip chart paper with each of the team’s #s, also teacher should prepare a sample of what a finished poster should look like as a way to model what the poster should capture (including the idea of adding a visual or presenting the information in a visually attractive way).

At the end of the class, students will be asked to call out their two “confusing words” from their environmental scenarios and teacher will create a vocabulary list on the board to be discussed next time. Make sure to write down the words and keep track of which team it came from (which scenario). In preparation for next class, you will ask the same teams to break into their groups to do a vocabulary activity with the words they selected from last class.

For homework, assign a new reading about The Rio Grande River and hand out graphic organizer. Tell students to read and complete graphic organizers before next class (they must also bring this reading and GO to the next class).
Lesson 2 Videos for Activity 1:

https://youtu.be/j5I31SHTIW4 - What the US-Mexico Border Really Looks Like (1:00 minute)


https://youtu.be/zw_fmOgO2-0Y - Program Focuses On Tracking Air Pollution At US-Mexico Border Part 2 (4:02 minutes)

Other Videos (Optional for other lessons):


https://youtu.be/TzYW8TJw2o - Border Fence vs. Environmental Conservation (4:06)
Lesson 2: Materials, Visual Aids & Narrative
New River

The New River winds from the Mexicali Valley of Mexico northward through a rural, desert and farming region that begins at the U.S.–Mexico border at the City of Calexico, through the Imperial Valley and north to the Salton Sea. For decades, from both sides of the border, the New River has been the dumping ground for increasing quantities of treated wastewater from cities and industries, raw, untreated sewage, runoff from agriculture, and storm water. Sometime in the 1950s, the river became so polluted that people described the odor from its water channel as “overpowering.” High concentrations of fecal coliform bacteria, silt, nutrients, such as nitrate and phosphate, and volatile organic compounds made the water and soil in and around the New River unsafe for human use. These pollutants affected the ecology of the river, impairing its animal and plant life. People complained of health problems that they thought were being caused by the polluted river.

Big Bend National Park

Big Bend National Park is located in southwest Texas. It includes more than 800,000 acres of diverse landscapes including deserts and mountains. A tourist to this area in the 1970s could see for hundreds of miles. Today, however, air pollution makes a clear view of the area a rarity. In fact, the National Park Service believes that Big Bend National Park has the dirtiest air of all parks in the west. Studies show that the pollution sources are mostly coal-burning power plants in Texas, Mexico, and the eastern United States. Urban areas in Texas are another source. The particulates from these power plants contribute to the haze in the national park and influence the natural and human systems present. The air quality is associated with respiratory illnesses in humans. The acid compounds in the air are starting to influence the grasslands as well.
Ciudad Juárez–El Paso Border Crossing

The Ciudad Juárez–El Paso Border Crossing is one of the busiest checkpoints connecting the United States and Mexico. Vehicle traffic is steadily increasing due to population growth and a fast growing economy. In 2004, more than one million trucks crossed the border between Ciudad Juárez and El Paso, Texas. Air quality is getting worse. In August 2003, the Texas Commission on Environmental Quality (TCEQ) found that vehicles idling on the international bridges produced about 22% of area-source carbon monoxide emissions in the El Paso–Ciudad Juárez area. Waits of one hour or longer are common. Particulate matter emitted from older Mexican trucks contributes much of the air pollution. Public health officials worry about this pollution. Scientists have connected the number of infants and children suffering and dying from respiratory infections to the air quality in the region. The number of poor children being rushed to hospitals for these problems is steadily increasing.

Asarco Smelter

The Asarco Smelter (copper and lead mine) near El Paso is owned by the American Smelting and Refining Company (Asarco). Asarco is a Mexican mining company with headquarters in the United States. By the 1920s, Asarco had the largest mining operation in Mexico. It had several plants located along the border, including a large copper and lead mine in El Paso, Texas. In 1969, El Paso had the highest concentration of lead in the air of any city in Texas. The plant employed more than 1,000 people in the 1990s. It produced almost 1 million tons of raw materials each year. Due to low copper prices, the plant closed in 1999. In this same decade, the water and soil in the El Paso area were found to have high levels of arsenic and lead. The U.S. Environmental Protection Agency said that decades of emissions from the mine contaminated the soil. Citizens of El Paso, Texas and Ciudad Juárez, Chihuahua fear that the mining waste will eventually end up in the Hueco Bolson (hu-way-co bowl-sohn) Aquifer, their primary source for drinking water.
Colorado River Basin

The Colorado River Basin begins in the Rocky Mountains in Colorado. It drains southwest, ending in the Gulf of California. The Colorado River is the subject of many laws and legal quarrels. It supplies water to the highly populated and arid southwest. Signed in 1922, the Colorado River Compact allocated 7.5 million acre feet to the Upper Basin states (Colorado, Wyoming, New Mexico, and Utah). The compact called for the same allocation to the Lower Basin states (Arizona, Nevada, and California). A treaty signed with Mexico in 1945 stated that Mexico should also receive 1.5 million acre feet. A total of 16.5 million acre feet are allocated. Yet studies show that, on average, the Colorado River delivers only 13.5 million acre feet annually. The quantity of water is not the only problem. As the water continues south, it becomes more and more contaminated with pesticides and salt from farms in the United States. By the time the water remaining in the river reaches Mexican cities and the Gulf of Mexico, the salinity and pesticide levels are so high, the water damages the ecosystems in the Gulf. That water is not safe to use in agriculture. The poor water quality has affected the health of the people and the economy in the region.
CIUDAD JUAREZ — EL PASO BORDER CROSSING

The Ciudad Juarez—El Paso Border Crossing is one of the busiest checkpoints connecting the United States and Mexico. Vehicle traffic is steadily increasing due to population growth and a fast growing economy. In 2001, more than one million trucks crossed the border between Ciudad Juarez and El Paso, Texas. Air quality is getting worse. In August 2003, the Texas Commission on Environmental Quality found that vehicles idling on the international bridges produced about 22% of area-source carbon monoxide emissions in the El Paso-Ciudad Juarez area. Waits of one hour or longer are common. Particulate matter emitted from older Mexican trucks contributes much of the air pollution. Public health officials worry about this pollution. Scientists have connected the number of infants and children suffering and dying from respiratory infections to the air quality in the region. The number of poor children being rushed to hospitals for these problems is steadily increasing.

THE CHECKPOINT

(LOCATED AT THE CIUDAD JUAREZ — EL PASO BORDER CROSSING)

The Ciudad Juarez—El Paso Border Crossing is one of the busiest checkpoints connecting the United States and Mexico.

Vehicle traffic is high because of population growth and a fast growing economy. In 2001, more than one million trucks crossed the border between Ciudad Juarez and El Paso, Texas. Air quality is poor.

In August 2003, the Texas Commission on Environmental Quality found that vehicles waiting to cross on the international bridges produced about 22% of area-source carbon monoxide emissions in the area. Vehicles wait approximately one hour or longer to drive across the checkpoint. Pollutants from older Mexican trucks produce much of the air pollution.

Public health officials worry about this pollution. Scientists say that infants and children are suffering and dying from respiratory infections from the poor air quality in the region. The number of poor children going to the hospitals for respiratory infections is high.
THE BORDER CROSSING (LOCATED AT THE CIUDAD JUAREZ – EL PASO BORDER CROSSING)

The Border Crossing is located in Ciudad Juarez—El Paso, Texas. It is a very busy checkpoint. It connects the United States and Mexico.

Car traffic is high. The economy is also good. In 2001, more than one million trucks crossed this checkpoint. Air quality is poor.

In 2003, cars and trucks produced about 22% of carbon monoxide emissions. Cars wait approximately one hour to go across. They produce high levels of air pollution.

Infants and children are dying from respiratory infections. The number of respiratory infections is high.
LEVEL 5 & 4

MODIFIED READING COMPREHENSION QUESTIONS

Your Name: _______________________________

Title of your reading: ____________________________

Circle a few (1-3) words that are confusing to you in the text. Discuss the words with your partner and see if they can give you some clues about the word’s meaning.

1. **Describe** the area. *(Where is it located? Is the area rural or urban? Is it a natural or social system?)*

2. **What are the main environmental issues** mentioned in your scenario? **What is causing the issues?**

   ___________________________________________

   ___________________________________________

   ___________________________________________

   ___________________________________________

   ___________________________________________

   .

3. **Who** is affected? **How** are the issues **affecting people?**

   ___________________________________________

   ___________________________________________

   ___________________________________________

   ___________________________________________

   ___________________________________________

   .
LEVEL 3

MODIFIED READING COMPREHENSION QUESTIONS

Your Name: __________________________

Title of your reading: __________________________

Circle a few (1-3) words that are confusing to you in the text. Discuss the words with your partner and see if they can give you some clues about the word’s meaning.

4. Describe the area. (Where is it located? Is the area rural or urban?)

5. What are the main environmental issues in the area? What is causing the environmental issues?

6. Who is affected? How are the issues affecting people?
LEVEL 2 & 1

Modified Reading Comprehension Questions

Your Name: ________________________________

Title of your reading: ____________________________________________

Circle a few (1-2) words that are confusing to you in the text. Discuss the words with your partner.

QUESTION #1

Describe the area. (Where is it?)

The border crossing is located between _____________ and ____________.

QUESTIONS #2

What is the problem?

The air is ________________________________.

The air quality is ________________________.

The effect of the problem:

One effect of air pollution is that ____________________________

WORD BANK FOR QUESTION #1
- Ciudad Juarez
- El Paso, Texas

WORD BANK FOR QUESTION #2
- Polluted
- Declining
- Low or Poor
- Respiratory infections
- Health problems
### LIST OF SPANISH/ENGLISH COGNATES

<table>
<thead>
<tr>
<th>PALABRA EN ESPAÑOL</th>
<th>ENGLISH WD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urbana (Una área urbana)</td>
<td>Urban (An urban area)</td>
</tr>
<tr>
<td>Rural (Una área rural)</td>
<td>Rural (A rural area)</td>
</tr>
<tr>
<td>Problema</td>
<td>Problem</td>
</tr>
<tr>
<td>Causando</td>
<td>Causing</td>
</tr>
<tr>
<td>Aire</td>
<td>Air</td>
</tr>
<tr>
<td>Clima</td>
<td>Climate</td>
</tr>
<tr>
<td>Humedo</td>
<td>Humid</td>
</tr>
<tr>
<td>Infecciones respiratorias (nota que el orden de las palabras es diferente en inglés: Respiratory Infections)</td>
<td>Respiratory Infections (note that the order of the words is different in Spanish)</td>
</tr>
<tr>
<td>Contaminado</td>
<td>Contaminated</td>
</tr>
<tr>
<td>Describir</td>
<td>Describe</td>
</tr>
<tr>
<td>Borde (en relación al cruce de frontera)</td>
<td>Border (in relation to frontier crossing)</td>
</tr>
<tr>
<td>Area</td>
<td>Area</td>
</tr>
<tr>
<td>Region</td>
<td>Region</td>
</tr>
<tr>
<td>Hospitales</td>
<td>Hospitals</td>
</tr>
<tr>
<td>Cualidad</td>
<td>Quality</td>
</tr>
<tr>
<td>Conectando</td>
<td>Connecting</td>
</tr>
<tr>
<td>Sufriendo (sufriendo infecciones respiratorias)</td>
<td>Suffering (suffering respiratory infections)</td>
</tr>
<tr>
<td>Economía</td>
<td>Economy</td>
</tr>
<tr>
<td>Produce</td>
<td>Produce</td>
</tr>
<tr>
<td>Poblacion</td>
<td>Population</td>
</tr>
<tr>
<td>Publico</td>
<td>Public</td>
</tr>
<tr>
<td>Oficiales</td>
<td>Officials</td>
</tr>
<tr>
<td>Approximadamente</td>
<td>Approximately</td>
</tr>
<tr>
<td>Trafico</td>
<td>Traffic</td>
</tr>
<tr>
<td>Vehiculos</td>
<td>Vehicles</td>
</tr>
<tr>
<td>Carros</td>
<td>Cars</td>
</tr>
<tr>
<td>Emisiones (Emisiones de carros)</td>
<td>Emissions (Car emissions)</td>
</tr>
<tr>
<td>Carbon Monxido</td>
<td>Carbon Monoxide</td>
</tr>
<tr>
<td>Bacteria</td>
<td>Bacteria</td>
</tr>
</tbody>
</table>

The words above appear in your reading and have equivalent words (palabras equivalentes) in Spanish and English. These are called cognates (cognados).

If you find other cognate words in your reading, you may add them at the bottom of the list.
LEVELS 2 & 1

SIMPLE BUT IMPORTANT WORDS

LANGUAGE TOOL FOR SPANISH SPEAKING STUDENTS

(Optional Handout for students to use as a personal learning tool with their readings)

(Palabras simples pero importantes que todos debemos saber)

These are important words you will encounter in many of your class readings.

Review these during your independent readings/homework time as a tool for your own learning.

<table>
<thead>
<tr>
<th>WORDS (Palabras)</th>
<th>GRAMMATICAL PURPOSE (Proposito gramatico)</th>
<th>EXAMPLES OF USAGE – Write a Sentence (Ejemplos de su uso)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Because [Por que]</td>
<td>To connect two sentences when giving an explanation or describing a situation</td>
<td>I was late because I missed the bus</td>
</tr>
<tr>
<td>And [Y]</td>
<td>Connects two or more ideas</td>
<td>John and Mary went to the store</td>
</tr>
<tr>
<td>In [En]</td>
<td>To describe location</td>
<td>The cars and trucks cause high traffic</td>
</tr>
<tr>
<td>Of (de)</td>
<td>Used for belonging to, relating to, or connected with</td>
<td>Ciudad Juarez is in Mexico.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I live in Willimantic, CT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cars produce high levels of air pollution</td>
</tr>
<tr>
<td></td>
<td></td>
<td>My phone did not ring because of the low battery.</td>
</tr>
</tbody>
</table>

EXTRA CREDIT [Extra Credito]: Write other “new but important” words from your readings.

[Escribe/encuentra otras palabras nuevas y importantes en base a las lecturas]:

<table>
<thead>
<tr>
<th>WORDS (Palabra)</th>
<th>GRAMMATICAL PURPOSE (Proposito gramatico) – Your teacher can help with this part...</th>
<th>EXAMPLES OF USAGE – Write a sentence (Ejemplos de su uso)</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>
# ALL LEVELS

## GRAPHIC ORGANIZER FOR GROUP ORAL PRESENTATION

Title (Include the name of the region you read about): ______________________________________

<table>
<thead>
<tr>
<th>INTRODUCTION OF GEOGRAPHIC AREA</th>
<th>[You can include can be location, climate or physical geographic features of area]:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>ISSUES/PROBLEMS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISSUE 1:</td>
</tr>
<tr>
<td>ISSUE 2:</td>
</tr>
<tr>
<td>ISSUE 3:</td>
</tr>
</tbody>
</table>

[Confusing Words]

1.  
2.  

**HOW CAN THEY WORK TOGETHER TO SOLVE THE ISSUES/PROBLEMS:**

**SOLUTIONS – MEXICO**

**SOLUTIONS – UNITED STATES (US):**
Lesson 3
LEVELS 5 & 4

HOMEWORK

ORIGINAL ARTICLE

The Rio Grande or Rio Bravo

The Rio Grande or Rio Bravo (its name in Mexico) begins in the Rocky Mountains in Colorado and runs south through New Mexico. Eventually, the river becomes part of the border between the United States and Mexico. This river is at the center of an international controversy pitting the United States against Mexico. Two major concerns involving the Rio Grande are water allocation and water quality.

Several factors have created a water shortage problem in parts of the Rio Grande. An ongoing drought since the 1990s has decreased the amount of groundwater. That means Mexico has less water to give to Texas. A 1944 treaty says Mexico must give Texas a certain amount of Rio Grande water. But, because of the drought, Mexico has been unable to deliver. A water shortage becomes more of a problem as the area’s population grows. Another concern is invasive weeds that grow in the water. These weeds, such as the water hyacinth, use a lot of water, and aquatic weeds have reduced the flow in the Lower Rio Grande. As a result, sandbars have formed. They prevent water from flowing to the Gulf of Mexico, which then affects downstream communities, agriculture, and natural systems. Experts estimate the economic impacts at $400 million annually.

A second major issue with the Rio Grande is water quality. The population of the region along the river is growing rapidly. Wastewater treatment cannot keep up. Many people in the region cannot get safe water. Raw sewage increases the amount of bacteria in the water. The bacteria, in turn, increase the risk of people getting diseases like hepatitis A. Agricultural runoff also pollutes the water, harming the natural river systems. Water quality issues are especially difficult for the poorer communities in the area. These include indigenous groups, famers, and colonia residents. Many have little access to clean water or adequate sewage treatment facilities.

The environmental issues surrounding the Rio Grande are binational, and therefore, the two nations’ governments are working together to address water quality and water allocation issues in the region. The U.S. Environmental Protection Agency (US EPA) is one of those agencies. The Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT) is the other. The two agencies have created a binational program to improve the natural and human systems of the region.
LEVEL 3

Modified Homework – Assigned Reading

The Rio Grande or Rio Bravo

The Rio Grande or Rio Bravo (its name in Mexico) begins in the Rocky Mountains in Colorado and runs south through New Mexico. The river is part of the border between the United States and Mexico. This river is at the center of an international controversy between the two countries. Two major concerns involving the Rio Grande are water allocation and water quality.

Several factors have created a water allocation problem. First, an ongoing drought since the 1990s has decreased the amount of groundwater. That means Mexico has less water to give to Texas. A 1944 treaty says Mexico must give Texas a certain amount of Rio Grande water. But, because of the drought, Mexico has been unable to give the water to the United States.

Another major issue with the Rio Grande is water quality. The population of the region is growing rapidly. There are not enough wastewater treatment plants to clean the water. Sewage increases the amount of bacteria in the water. As a result, the bacteria increase the risk of people getting diseases like hepatitis A. Low water quality affects the poorer communities in the area. They affect indigenous groups, farmers, and colonia residents.

The environmental issues of the Rio Grande are binational, which means that, the two nations' governments are working together to find solutions. The two major agencies involved are: The U.S. Environmental Protection Agency (US EPA) and The Secretaria de Medio Ambiente y Recursos Naturales (SEMARNAT) in Mexico.

NEW WORDS

Drought [Sequia]: When there is no rain and the land becomes very dry.

Wastewater treatment plants [Plantas de tratamientos de agua] – Processes to clean the waste out of the water.

Sewage [Aguas negras] – Water which has not been cleaned for drinking purposes.

Binational – When two countries are involved.
Modified Homework – Assigned Reading

The Rio Grande River

The Rio Grande begins in the Rocky Mountains in Colorado. The river is part of the border region of the United States and Mexico.

Two major problems in the Rio Grande are water distribution and water quality.

Water Distribution

Since the 1990s, the region has had a drought. The drought has decreased the groundwater for people to drink. Less water limits the water that Mexico can share with the United States. This violates an agreement between the two countries.

Water Quality

Another major problem with the Rio Grande is water quality. The population of the region is growing rapidly and more clean drinking water is needed. The water is dirty because there are not enough facilities to clean the water. As a result, the bacteria in the water can make people sick. Low water quality affects poor people in the region like native communities, farmers and residents of the area.

Finding Solutions

The environmental problems of the Rio Grande involve both countries. Mexico and the United States are working together to find solutions.

TYPES OF WATER & WATER-RELATED PROBLEMS DISCUSSED IN THE ARTICLE:

- Drinking water [Agua potable] – Water that is safe for humans to drink.
- Groundwater [Agua subterranea] – Natural water that is under the ground or inside rocks, typically used for drinking purposes.
- Drought [Sequía] – When there is no rain and the land becomes very dry.
LEVELS 5 & 4

Modified – Homework Graphic Organizer

Name: ____________________________

From the reading about the Rio Grande, answer the questions below and in the chart.

Here is an EXAMPLE:

**MAIN ISSUES/PROBLEMS:** Lack of clean water.

<table>
<thead>
<tr>
<th>Region</th>
<th><strong>STAKEHOLDERS: People Involved, Affected, or Concerned</strong></th>
<th><strong>Describe the complexity of finding solutions</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Border Crossing at Ciudad Juarez</td>
<td>Residents, farmers, government representatives</td>
<td>As the population grows, both countries cannot build water treatment facilities fast enough to accommodate the population growth in the area.</td>
</tr>
</tbody>
</table>

**HOMEWORK:**

Main issues/problems: ____________________________________________

________________________________________________________________

________________________________________________________________

________________________________________________________________

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</table>
## LEVEL 3

**Modified – Homework Graphic Organizer**

**Name:**

**DIRECTIONS:** Read the *Rio Grande* article and complete the chart below. This will be your preparation for an in-class activity tomorrow.

Here is an **EXAMPLE:**

**MAIN ISSUE/PROBLEM(S):** Lack of parks in the area

<table>
<thead>
<tr>
<th>Region</th>
<th>STAKEHOLDERS Who is involved or affected?</th>
<th>Why are the solutions so complex?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ciudad Juarez</td>
<td>They want the government to create more parks.</td>
<td>The government does not have any money for parks. There is very little land available for recreational parks.</td>
</tr>
</tbody>
</table>

**HOMEWORK:**

**MAIN ISSUES/PROBLEM(S):**

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</tbody>
</table>

Why are the solutions to these problems so complex? The solutions are complex because...

**Possible Answers:**

- Both countries need to work together
- Both countries need to negotiate agreements
- Both countries require financial support (money) to create solutions
LEVEL 3

Modified – Homework Graphic Organizer

Name: ________________________________

DIRECTIONS: Read the *Rio Grande* article and complete the chart below. This will be your preparation for an in-class activity tomorrow.

Here is an EXAMPLE:

**MAIN ISSUE/PROBLEM(S):** Lack of parks in the area

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**HOMEWORK:**

**MAIN ISSUES/PROBLEM(S):**

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**Possible Answers:**

- Both countries need to work together
- Both countries need to negotiate agreements
- Both countries require financial support (money) to create solutions
NARRATIVE *(Blue indicates modifications for ELs or sheltered strategies)*

This lesson’s primary focus is to introduce key concepts related to the environmental challenges facing various areas located in the US/Mexico border region. The primary sheltered strategies used in this lesson are: 1) To give students voice and 2) make text comprehensible (and amplify text).

The lesson is introduced by showing three videos which provide a good overview of the border crossing region located between the El Paso and Ciudad Juarez. The first video is a 1-minute video which shows an aerial view of the US/Border region and provides a few stats about the area (the stats appear in writing right on the screen). The second and third video deal with the border crossing area of Ciudad Juarez and El Paso, Texas and provides a good overview of the primary environmental issues there. The topic of these two videos is the same as the reading text (scenario) for Activity 1, for Levels 3, 2&1 students. The videos are included to make the content of the lesson more comprehensible and to make the lesson more relevant. The videos also amplify the text for Levels 3, 2, and 1 by reviewing the same concepts in a visual format and hearing the oral discussion of the topic.

I have also included two optional tools that can be given to students with language proficiency levels of 1 and 2 for vocabulary development. These tools can be given to the students after the class has ended. They are: 1) List of Spanish/English Cognates showing academic vocabulary specifically taken from the lessons’ readings, and 2) Simple but Important Words is a chart that starts to teach lower level ELs about key words such as: *and, of, at, in, etc.* and what their function in the sentence is. I included these because of their high frequency in the language (both orally and in writing). ELs can benefit greatly from learning these simple words which appear in most of their content areas and in everyday language. Students can be encouraged to add new simple words into the lower part of the chart. The teacher may also update the top part of the handout with new “simple”
words each week, or whenever new units are introduced. I thought that both of these tools could give students a lot of mileage.

After watching the videos and processing the reading, the teacher can ask some **big questions** and get students to relate the content to complexity of these issues, especially when two large countries are involved (questions should assist students to think critically about how bordering countries have to work together to solve the types of environmental, political and social challenges presented).

During Activity 1, students will read scenarios about five different geographic areas on the border and the types of issues they face. Students will engage in independent reading, but will also **work in pairs** to process the reading. A **graphic organizer** for all levels is included to guide their discussion. Students are asked to compare and discuss their answers and **select a few confusing words** (these words will be used in **vocabulary development** activity in Lesson 3). Students are also encouraged to **discuss the “confusing” words** they have selected with each other to gather additional clues about their use and meaning.

Activity 2 has students create their own posters for an oral presentation of their findings about their specific scenarios. It is a good opportunities for students to practice summarizing and synthesizing skills. It also allows students to think critically for the part of the presentation, which asks them to think of the kinds of solution each country could bring to the table. The purpose of this activity is not only to engage them in critical thinking and prediction about possible solutions to complex problems, but to have students reflect on the difficulty of finding solutions to complex problems. This activity will **increase students’ voice** in the classroom and will give them the opportunity to **think/act as researchers**. It also **increases the amount of student talk time** in the classroom.
For homework, the students will read a new text about the Rio Grande River and answer some comprehension questions. A modified graphic organizer has been included for Levels 5&4, 3, 2 & 1. The GO starts to introduce the concepts of “stakeholders” and why finding solutions to the issues is a complex task. These issues will be further discussed in Lesson 3.
Lesson 3
### PERFORMANCE INDICATORS

**Unit:** The United States and Mexico: Working Together

**Lesson 3**

**Content Objectives**

1. Students will develop new academic vocabulary and actively engage in a discussion with peers and teacher about the meaning of unknown words they have selected from their Lesson 2 readings.

2. Students will start to examine the concept of “stakeholders” and advocate for their views in a value line activity.

**Language Objectives**

1. Students will interactively discuss the meaning of 10 new academic words based on personal selections of unknown words from their Lesson 2 readings.

2. In small groups, students will discuss a list of environmental/social/political issues and organize them on a value line. The guiding question is: *Which of these issues are the most detrimental to our planet?* The topics are pollution, overpopulation, industries, lack of jobs and car emissions.

<table>
<thead>
<tr>
<th>Domain/Topic</th>
<th>Level 5</th>
<th>Level 4</th>
<th>Level 3</th>
<th>Level 2</th>
<th>Level 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speaking/Listening &amp; Reading/Writing:</td>
<td>Using a 6-square graphic organizer students will thoroughly complete a vocabulary GO for at least 2 of the words reviewed. As an exit slip, students will complete a different 4-square vocabulary GO using 1 of the new words from the discussion.</td>
<td>Using a 6-square graphic organizer students will thoroughly complete a vocabulary GO for at least 2 of the words reviewed. As an exit slip, students will complete a different 4-square vocabulary GO using 1 new word from the discussion.</td>
<td>Using a modified 6-square graphic organizer students will complete most of a vocabulary GO for at least 2 of the words reviewed. As an exit slip, students will complete most parts of a different 4-square vocabulary GO using 1 new word from the discussion.</td>
<td>Using a modified 6-square graphic organizer students will complete some parts of a vocabulary GO for at least 2 of the words reviewed. As an exit slip, students will complete some parts of a different modified 4-square vocabulary GO using 1 new word from the discussion.</td>
<td>Using a modified 6-square graphic organizer and with teacher support students will complete some parts of a vocabulary GO for at least 1 of the words reviewed. Students may use their L1 for clarification. As an exit slip, students will complete some parts of a modified 4-square vocabulary GO using 1 new word from the discussion.</td>
</tr>
<tr>
<td>Domain/Topic</td>
<td>Level 5</td>
<td>Level 4</td>
<td>Level 3</td>
<td>Level 2</td>
<td>Level 1</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Speaking &amp; Listening:</td>
<td>Students will provide at least three robust oral arguments for their group’s selections on the value line.</td>
<td>Students will provide at least two solid arguments for their group’s selections on the value line.</td>
<td>Students will provide at least one argument for their group’s selections on the value line, or ask another group one question about their decisions.</td>
<td>Students will number the topics on a modified value line GO to gain some access to the discussion. Students will be asked to list the topics from 1 to 5 in order of importance (refer to guiding question in language objectives).</td>
<td>Students will number the topics on a modified value line GO to gain some access to the discussion. Students will be asked to list the topics from 1 to 5 in order of importance (refer to guiding question in language objectives).</td>
</tr>
<tr>
<td>2. In small groups, students will take a position about difficult issues during a value line activity.</td>
<td>Students will ask different clarifying questions to peers and demonstrate a deeper understanding of the issues.</td>
<td>Students will ask some questions to peers and demonstrate a good understanding of the issues.</td>
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</tbody>
</table>

With teacher support and guidance, the students will be encouraged to use their L1 for group discussion.
## FUNCTIONAL/NOTIONAL CHART
Proficiency Language Levels 1-3

### Lesson: #3
Unit: The United States and Mexico
Audience: High School/Community College

### OBJECTIVE 1

<table>
<thead>
<tr>
<th>Function</th>
<th>Situation</th>
<th>Expression</th>
<th>Words</th>
<th>Grammar</th>
<th>Activities</th>
</tr>
</thead>
</table>
| **Domains:** Speaking/Listening Writing/Reading **Interactive Discussion/Asking others for information** | Interactive small group and whole group discussion to discuss the use and meaning of 10 new vocabulary words from readings | **Level 3** | The word is used to describe _______  
The synonym of the word is _______  
I came up with this _______ to remember the word  
What is your word?  
I like this word because _______  
**Level 2 & 1** | 1. People, natural systems, social systems, a type of  
2. Sound, movement, song  
3. Is short, easy to remember, of the sound | Questions, phrases to agree and disagree, declarative sentences, negation, the use of because to connect ideas | Pair work and whole group discussion |

### OBJECTIVE 2

<table>
<thead>
<tr>
<th>Function</th>
<th>Situation</th>
<th>Expression</th>
<th>Words/Phrases</th>
<th>Grammar</th>
<th>Activities</th>
</tr>
</thead>
</table>
| **Domains:** Speaking/Listening Writing/Reading **Apply knowledge/draw on past experiences and take a position** | Discuss five difficult issues and build an argument for assigning values to the issues from 1 to 5 in order of importance (1 being the most detrimental, and 5 the least detrimental) | **Level 3:**  
______1 is the most _______2______ issue.  
______1______ is the least _______2______ issue.  
I agree/don’t agree with _______3______ | 1. Pollution, overpopulation, industries, lack of jobs, car emissions  
2. Detrimental, damaging  
3. You, her, him, your opinion, group 1 | Adjectives, nouns, pronouns, comparatives and superlatives | Whole Group Discussion |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Can you explain 4?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1 and 2:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 is very 5.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 is 6. important.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I agree with 3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you agree? 7.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think that 1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. That again, why you think that</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Harmful, bad</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. More, less, equally</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Yes, no, maybe</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Is the worst problem, is less important, is more important</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Lesson 3

Words in **bolded in blue** represent modifications for English learners (ELs). Modifications can include modified written materials, visual aids, sheltered content teaching strategies (teacher talk, pace of speech, repetition, questioning techniques, modeling, opportunities for students to negotiate meaning/answers/responses) and more.

**Note:** Page #s for worksheets, guides and graphic organizers relate to the pagination sequence of the specific Lesson (not the Unit).

**Activity 1**

<table>
<thead>
<tr>
<th>Duration:</th>
<th>25 minutes</th>
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</thead>
<tbody>
<tr>
<td>Grouping Type:</td>
<td>Small groups/pairs and whole group</td>
</tr>
<tr>
<td>Strategy:</td>
<td>Vocabulary Development</td>
</tr>
<tr>
<td>Primary Goal:</td>
<td>To introduce 10 new academic vocabulary related to the readings from Lesson 2</td>
</tr>
</tbody>
</table>

**Student Materials:** Modified 6-Corners Vocabulary GO for Levels 5 & 4 (Page 8)
Modified 6-Corners Vocabulary GO for Levels 3 (Page 9)
Modified 6-Corners Vocabulary GO for Levels 2&1 (Page 10)
Exit Vocabulary Slip/GO for Levels 5, 4 & 3 (Page 11)
Exit Vocabulary Slip/GO for Levels 2&1 (Page 12)

**Teacher Materials:** Board/Flip chart/chalk/different color markers
Visuals of different words from the readings which the students may have selected (you can try to peak at their choices during the Lesson 2, Activity 1 exercise, or just prepare many visuals for the anticipated vocabulary words).

**Materials to prepare ahead of time:** Photocopy 6-Square GOs (2 per student) and 4-Square Exit Slip GOs (1 copy per student).

Students will be asked to pull out their text with the circled vocabulary words (confusing words) from the previous Lesson 2.

As students start to call them out, the teacher will write the words on the board using large font [you can use different colors to code the words according to the level of the student who is calling the word out]. For example, for Level 5 students, I can use green to jot down their selections. This is simply a good tool for the teacher, so during discussion, she can tailor her questions and feedback accordingly.

The teacher hands out the vocabulary graphic organizers and explains the activity. Each student will select two of their favorite words from the list on the board. They will then go around the room and solicit help in figuring out definition/meaning of the word, finding synonyms for the word, and ideas on how to use it in a sentence. Student should ask 1 question per student and elicit the help of three students per word. There will be two rounds of questions.

To open the activity, the teacher will select a not very common word that is not on the vocabulary list on the board. She will model the activity, by writing the word on her GO and physically walking over to the first student or small groups of students and asking them if they know what the word means. She models the type of questions and negotiation of meaning that should take place during the task. Teacher then goes to the second set of students and ask them to help her think of a few synonyms for the word. The third group of students will be asked to help the teacher come up with a sound, movement or a song to remember the word (an association of some sort).
Students will have six minutes to complete the first round for their first vocabulary word. This means that students can spend two minutes per topic with each student they talk to (2 minutes to discuss the meaning, 2 minutes to find a word association and 2 minutes to find synonyms). This should be a fun and game-like activity.

After the first round, stop the students and direct them to return to their places. The teacher will facilitate a conversation about the various words and will try to involve as many students as possible. The teacher will give students plenty of wait time during her questioning session and make it fun and informal. Students should enjoy physically demonstrating the movement or sound/song they selected for their words. Also, teachers must not forget to write down abbreviated definitions on the board for Level 1&2 students to copy onto their GO. To change it up a bit, you can ask a few students with the same word to come up to the front of the room and make their movement/song at the same time. You should get a fun reaction from the other students. However, for the purpose of clarity, teacher should then ask each of the students to demonstrate their word associations individually a second time.

The teacher can switch the small group/pair activity to whole class discussion until most of the selected words have been covered. If more than a few words are left, then the teacher can assign them for homework or continue the activity next time.

Keep in mind that each round of small group/pair discussion will take about 6 minutes, so for this Lesson, I recommend doing two rounds (12 minutes for the small group/pair interactions and 8 minutes for whole group discussions).

At the end of Activity 1, the teacher will hand out a vocabulary exit slip and ask students to select one NEW word from the vocabulary list on the board and complete the exit slip before departing the classroom. The exit slip vocabulary asks similar question, but it includes only 4-corners and ask one new question: Describe what the word is NOT. This strategy helps to deepen the students’ vocabulary knowledge and helps to amplify the word’s meaning and use. This GO also includes a personal reaction part in which students can explain how they feel about the word (do they like it, do they not and why).

Collect the exit slips as student leave your room at the end of the Lesson.

**Activity 2**

| Duration: | 15 minutes |
| Grouping Type: | Small groups and whole group |
| Strategy: | Value Line Activity |
| Primary Goal: | To have students draw on knowledge they have learned, draw on past experiences and take a position about difficult topics. |

**Student Materials:**
- Stakeholders Thinking Guide for ALL Levels (Page 13)
- Oral Preparation Guide for Levels 5&4 (Page 15)
- Oral Preparation Guide for Levels 3 (Page 16)
- Oral Preparation Guide for Levels 2&1 (Page 17)

**Teacher Materials:**
- Value Line Team Name Badges for ALL Levels (Page 14)

**Materials to prepare ahead of time:** Organize sets of value line name badges and have them ready for each team.

Photocopy the *Stakeholders Thinking Guide* (1 per student) and the *Oral Preparation Guide* (1 per student)

Teacher will assign numbers from 1 to 5 and ask students to get into teams. There should be five students in each team.
Before getting started the teacher will make a connection to the homework assignment and review what being a stakeholder is? A stakeholder is someone who has an interest, a stake in an issue, something that is important to them. The teacher can then say, since we are all stakeholders of our planet, I think you are going to like the next activity.

In your grouping of teams, make sure that lower level ELs end up with Level 3 students who can assist them with this activity. The teacher should also scaffold for them as much as possible during the actual activity.

The teacher will ask one student from each team to come to the front of the room to pick up their name badges. Before students get started (or wear badges), teacher will give directions and state the goal of the activity: To organize the issues printed on the name badges from 1 to 5, according to the following guiding question.

**Guiding Question:** So, as stakeholders, which of these issues are the most detrimental (harmful) to our planet's. The teacher can draw an imaginary value line on the board and place the numbers as she explains the values of the numbers (1 = most detrimental and 5 = least detrimental).

The teacher hands out the *Stakeholders Thinking Guide* and gives students enough wait time for activity and question to sink in. At their tables, direct the students to re-read the question independently and start to arrange the issues on the value line. The same list of issues printed on the name badges appears at the top of the *Thinking Guide*.

After about 2 minutes, let the groups know they can start discussing the issues and in order to decide their placement on the value line (from 1 to 5). Remind students that they have to have good arguments for how they selected their lineup. Students should also be ready to answer questions from the teacher and other team members. Teachers will give groups a copy of the *Oral Preparation Guide*, so students can start to see how they can frame arguments and ask questions of other teams. The Guide provides some sentence frames they can use for this activity.

The room should get very loud. After five minutes of group discussion, you should ask teams to wear their value line name badges according to number they assigned to each issue. Before students get up, make sure you have assigned each team a physical area of the room where they will line up. All number 1s should be facing the same direction in the room to facilitate the discussion. Everyone should be able to see everyone from where they are standing. This will make the activity more meaningful.

As teams start to line up, you can ask for volunteers. Carefully listen to their presentations, explanations and rationales (teacher should prepare follow-up questions for each team). Let every team present before opening the floor for questions/discussion. Try as much as possible to limit the teacher’s talk and elicit as much interaction and questioning across teams.
**Activity 1 - LEVEL 5 & 4**

**6-SQUARE VOCABULARY GRAPHIC ORGANIZER FOR ACTIVITY #1**

Your Name: ________________________________

When I read the sentence that has this word, I think about: ____________________________________

<table>
<thead>
<tr>
<th>WHAT WORD?</th>
<th>MEANING - What does it mean? Ask your classmates:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
</tr>
<tr>
<td></td>
<td>3.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DRAW IT</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>USE IT - Write a sentence</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>ASSOCIATE SOMETHING with the word</th>
</tr>
</thead>
<tbody>
<tr>
<td>A song, a movement, a sound...</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SIMILAR WORDS (Synonyms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
</tr>
</tbody>
</table>

When I read the sentence that has this word, I think about: ____________________________________

<table>
<thead>
<tr>
<th>WHAT WORD?</th>
<th>MEANING - What does it mean? Ask your classmates:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
</tr>
<tr>
<td></td>
<td>3.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DRAW IT</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>USE IT - Write a sentence</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>ASSOCIATE SOMETHING with the word</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A song, a movement, a sound...)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SIMILAR WORDS (Synonyms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
</tr>
</tbody>
</table>
**Activity 1 - LEVEL 3**

**6-SQUARE VOCABULARY GRAPHIC ORGANIZER FOR ACTIVITY #1**

Your Name: ________________________________

When I read the sentence with this word, I think about: ________________________________

<table>
<thead>
<tr>
<th>WHAT WORD?</th>
<th>MEANING - What does it mean? Ask your classmates:</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRAW IT</td>
<td>WRITE A FEW SENTENCES</td>
</tr>
<tr>
<td>SHARE WITH THE GROUP</td>
<td>SIMILAR WORDS</td>
</tr>
<tr>
<td>(Just raise your hand)</td>
<td></td>
</tr>
</tbody>
</table>

When I read the sentence with this word, I think about: ________________________________

<table>
<thead>
<tr>
<th>WHAT WORD?</th>
<th>MEANING - What does it mean? Ask your classmates:</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRAW IT</td>
<td>WRITE A SENTENCE</td>
</tr>
<tr>
<td>SHARE WITH THE GROUP</td>
<td>SIMILAR WORDS</td>
</tr>
<tr>
<td>(Just raise your hand)</td>
<td></td>
</tr>
</tbody>
</table>
### Activity 1 - LEVEL 2 & 1

**6-SQUARE VOCABULARY GRAPHIC ORGANIZER**

Your Name: ________________________________

<table>
<thead>
<tr>
<th>WHAT WORD?</th>
<th>DEFINITION – <em>Copy from the board:</em></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DRAW IT</th>
<th>WRITE SENTENCES with the help of a partner</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SHARE WITH YOUR PARTNER</th>
<th>How do you write/say the word in your 1st language? Write the word in both languages...</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Pronounce the word, read your sentences, use your first language if you need to)</td>
<td></td>
</tr>
</tbody>
</table>
Activity 1 - LEVEL 5, 4 & 3
EXIT VOCABULARY SLIP

Your Name: ____________________________________________

What's the NEW WORD you learned today? ____________________________________________

<table>
<thead>
<tr>
<th>What is the meaning of the word?</th>
<th>Write one sentence:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Two Synonyms (words that are similar):</th>
<th>What the word is NOT:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EXAMPLES:</td>
</tr>
<tr>
<td></td>
<td>The word “fuzzy” does NOT mean that something is smooth.</td>
</tr>
<tr>
<td></td>
<td>Hot is not cold.</td>
</tr>
</tbody>
</table>

PERSONAL REACTION TO THE WORD

I LIKE THIS WORD BECAUSE
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

I DON'T LIKE THIS WORD BECAUSE
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
Activity 1 - LEVEL 2 & 1
EXIT VOCABULARY SLIP

My Name is: ____________________________________________

What's the NEW WORD? __________________________________

<table>
<thead>
<tr>
<th>Draw a picture or a symbol for the word</th>
<th>Write one sentence:</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Picture of a girl drawing" /></td>
<td></td>
</tr>
</tbody>
</table>

**Similar words (2):**
- Example:
  - New word is: Flower
  - Similar words: Rose and Tulip

**What the word is NOT:**
- Example:
  - The blue fish is NOT yellow.
  - The ______ [new word] is NOT _______________

**MY PERSONAL REACTION**

- [Thumbs up] Yes, I **like** the new word.
- [Thumbs down] No, I **do not like** the new word.
VALUE LINE ACTIVITY #2

STAKEHOLDERS THINKING GUIDE

ALL LEVELS

**Issues:** Pollution, overpopulation, industries, lack of jobs, and car emissions

**Guiding Question:** Which of these issues are the most detrimental (harmful) to the future of our planet’s future survival?

Assign a number to each issue on an imaginary value line from 1 to 5

\(1 = \text{most harmful} \) and \(5 = \text{least harmful}\)

1 ___________ 2 ___________ 3 ___________ 4 ___________ 5 ___________

1

Most detrimental

Most harmful

Very harmful

5

Least detrimental

Least harmful

Less harmful
VALUE LINE ACTIVITY #2 – Team Name Badges

ALL LEVELS

DIRECTIONS FOR TEACHER: Photocopy each square onto a different color paper (the goal is to have one color per issue—this should be consistent for each set of name badges). Cut the squares and use some sort of name badge so students can “wear” their choices and line up on their value line according to the number they have placed on their choices.

<table>
<thead>
<tr>
<th>POLLUTION</th>
<th>OVERPOPULATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>(Includes air, land, and water pollution)</em></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INDUSTRIES</th>
<th>LACK OF JOBS</th>
</tr>
</thead>
</table>

| CAR EMISSIONS | |
|---------------|
Level 5 & 4

ORAL PREPARATION GUIDE FOR STUDENTS

Value Line Activity #2

Guiding Question: Which of these issues are the most detrimental (dangerous) to our planet?

Arguments

1. We decided to place ____________ in the first position because...
2. We think that ____________ is the most important issue because....
3. We agreed that ____________ was the least important issue because....
4. We don’t agree with group 1 on this issue because ____________.

Clarification

(When you want to ask your classmates a question about their value line choices)

1. Can you explain why you think ____________ is more important than _________________.
2. Can you talk about why you placed ________________ in the last position.

PERSONAL THOUGHTS/QUESTIONS
What do you want to ask or comment on...

1. ________________
2. ________________
3. ________________
Level 3

ORAL PREPARATION GUIDE FOR STUDENTS

Value Line Activity #2

Guiding Question: Which of these problems are the most detrimental (harmful) to our planet?

Arguments

• We think that ____________ is the most important/least important issue because ________________________________.
• We don’t agree with group 1 on this issue because ____________ ________________________________.

Clarification

(When you want to ask your classmates a question about their value line choices)

• Can you explain why you think ____________ is more important than ________________________________.
• Why do you think ______________ is less important.

PERSONAL THOUGHTS/QUESTIONS

What do you want to ask or say...

1. ____________________________________________________________

2. ____________________________________________________________

3. ____________________________________________________________
ORAL GUIDE FOR STUDENTS

Value Line Activity #2

Guiding Question: Which of these problems are the most harmful to our planet?

Arguments/Argumentos

- I think that ___1______ is more important.
- I think that ___1______ is less important.
- I agree that___1______ ___2__________.

Clarification/Clarificacion

Practice saying these orally to another classmate or team...

- Can you explain your answer?
- Do you agree with their answers? ___ Yes or ___No

PERSONAL THOUGHTS/QUESTIONS

I think that:
1:__________________ is 2: ______________

WORD BANK

1: Pollution, extinction, war, overpopulation, poverty
2: ______ is the worst problem.
    ______ is not important.
    ______ is less important than 1:__________.
    ______ is more important than 1:__________.
Activity 2
The second activity for this lesson touches upon the concept of “stakeholder” and has students create a value line in teams about some of the environmental/social/political issues they have been reading and talking about during Lesson 1 and 2.

I included a Thinking Guide GO for students to think independently about the issues before engaging in team discussions. It is very important not to skip this step. These silent moments help the students to expand their analytical skills and shape their own views/formulate their own questions/opinions before engaging in conversation and negotiating meaning with peers. These silent spaces are also very important for ELs, since they require longer amounts of processing time for language and content.

In Activity 2, I also provide an Oral Prep. Guide for Levels 3, 2&1. The Guide provides sentence frames for argumentation, clarification and personal views about the issues being explored. These are helpful for these levels since many times students may feel that they don’t know what to say, how to get started or how to organize their ideas (orally or in writing). So, the Guide acts as a tool to help students maximize their time and engage with peers in the activity tasks.

The value line gives students the opportunity to expand their academic talk and think about larger issues (big questions). These oral instructional tasks are also excellent opportunities for teacher to gauge understanding and depth of knowledge. They also provide fertile ground for teacher to model language for oral and written production.
NARRATIVE

This lesson’s primary focus is to develop key academic vocabulary related to the previous readings and engage students in higher order thinking and argumentation skills. The primary sheltered strategies used in this lesson are: 1) To give students voice 2) Amplify previous texts/videos and 3) Develop student academic vocabulary in content area.

Activity 1
The primary tools used in this activity are a 6-corners graphic organizer and a 4-square exit slip graphic organizer. Both of these tools have been modified for Levels 5&4, 3, 2&1. I use graphics, photos, images and icons as much as possible to expand access to the information on these organizers. I also use underlining, bolding and different colors to code key words, important phrases, etc.

During the classroom facilitation and discussion, teacher should slow down her speech and emphasize sounds of the new vocabulary words to build ELs phonetic awareness and listening abilities. The teacher should also have different students say the same words aloud, so ELs can hear the different variations of the English language. This activity also gives room for creative input and allows students to add sound, a physical movement or a song to help cement the new vocabulary words in their working memory. Make sure ELs are included in these sort of fun activities and encourage lower level ELs to say the word in their L1. It is also fun to hear the English word in another language, and have the English speakers repeat the sound (and think of a movement to help them remember the pronunciation). This is a good opportunity for English speakers to experience what the ELs are all experiencing during their linguistic development. The exit slip also includes a personal connection question as a way to increase the input of their ideas into the curriculum and expand their voices in the classroom.
Checklists
## GRAMMAR AND FUNCTIONS CHECKLIST

<table>
<thead>
<tr>
<th>Grammar</th>
<th>Lesson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present tense</td>
<td>1, 2</td>
</tr>
<tr>
<td>Past tense</td>
<td>1, 2</td>
</tr>
<tr>
<td>Additive conjunction</td>
<td>1, 2</td>
</tr>
<tr>
<td>Nominalization</td>
<td>1, 2</td>
</tr>
<tr>
<td>Adjectives</td>
<td>1, 3</td>
</tr>
<tr>
<td>Articles</td>
<td>1, 2</td>
</tr>
<tr>
<td>Possessives</td>
<td>1, 2</td>
</tr>
<tr>
<td>Proper nouns</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td>Capitalization</td>
<td>1</td>
</tr>
<tr>
<td>Compound sentences</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td>Prepositions</td>
<td>1</td>
</tr>
<tr>
<td>Directional words</td>
<td>1</td>
</tr>
<tr>
<td>Verb to be</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td>Articles</td>
<td>2</td>
</tr>
<tr>
<td>Evaluative language</td>
<td>2</td>
</tr>
<tr>
<td>Spanish/English cognates</td>
<td>2, 3</td>
</tr>
<tr>
<td>Possessives</td>
<td>2</td>
</tr>
<tr>
<td>Adjectival phrases</td>
<td>2</td>
</tr>
<tr>
<td>Imperative phrases</td>
<td>2</td>
</tr>
<tr>
<td>Questions</td>
<td>3</td>
</tr>
<tr>
<td>Phrases to agree and disagree</td>
<td>3</td>
</tr>
<tr>
<td>Declarative sentences</td>
<td>3</td>
</tr>
<tr>
<td>The use of “because”</td>
<td>3</td>
</tr>
<tr>
<td>Pronouns</td>
<td>3</td>
</tr>
<tr>
<td>Comparatives and superlatives</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Functions</th>
<th>Lesson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify/Classify</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td>Locate</td>
<td>1</td>
</tr>
<tr>
<td>Describe</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td>Provide Examples</td>
<td>2</td>
</tr>
<tr>
<td>Synthesize/Summarize</td>
<td>2</td>
</tr>
<tr>
<td>Predict</td>
<td>3</td>
</tr>
<tr>
<td>Brainstorm</td>
<td>3</td>
</tr>
<tr>
<td>Formulate original ideas</td>
<td>3</td>
</tr>
<tr>
<td>Explain</td>
<td>3</td>
</tr>
<tr>
<td>Discuss</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td>Asking others for information</td>
<td>3</td>
</tr>
<tr>
<td>Apply Knowledge</td>
<td>3</td>
</tr>
<tr>
<td>Draw on past experiences</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td>Take a position</td>
<td>3</td>
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</tbody>
</table>
Write the page numbers and any other identifying features to identify those parts of your lessons that employ the following strategies.

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<thead>
<tr>
<th>SHELTERED STRATEGIES</th>
<th>Lesson 1</th>
<th>Lesson 2</th>
<th>Lesson 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Contextualize Lesson</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. A. Build and Activate Background Knowledge</td>
<td>9-10, 12</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>I.B. Develop Vocabulary</td>
<td>11, 13-15</td>
<td>7, 18, 20</td>
<td>5, 8-12</td>
</tr>
<tr>
<td>I. C. Use extensive Visuals, Realia, Manipulatives, &amp; Gestures</td>
<td>16-17</td>
<td>6-8</td>
<td>10, 12, 17</td>
</tr>
<tr>
<td>I. D. Model (Instructions, Processes)</td>
<td>6, 7</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>I. E. Create Opportunities To Negotiate Meaning</td>
<td>6, 7, 8</td>
<td>6-8</td>
<td>5-7, 13</td>
</tr>
<tr>
<td>II. Make Text Comprehensible</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>II.A. Intentional Use of Graphic Organizers</td>
<td>9-15</td>
<td>15-17, 20, 21, 25-27</td>
<td>8-13, 15-17</td>
</tr>
<tr>
<td>II.B. Modify Written Text</td>
<td>11</td>
<td>13-14</td>
<td></td>
</tr>
<tr>
<td>II.C. Amplify Number of Activities per Text</td>
<td></td>
<td></td>
<td>6-7, 13-17</td>
</tr>
<tr>
<td>III. Make Talk Comprehensible</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>III.A. Pace Teacher’s Speech</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III.B. Use of Listening Guides</td>
<td>14, 15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III.C. Use of Word Walls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>III.D. Frame Main Ideas</td>
<td>7</td>
<td>21</td>
<td>15-17</td>
</tr>
<tr>
<td>III.E. Check for Understanding</td>
<td>8</td>
<td>15-17, 21, 25-27</td>
<td>5-7</td>
</tr>
<tr>
<td>IV. Change Traditional Classroom Talk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV.A. Use Teacher Question and Response Strategies</td>
<td>6-8</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>IV.B. Practice Instructional Conversations</td>
<td>6-8</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>V. Engage at Appropriate Language Proficiency Levels</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V.A. Vary Question Techniques based on Student’s Language Proficiency level—in conversations, activities, and assessments</td>
<td>11, 13</td>
<td>15-17, 25-27</td>
<td>5-7</td>
</tr>
<tr>
<td>VI. Give Students Voice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VI. A. Challenge students to produce extended academic talk</td>
<td>6-7, 21</td>
<td>7, 15-17</td>
<td></td>
</tr>
<tr>
<td>VI. B. Model Language for Oral and Written Production</td>
<td>6-8</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>VI. C Use Group/Pr. Work to Elicit Student Talk; Students as Researchers</td>
<td>6-8</td>
<td>7, 21</td>
<td>5-7</td>
</tr>
<tr>
<td>VI. D. Respond to Student’s Voice – Writing and Error Correction</td>
<td></td>
<td>7, 21, 29</td>
<td>7</td>
</tr>
</tbody>
</table>
Original Lessons
LESSON 1
The Tijuana River: A Shared Resource

Problems surrounding the Tijuana River make the health of the watershed an environmental issue requiring international attention. In this lesson, students apply what they know about issues affecting the relations between the United States and Mexico, in order to focus on those that are environmental in nature.

Students begin the lesson by viewing a map of the border region and listing problems and issues confronting the two countries that have links to economics, politics, and immigration. The students record their ideas and categorize them. Their work serves as the basis for a class discussion about the "bigger picture" regarding the relations between the United States and Mexico. It also gives the teacher insight into students' prior knowledge and opinions about these issues, and this area of the world.

The class then reads about the natural and human social systems in the Tijuana River watershed. Following the reading, they organize their thoughts and discuss the problems and issues presented in the article. Students come to understand that the health of the Tijuana River is one of the environmental issues currently affecting the relationship between the United States and Mexico.

Background
The southern portion of the State of California and the entire Mexican state of Baja California lie in a coastal desert ecosystem where the human population has rapidly increased over the last 20 years, making the availability and quality
Learning Objectives

Identify key environmental issues that influence the relations between the United States and Mexico.

Provide examples of environmental impacts that are not contained by the political boundaries between the United States and Mexico.

of fresh water major issues. Some of the largest cities in these states—San Diego and Tijuana—occupy an increasing amount of this desert area and must import most of their water from distant sources. Although both share their names with nearby rivers, neither river serves as a source of water for either city. Instead, the cities have historically used these rivers for stormwater and wastewater management.

The quality and quantity of the water in the Tijuana and San Diego rivers have changed as the cities have grown. Migrant populations and immigrant groups on both sides of the border put additional pressures on the permanent populations and resources of these areas. Once seasonal, these rivers now run year-round with water draining from inland areas to the ocean. Where the quantity of water overall has increased in the rivers, the quality of the water has decreased over time. Urbanization and industrialization in both cities over the past decade have led directly to this decline in water quality. Poor water quality has directly affected the health of the riparian and coastal ecosystems in the border region of both states, not to mention the public's health.

San Diego has failed to meet the federal Clean Water Act standards for more than two decades, as its aging sewage system, under pressure from population growth, frequently spills raw sewage into local streams and the Pacific Ocean. At the same time, Tijuana's growing population is faced with increasing residential and industrial areas that operate without sufficient waste management and treatment facilities, and end up dumping their solid waste and sewage directly into the Tijuana River. The mismanagement of waste and sewage on both sides of the border has affected farmland in the entire river valley, making most of it unsuitable for agricultural production. The sewage in the river makes its way to the coast, continually contaminating both nations' once pristine beaches, estuaries, and coastal waters.

Key Vocabulary

Immigration: The process by which people travel to a new country or region in order to settle there.

Industrialization: 1. Transformation of an economy from production of goods by human and animal labor to production by powered machines. 2. The changing of an area by creating industry, such as factories and power plants.

Infrastructure: The basic facilities and systems needed for a community, such as roads, utilities, and communication systems.

Issue: A subject of discussion.

Maquiladora: A foreign-owned factory in Mexico, often along the U.S.–Mexico border, that imports materials and equipment from the U.S. and then sells the products in the U.S.

Problem: A situation that can cause difficulties to the continued functioning of humans, social systems, or natural systems.
Summary of Activities

Students brainstorm problems and issues that influence relations between the United States and Mexico. They read and discuss an article about the environmental issues involving the Tijuana River watershed and consider how these issues influence life in the border region.

Instructional Support
See Extensions & Unit Resources, pages 32–33.

Students should know:
- Living things cause changes in the environment in which they live: some of these changes are detrimental to the organism or other organisms, and some are beneficial.
- Rivers and streams are dynamic systems that erode, transport sediment, change course, and flood their banks in natural and recurring patterns.
- The location and effects of urbanization, renewed immigration, and industrialization in America following the Industrial Revolution (for example, the effects on the social fabric of cities, wealth and economic opportunity, the conservation movement).
- The growth of population, rural to urban migration, and the growth of cities are associated with the Industrial Revolution.
- The general geography of North America and the location of the United States and Mexico.

Prerequisite Knowledge

Gather and prepare Materials Needed.

Gather and prepare A-V Materials

Prepare a Problems and Issues Chart:
- On chart paper, make a two-column chart with "Problems" at the top of one column and "Issues" at the top of the other. The columns should each be wide enough to fit a 3" x 3" (or larger) self-adhesive note.
- Post the Problems and Issues Chart in a location visible to all students and accessible during the Lesson.
### Lesson 1

<table>
<thead>
<tr>
<th>Materials Needed</th>
<th>Audio-Visual Materials</th>
<th>Duration</th>
</tr>
</thead>
</table>

**Activity Supplies:**
- self-adhesive notes (3'' x 3'' or larger): three to five per student

**A-V Equipment:**
- projection system, screen

**Class Supplies:**
- chart paper
- colored markers
- pencils or pens
- tape or thumbtacks

**Student Edition:**

**Student Workbook:**
- Key Unit Vocabulary, pages 2–3
- Notes on the Tijuana River, pages 4–5

**Student Maps:**
- United States–Mexico Border Region, provided separately

**Visual Aids:**
- United States–Mexico Border Region, Visual Aid #1

**Preparation Time**
- 20 min.

**Instructional Time**
- 50 min.

**Safety Notes**
- None

I have these, but did not include
Vocabulary Development

Distribute a Student Workbook to each student and use the Key Unit Vocabulary (Student Workbook, pages 2-3) to introduce new words to students as appropriate. This vocabulary will be used throughout the unit.

Step 1

Ask students to explain the difference between an “issue” and a “problem.” (Answers will vary.) Use students’ input to help them understand that a “problem” is a situation that is difficult, or that causes difficulties. People can solve a problem. An “issue,” in contrast, is a subject of discussion. Issues arise when people disagree about the ways to solve a problem. People can discuss and resolve issues. Ask the class to give examples of problems and issues. (Problem—a budget deficit, issue—government spending; problem—students not graduating, issue—education; problem—water pollution, issue—water quality)

Step 2

Distribute a United States–Mexico Border Region student map to each student. Project United States–Mexico Border Region (Visual Aid #1) and ask students to describe what part of the world is shown on the map. (The southern part of the United States that touches the northern part of Mexico; the U.S.–Mexico border region). Tell students that the border between the U.S. and Mexico is 1,956 miles long, from the Pacific Ocean to the Gulf of Mexico, and 124 miles wide all along that distance. Explain that it is one of the most active border areas in the world, and has been ever since the United States and Mexico formed the border following the Mexican-American War in 1848. Ask students to look at the map and note information related to natural systems and social systems in the border region. (Natural systems: ecosystems, rivers, mountains, oceans, seas; Social systems: highways, the border, cities, states)

Give each student three self-adhesive notes. Direct students to think about three things that they know about the border region that are not displayed on the map and write each item on a separate self-adhesive note. Give students 10 minutes to complete this task.

Step 3

Direct each student to choose one of the items they have written on the self-adhesive notes and decide if the item is an issue or a problem in the border region. Have students place their sticky notes in the appropriate column of the Problems and Issues Chart.

When each student has placed a sticky note on the chart, read off the items posted on the chart and let the class confirm whether each is in the correct column, “Problem” or “Issue.” Move topics from one column to another to correct any that are misplaced. If the same topic appears on multiple sticky notes, place those notes one on top of the other in the same column. (Answers will vary, depending on students’ knowledge of the border region, but the items on the chart should include: Issues: immigration, public health, national security, population growth; Problems: illegal immigration, crime, pollution, poverty)

Step 4

Choose one of the following options:

If students did not list the environment as an issue in the border region or mention pollution as a problem, ask the class if they think environmental problems affect life in the border region, or if the environment is an issue that affects the relationship between the United States and Mexico. (Yes) If no sticky notes reflecting the environment appear under the “Issues” column, add one. Tell students that over the next several lessons, they will learn about environmental issues that are associated with the border region and affect U.S.–Mexico relations.
If students listed the environment as an issue, point it out to students and tell them that over the next several lessons, they will learn about the environmental issues that influence U.S.–Mexico relations.

If students did not list the environment as an issue, but placed topics under the "Problem" column that suggest they were thinking about it (for example, they might have mentioned pollution, trash, smog/smoke, sewage), write "environment" on a sticky note and add it to the "Issue" column. Point out to students that problems like pollution, trash, and sewage relate to the issue of the environment. Tell them that over the next several lessons, they will learn about the environmental issues that are associated with the border region and affect U.S.–Mexico relations.

**Step 5**

Distribute a **Student Edition** to each student. Tell students to turn to **California Connections: The Tijuana River, Part 1 A Shared Resource** (Student Edition, pages 2–5) and **Notes on the Tijuana River** (Student Workbook, pages 4–5).

As a class, read **California Connections: The Tijuana River, Part 1 A Shared Resource**. After reading the article, have students complete the concept map on the **Notes on the Tijuana River** individually. Direct students to wait to answer the questions on page 2 until after the class has discussed the article.

**Step 6**

When students have completed their concept maps, lead a class discussion about the article using the following questions as the starting point:

- What are the main problems mentioned in the article? (*The Tijuana River is highly polluted with raw sewage, industrial waste, and garbage; this pollution influences the people and natural environment in the area. Urbanization, industrialization, and population growth cause this pollution.*)

- How are these problems connected to the environment? (*The sewage and other byproducts in the water, as well as erosion from new housing, influence the Tijuana River Estuary and change the coastal systems.*)

- How are these problems connected to the economy? (*Some reasons for the reduction in water quality have to do with the economy. The infrastructure for wastewater treatment and the management of industrial wastes in the area is either non-existent or limited. Improving the infrastructure would cost money. The maquiladoras are a source of employment for Mexicans, and they also contribute to the economy in the United States. It may seem to be cheaper in the short term to dump industrial waste into the soil and water rather than create new wastewater treatment facilities.*)

- How are these problems connected to politics? (*These problems require both countries to communicate and discuss the possible solutions and economic consequences.*)

- How are these problems related to immigration? (*Many people have come to the border region to work in the maquiladoras or other industries. Some come to the area to immigrate to the other country. Many of these people live in poor housing with no infrastructure. This puts a burden on the land and waterways.*)

**Step 7**

Direct students to answer the questions on page 2 of **Notes on the Tijuana River**, using their concept maps on page 1 and the information in **California Connections: The Tijuana River, Part 1 A Shared Resource**.

Gather **Student Editions** and student maps.

Collect **Student Workbooks** and use **Notes on the Tijuana River** for assessment.
Lesson Assessment

Description

Notes on the Tijuana River (Student Workbook, pages 4–5) assesses students' achievement of the learning objectives: "Identify key environmental issues that influence the relations between the United States and Mexico" and "Provide examples of environmental impacts that are not contained by the political boundaries between the United States and Mexico." To demonstrate what they have learned, students complete a concept map and provide written responses to questions.

Suggested Scoring

An Answer Key and Sample Answers for Notes on the Tijuana River are provided on pages 41–42. There are 20 total points possible.
The Tijuana River: Part 1
A Shared Resource

If you walk along the sand at Imperial Beach, you will see gulls and sunbathers, you are likely to see empty beverage containers, bleach bottles, plastic toys, tires, oil containers, or even a refrigerator door. You might also see a yellow sign that says Keep Out! Sewage Contaminated Water. Exposure May Cause Illness.

The San Diego County Department of Environmental Health closed the beach at the mouth of the Tijuana River for 198 days in 2006. Environmental problems cross political borders at this special place where land, river, and ocean merge with two socially and economically different countries.

The Tijuana River is a transboundary watershed, with drainages running across the border between United States and Mexico. Most of the river flows through Mexico. There it passes the cities of Tecate and Tijuana. It enters the United States 3 miles (4.8 kilometers) before draining into the Pacific Ocean. The river meets the sea at the protected Tijuana River National Estuarine Research Reserve. The Reserve lies at the meeting point of terrestrial, freshwater, and marine habitats. It provides refuge for several threatened and endangered

Warning sign, Imperial Beach, California
species. Years ago, hiking upstream from the reserve, you might have been able to see dolphins and deer in the same day. However, those mammals no longer live in the estuary.

Human Activity

Today, human activities threaten the Tijuana River watershed. The area is designated as a biodiversity hotspot and a “Wetland of International Importance.” It is home to many threatened species. Experts think that Tijuana’s current population of 1.5 million will double by 2020. San Diego’s population will increase by 1.3 million. This rapid growth means that more people will need homes, water, and places to dispose of wastes. Rapid growth is a particular problem for Mexico because it lacks infrastructure, like facilities for wastewater.

Citizens of both countries move to the border region seeking work. Migration to the region has grown since the mid-1990s. At that time, the new North American Free Trade Agreement (NAFTA) eased trade restrictions between United States and Mexico. NAFTA led to an explosion in the number of maquiladoras. Maquiladoras are assembly plants. Many of them are American-owned, but they operate on the Mexican side of the border. There, the owners take advantage of Mexico’s lower wages and more abundant labor supply. They also take advantage of less strict enforcement of environmental regulations. Most of the profits from the maquiladoras flow back across the border to American and multinational corporations.

Problems and Issues

Money is not the only thing that flows across the border. Litter and the byproducts of manufacturing flow into the region.
river. Mexico’s infrastructure, funding, and environmental regulations are not as strong as those in the U.S. and sometimes cannot effectively deal with the industrial waste and toxic chemicals dumped on soil and into waterways. These toxins travel downstream. They pollute both surface water and groundwater. They also pollute the coastal waters of the Pacific Ocean. Scientists have found that the river is contaminated with sewage, sediment, trash, nutrients, pesticides, and heavy metals. Each of these having the potential to affect the health of humans, as well as other animals and plants.

The growing need for housing is another problem caused by economic growth in the region. Many housing developments have been built on crumbling hillsides above the river. Their construction has removed the vegetation that holds the hillsides in place. When rain falls, water runs off the concrete, rather than soaking into the ground. The water erodes the hillsides and carries soil into the river. This sediment pulses into the river with each storm, choking the channel and threatening to bury the estuary in a layer of silt.

Sediment is not the only thing flushed downriver during a storm. Tijuana lacks adequate sewage treatment. With each rainstorm, a million gallons of raw sewage overflow downstream from Tijuana. This enormous load of organic waste poses a human health problem. The torrents also
sweep recyclable materials, plastics, trash, and even discarded appliances into the river.

Debris overwhelms the border fence. The drainage gates in Smuggler's Gulch and Goat Canyon are open all the time. This allows the current to carry debris downstream, where it pollutes the estuary and litters the beach. Once it flows out to sea, it causes even more problems. The water and sediment that flow into Goat Canyon are caught by large basins at the head of the canyon on the U.S. side. The problems do not stem only from Mexico. Wastewater infrastructure in San Diego is old and in disrepair. Population growth in San Diego further stresses an overburdened system.

Environmental changes on one side of the border do not stay there. The river flows across the border without regard to local infrastructures, and environmental and economic laws. What enters the river upstream always flows downstream. Because of this, neither Mexico nor the United States can solve these problems without working together.
**Allocation:** The quantity of something, such as water, that is distributed to areas, communities, groups, or individuals according to a specific plan and for a specific purpose.

**Aquifer:** An underground layer of rock or sediment that holds usable amounts of groundwater.

**Convention:** An agreement between nations.

**Emissions:** The release of matter or energy into the environment including gases, particulates, noise, vibrations, light, heat, radiation, and odors.

**Environmental justice:** Respecting and valuing every individual and community by conducting public health and environmental protection programs and policies in a way that promotes equity and fair treatment for all, regardless of race, age, culture, income, or geographic location.

**Habitat restoration:** The process of returning a degraded or former habitat to a healthy, self-sustaining condition that resembles as closely as possible its pre-disturbed state.

**Immigration:** The process by which people travel to a new country or region in order to settle there.

**Indigenous:** Originating in a particular region or country.

**Industrialization:** 1. Transformation of an economy from production of goods by human and animal labor to production by powered machines. 2. The changing of an area by creating industry, such as factories and power plants.

**Infrastructure:** The basic facilities and systems needed for a community, such as roads, utilities, and communication systems.

**Issue:** A subject of discussion.

**Lead:** A heavy, soft, bluish gray metallic element that is highly toxic.

**Maquiladora:** A foreign-owned factory in Mexico, often along the U.S.–Mexico border, that imports materials and equipment from the U.S. and then sells the products in the U.S.

**Median household income:** A statistical value that divides household income into two segments: one half earning less than the median household income and the other half earning more.

**Municipal:** Relating to a town, city, or region that has its own local government.

**Outreach:** Efforts to provide information or services to individuals, groups, or other stakeholders.

**Particulate matter:** Tiny particles of liquid and solids suspended in the atmosphere.

**Population density:** The number of individuals of a certain species per unit of land, such as the number of people per square mile or square kilometer.

**Poverty rate:** An estimated percentage of people lacking the money they need to meet their basic needs.

**Problem:** A situation that can cause difficulties to the continued functioning of humans, social systems, or natural systems.

**Salinity:** The total amount of salts dissolved in water; sea water averages 35 parts per thousand.

**Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT):** The Mexican government agency that is responsible for the protection, restoration, and preservation of the natural environment.

**Stakeholders:** Individuals, groups, or organizations that have an interest in, or concern about, a particular action or decision.
**Stewardship:** Careful and responsible management of land, air, water, and biodiversity to ensure healthy and fully functioning ecosystems.

**Transient:** (adj.) Something that is temporary or just passing through, such as a hotel guest.

**Treaty:** A legally binding agreement between two or more nations that creates or restricts rights and responsibilities.

**U.S. Environmental Protection Agency (U.S. EPA):** The U.S. government agency that implements federal laws designed to promote public health by protecting air, water, and soil from pollution.

**Watershed:** The land area that drains water into a particular body of water, such as a stream, river, lake, or ocean.
Notes on the Tijuana River
Lesson 1 | page 1 of 2

Name: ____________________________

Instructions: Identify and summarize the issue in the top circle. Then describe the possible causes and the problem in the other circles.

Issue summary:

Possible causes: Tijuana River

Problem:
Notes on the Tijuana River
Lesson 1 | page 2 of 2

Name: __________________________

Instructions: Answer the following questions using information from *California Connections: The Tijuana River, Part 1* and the class discussion. (5 points each)

1. Why are the problems in the Tijuana River watershed important to both the United States and Mexico?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

2. Why do the problems exist? What or who is/are directly involved in the problems?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

3. How is the issue of industrialization related to problems in the Tijuana River watershed?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

4. How is issue of immigration related to problems in the Tijuana River watershed?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
LESSON 2
Life on the Border

This lesson is focused on broadening students' understanding of the scope of environmental issues that affect U.S.–Mexico relations and examining the effects of these issues on international politics.

Students work with a partner to read and discuss various locations, from cities, such as Ciudad Juárez (see-oo-dahd wahr-ez), to open areas like Big Bend National Park, that display a variety of environmental problems found in the U.S.–Mexico border region. Using scenario cards and a map of the region, students locate where the scenarios take place, explain the specifics of the problems involved in the scenarios, and brainstorm their possible effects on the relations between the United States and Mexico.

The students examine the real circumstances behind each of the scenarios they studied. They also review historical information on how environmental issues have influenced the relationship between the United States and Mexico. To conclude the lesson, the students assess their analyses of each scenario in light of the surrounding environmental, social, political, and economic realities.
Learning Objectives

Identify key environmental issues that influence the relations between the United States and Mexico.

Provide examples of environmental impacts that are not contained by the political boundaries between the United States and Mexico.

Background

The U.S.–Mexico border region is a diverse area with climates ranging from desert to subtropical and economies supported by agriculture, industry, and tourism. The area is comprised of several major watersheds, vital to the people, economies, and natural systems throughout the region.

The border region has seen dramatic economic growth over the past 50 years. Despite the amount of money invested in the cities and industry in the border region, the region remains generally poor. Among the many reasons for this poverty is one on which most people agree: population growth in the area has outstripped the region’s ability to provide necessary quantities of some basic natural resources: water, air, and soil. Population growth has also outpaced the development of infrastructure to prevent degradation of water, soil, and air quality.

Water quality and allocation top the list of environmental concerns in the border region. Agricultural runoff containing pesticides and fertilizers, toxic-laden industrial runoff, and raw sewage end up in the region’s groundwater. This contamination influences the quality of freshwater supplies and the overall environmental health of the region. These same byproducts of human industry and communities also affect the soil. Mining in the border region has resulted in soil contamination as waste products (tailing) from the extraction and processing of specific ores are not disposed of properly. Their toxic components have found their way into the water sources that support human communities, as well as natural systems.

The rise in population and industry in the border region has also influenced air resources. The flow of people and products between the two countries, together with industrial emissions, continues to detract from air quality.

Local communities, indigenous groups, non-governmental organizations (NGOs), and federal agencies are starting to collaborate to address these issues, yet social, political, and economic differences between the two nations make this process difficult.

Key Vocabulary

**Aquifer**: An underground layer of rock or sediment that holds usable amounts of groundwater.

**Emissions**: The release of matter or energy into the environment including gases, particulates, noise, vibrations, light, heat, radiation, and odors.

**Lead**: A heavy, soft, bluish gray metallic element that is highly toxic.

**Particulate matter**: Tiny particles of liquid and solids suspended in the atmosphere.

**Salinity**: The total amount of salts dissolved in water; sea water averages 35 parts per thousand.

**Watershed**: The land area that drains water into a particular body of water, such as a stream, river, lake, or ocean.
Summary of Activities

Students read about environmental problems in the border region; locate on a map the areas where these problems are reported; and analyze how these problems are connected. Students discuss how environmental problems influence the relationship between the United States and Mexico.

Instructional Support

See Extensions & Unit Resources, pages 32-33.

Prerequisite Knowledge

Students should know:
- living things cause changes in the environment in which they live: some of these changes are detrimental to the organism or other organisms, and some are beneficial.
- the general characteristics of the world’s biomes.
- the location and effects of urbanization, renewed immigration, and industrialization in America following the Industrial Revolution (for example, the effects on the social fabric of cities, wealth and economic opportunity, the conservation movement).
- the growth of population, rural to urban migration, and the growth of cities are associated with the Industrial Revolution.
- the general geography of North America and the location of the “border region” of the United States and Mexico.

Advanced Preparation

Gather and prepare Materials Needed.

Gather and prepare A-V Materials:
- Gather from previous lessons:
  - United States–Mexico Border Region student maps from Lesson 1
<table>
<thead>
<tr>
<th>Materials Needed</th>
<th>Audio-Visual Materials</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Supplies:</td>
<td>No additional Audio-Visual Materials are required for this lesson.</td>
<td></td>
</tr>
<tr>
<td>- pencils or pens</td>
<td>Preparation Time 20 min. Instructional Time 50 min.</td>
<td></td>
</tr>
<tr>
<td>Student Edition:</td>
<td>Safety Notes None</td>
<td></td>
</tr>
<tr>
<td>- Environmental Scenarios, pages 6-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- The Reality, pages 9-10</td>
<td></td>
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</tbody>
</table>
Vocabulary Development

Redistribute the students’ individual Student Workbooks and use the Key Unit Vocabulary to introduce new words to students as appropriate.

Step 1

Ask students to review the problems and issues in the border region, or specifically in the Tijuana River watershed, that they learned about in the last lesson. List some of these on the board.

Direct students to choose a partner to work with during this lesson and have the student pairs sit together. Distribute a Student Edition and a United States–Mexico Border Region student map to each student. Tell students to turn to What Are the Issues? (Student Workbook, pages 6–9) and Environmental Scenarios (Student Edition, pages 6–8).

Explain to students that they will read scenarios involving environmental issues in four areas of the border region. Environmental Scenarios describes specific problems that have been reported in locations in both Mexico and the United States. Direct students to read each of the Environmental Scenarios with their partner, locate the area referred to in the scenario on the United States–Mexico Border Region student map, and use the questions on What Are the Issues? to analyze why that specific environmental problem exists. Students should complete their individual copies of What Are the Issues? while doing this. Give students 20 minutes to complete the task.

Step 2

When time is up, regroup the class and ask students:

- How might these environmental problems influence the relationship between the United States and Mexico? (Populations on both sides of the border influence and are influenced by these environmental issues; thus, in order to find effective solutions, both countries need to work together.)
- How might these environmental problems influence the economy? (In a region that is already relatively poor, the quality of the water, air, and soil has a major influence on the economy. If the soil is contaminated with lead and arsenic, farming will not be as productive. If clean water is not available in the colonias, then they must spend money trucking in clean water. If water’s availability is limited along the Colorado River, then agricultural production will decrease.)
- How might these environmental problems influence politics? (Many of these environmental issues require local, state, and federal governments to work together to manage natural resources. Since many of these resources are scarce, their distribution and management can cause conflict, thereby influencing politics.)

Step 3

Tell students to turn to The Reality (Student Edition, pages 9–10). Explain that this reading describes the influence that these environmental issues have on the relations between the United States and Mexico. As a class, read through each section of The Reality, paying special attention to the role of the United States and Mexican governments in each.

Step 4

Gather Student Editions and student maps. Collect Student Workbooks and use What Are the Issues? for assessment.
Lesson Assessment

Description

What Are the Issues? (Student Workbook, pages 6–9) assesses students' achievement of the learning objectives: "Identify key environmental issues that influence the relations between the United States and Mexico" and "Provide examples of environmental impacts that are not contained by the political boundaries between the United States and Mexico." To demonstrate what they have learned, students provide written responses to questions.

Suggested Scoring

An Answer Key and Sample Answers for What Are the Issues? are provided on pages 54–57. There are 40 total points possible.
Name: ____________________________

Instructions: Read each scenario, locate the area discussed on the United States–Mexico Border Region student map and discuss the scenario with your partner. Then answer the following questions. (2 points each item)

The New River
1. Describe the location, climate, and physical geography of the New River.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

2. What is the environmental problem? What is the issue?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

3. What are the causes of the environmental problem?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

4. Who or what does the environmental problem affect?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Big Bend National Park
1. Describe the location, climate, and physical geography of Big Bend National Park.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

2. What is the environmental problem? What is the issue?

________________________________________________________________________

________________________________________________________________________
What Are the Issues?
Lesson 2 | page 2 of 4

Name: ____________________________

Big Bend National Park (continued):
3. What are the causes of the environmental problem?
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

4. Who or what does the environmental problem affect?
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

Ciudad Juárez–El Paso Border Crossing
1. Describe the location, climate, and physical geography of Ciudad Juárez and El Paso.
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

2. What is the environmental problem? What is the issue with the Ciudad Juárez-El Paso Border Crossing?
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

3. What are the causes of the environmental problem?
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

4. Who or what (human and natural systems) does the environmental problem affect?
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
What Are the Issues?
Lesson 2 | page 3 of 4

Name: ________________________________

**Asarco Smelter (copper and lead mine) near El Paso**
1. Describe the location, climate, and physical geography of the location of the mine.

2. What are the environmental problems? What is the issue with the Asarco Smelter?

3. What are the causes of the environmental problems?

4. Who or what do the environmental problems affect?

**Colorado River Basin**
1. Describe the location, climate, and physical geography of the Colorado River Basin.
Colorado River Basin (continued):
2. What are the environmental problems? What is the issue in the Colorado River Basin?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

3. What are the causes of the environmental problems?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

4. Who or what do the environmental problems affect?

________________________________________________________________________
________________________________________________________________________
The New River:

Today, thanks to binational cooperation between the United States and Mexico, this waterway is dramatically becoming a cleaner and safer resource for the human communities and ecosystems that depend upon it. Beginning in the 1980s, the countries began working together to determine what to do about the New River and how to improve its water quality. Many state and federal agencies on both sides of the border joined together to come up with both short-term "quick fixes," as well as longer-term solutions to tackle the sources of the pollution entering the river. Over $50 million dollars have been invested in projects, paid for jointly by the U.S. and Mexico, to control and treat the sewage and runoff before it enters the waterways. These projects include the installation of modern sewer pipes and sewage cleaning equipment, the construction or modernization of pumping stations and sewage treatment plants (including the Las Arenitas Wastewater Treatment Plant), and the treatment of runoff from cities, storms, and agricultural areas. This joint effort has substantially improved the New River's ability to support wildlife and has resulted in measurably cleaner water flowing through the New River.

Big Bend National Park:

Because air quality was getting worse on both sides of the border, the United States and Mexico formed a Binational Air Work Group in 1990. This group's purpose is to discuss the air quality issue. They began by trying to investigate where the pollution originated. But the two countries never came to an agreement over the source. Eventually, Mexico pulled out of the group and did not participate in further research.

Ciudad Juárez-El Paso Border Crossing:

Both sides of the border are cooperating to address the issue of air quality in the region. Local communities, with the support of national agencies, are working to promote alternative fuels, like biodiesel. They are also making more fuel-efficient trucks available to Mexican drivers. The national governments are working to reduce idling from trucks on the international bridges. They are managing traffic better and making border crossings more efficient. El Paso and Ciudad Juárez are also using U.S. EPA grants to train mechanics to repair vehicle exhaust systems.

Another success story relates to Metales y Derivados (may-tal-ays ee dair-ee-vah-dohs), an abandoned lead smelting facility. This smelter was once owned by a U.S. corporation. It was closed down in 1994 for failing to comply with Mexican environmental laws and regulations. The abandoned site contains about 6,000 tons of hazardous wastes that pose health risks to Mexican citizens. The two countries are working together to cleanup this site.
Asarco Smelting (copper and lead mine) near El Paso:

In 1999, Asarco suspended operations in El Paso. They closed the plant because of falling copper prices and because Asarco's air quality permit was not renewed. (The company applied to renew its state air quality permit with the states of Texas and New Mexico. Both states denied the company a permit.) Some cross-border cooperation has occurred. The Mexican Senate's Border Affairs Commission hosted a binational forum on Asarco in 2005. At the forum, local lawmakers, non-governmental organizations, and federal agencies met to discuss Asarco. The group focused on air and soil quality issues, the mining operations, and safe cleanup of the byproducts.

The Colorado River Basin:

In 2005, seven states and the U.S. federal government began to renegotiate the water allocations for the states along the Colorado River. Various U.S. agencies have partnered with Colorado Basin communities to implement wetland restoration projects. Such projects help preserve natural systems along the river and improve the river's water quality. U.S. and Mexican authorities agree the two countries need to cooperate to improve water quality. They also need to increase water availability for people on both sides of the border. The two nations have begun discussing water needs and ways to protect the limited water source for everyone.
What Are the Issues?

Lesson 2 | page 1 of 4

Name: ________________________

Instructions: Read each scenario, locate the area discussed on the United States–Mexico Border Region student map and discuss the scenario with your partner. Then answer the following questions. (2 points each item)

The New River
1. Describe the location, climate, and physical geography of the New River.
   The New River begins in the Mexicali Valley of Mexico and travels northward through a rural, desert and farming region that crosses the border at Calexico, through the Imperial Valley, to the Salton Sea in California.

2. What is the environmental problem? What is the issue?
   The problem is that in the 1950s, the river's odor become overpowering and people began getting sick.
   The issue is water quality.

3. What are the causes of the environmental problem?
   Overuse of the water due to population growth has resulted in a water shortage; pesticide use influences the water quality.

4. Who or what does the environmental problem affect?
   The wildlife and plant life around the river died off. The water and soil in and around the river became unsafe for humans to use. People also were getting sick because of the river.

Big Bend National Park
1. Describe the location, climate, and physical geography of Big Bend National Park.
   It is located in southwest Texas and borders the Rio Grande River and the Mexican states of Chihuahua and Coahuila. The climate is relatively dry, with winters and high summer temperatures. The Chisos Mountains run through the park.

2. What is the environmental problem? What is the issue?
   The problem is that particulates in the air have created a haze over the national park.
   The issue is air quality.
What Are the Issues?
Lesson 2 | page 2 of 4

Name: _______________________________________

Big Bend National Park (continued):
3. What are the causes of the environmental problem?
   Coal-burning power plants and urbanization are the causes of this haze.

4. Who or what does the environmental problem affect?
   The particulates in the air cause breathing problems to those who live in the area.
   They also influence the grasslands.

Ciudad Juárez—El Paso Border Crossing
1. Describe the location, climate, and physical geography of Ciudad Juárez and El Paso.
   El Paso, Texas, and Ciudad Juárez, Chihuahua, are in a desert region of western Texas and Northern Mexico.

2. What is the environmental problem? What is the issue with the Ciudad Juárez—El Paso Border Crossing?
   The problem is that the air quality in these cities is declining.
   The issue is air quality.

3. What are the causes of the environmental problem?
   Trucks crossing the border from Mexico to the United States idle for long periods of time, causing an increase in carbon monoxide emissions.

4. Who or what (human and natural systems) does the environmental problem affect?
   As this is an urban area, carbon monoxide influences the people. Breathing illnesses have increased, especially in little children who live in Ciudad Juárez and El Paso.
What Are the Issues?
Lesson 2 | page 3 of 4

Name: __________________________

Asarco Smelter (copper and lead mine) near El Paso
1. Describe the location, climate, and physical geography of the location of the mine.
   The lead and copper mine is located in El Paso, Texas. It is a desert area.

2. What are the environmental problems? What is the issue with the Asarco Smelter?
   The problem is that El Paso has the highest concentration of lead in the air of all the cities in Texas, and the soil contains high levels of lead and arsenic. The issue is mining methods.

3. What are the causes of the environmental problems?
   Byproducts from the mining methods emitted into the air and soil are the cause of the problems.

4. Who or what do the environmental problems affect?
   The byproducts influence the air and soil quality; they may also influence the water quality.

Colorado River Basin
1. Describe the location, climate, and physical geography of the Colorado River Basin.
   The Colorado River begins in Colorado and flows southwest through Utah, Arizona, Nevada, and along the border between Arizona and California. The river travels through Mexico and ends in the Gulf of California. The region is arid/semiarid and includes desert and canyon lands.
What Are the Issues?
Lesson 2 | page 4 of 4

Name: ______________________

Colorado River Basin (continued):
2. What are the environmental problems? What is the issue in the Colorado River Basin?
   The water is over-allocated, and the quality of the water is decreasing as pesticides and salt
   concentrations increase. The issue is water quality and quantity.

3. What are the causes of the environmental problems?
   Overuse of the water due to population growth has resulted in a water shortage; pesticide use is
   influencing the water quality.

4. Who or what do the environmental problems affect?
   The environmental problems affect the people who live along the river, the ecosystems of the Gulf of
   California, and agriculture.
New River

The New River winds from the Mexicali Valley of Mexico northward through a rural, desert and farming region that begins at the U.S.–Mexico border at the City of Calexico, through the Imperial Valley and north to the Salton Sea. For decades, from both sides of the border, the New River has been the dumping ground for increasing quantities of treated wastewater from cities and industries, raw, untreated sewage, runoff from agriculture, and storm water. Sometime in the 1950s, the river became so polluted that people described the odor from its water channel as “overpowering.” High concentrations of fecal coliform bacteria, silt, nutrients, such as nitrate and phosphate, and volatile organic compounds made the water and soil in and around the New River unsafe for human use. These pollutants affected the ecology of the river, impairing its animal and plant life. People complained of health problems that they thought were being caused by the polluted river.

Big Bend National Park

Big Bend National Park is located in southwest Texas. It includes more than 800,000 acres of diverse landscapes including deserts and mountains. A tourist to this area in the 1970s could see for hundreds of miles. Today, however, air pollution makes a clear view of the area a rarity. In fact, the National Park Service believes that Big Bend National Park has the dirtiest air of all parks in the west. Studies show that the pollution sources are mostly coal-burning power plants in Texas, Mexico, and the eastern United States. Urban areas in Texas are another source. The particulates from these power plants contribute to the haze in the national park and influence the natural and human systems present. The air quality is associated with respiratory illnesses in humans. The acid compounds in the air are starting to influence the grasslands as well.
Ciudad Juárez–El Paso Border Crossing

The Ciudad Juárez–El Paso Border Crossing is one of the busiest checkpoints connecting the United States and Mexico. Vehicle traffic is steadily increasing due to population growth and a fast growing economy. In 2001, more than one million trucks crossed the border between Ciudad Juárez and El Paso, Texas. Air quality is getting worse. In August 2003, the Texas Commission on Environmental Quality found that vehicles idling on the international bridges produced about 22% of area-source carbon monoxide emissions in the El Paso–Ciudad Juárez area. Waits of one hour or longer are common. Particulate matter emitted from older Mexican trucks contributes much of the air pollution. Public health officials worry about this pollution. Scientists have connected the number of infants and children suffering and dying from respiratory infections to the air quality in the region. The number of poor children being rushed to hospitals for these problems is steadily increasing.

Asarco Smelter

The Asarco Smelter (copper and lead mine) near El Paso is owned by the American Smelting and Refinery Company (Asarco). Asarco is a Mexican mining company with headquarters in the United States. By the 1920s, Asarco had the largest mining operation in Mexico. It had several plants located along the border, including a large copper and lead mine in El Paso, Texas. In 1969, El Paso had the highest concentration of lead in the air of any city in Texas. The plant employed more than 1,000 people in the 1990s. It produced almost 1 million tons of raw materials each year. Due to low copper prices, the plant closed in 1999. In this same decade, the water and soil in the El Paso area were found to have high levels of arsenic and lead. The U.S. Environmental Protection Agency said that decades of emissions from the mine contaminated the soil. Citizens of El Paso, Texas and Ciudad Juárez, Chihuahua fear that the mining waste will eventually end up in the Hueco Bolson (hu-way-co bowl-sohn) Aquifer, their primary source for drinking water.
Colorado River Basin

The Colorado River Basin begins in the Rocky Mountains in Colorado. It drains southwest, ending in the Gulf of California. The Colorado River is the subject of many laws and legal quarrels. It supplies water to the highly populated and arid southwest. Signed in 1922, the Colorado River Compact allocated 7.5 million acre feet to the Upper Basin states (Colorado, Wyoming, New Mexico, and Utah). The compact called for the same allocation to the Lower Basin states (Arizona, Nevada, and California). A treaty signed with Mexico in 1945 stated that Mexico should also receive 1.5 million acre feet. A total of 16.5 million acre feet are allocated. Yet studies show that, on average, the Colorado River delivers only 13.5 million acre feet annually. The quantity of water is not the only problem. As the water continues south, it becomes more and more contaminated with pesticides and salt from farms in the United States. By the time the water remaining in the river reaches Mexican cities and the Gulf of Mexico, the salinity and pesticide levels are so high, the water damages the ecosystems in the Gulf. That water is not safe to use in agriculture. The poor water quality has affected the health of the people and the economy in the region.
The Reality
Lesson 2 | page 1 of 2

The New River:
Today, thanks to binational cooperation between the United States and Mexico, this waterway is dramatically becoming a cleaner and safer resource for the human communities and ecosystems that depend upon it. Beginning in the 1980s, the countries began working together to determine what to do about the New River and how to improve its water quality. Many state and federal agencies on both sides of the border joined together to come up with both short-term "quick fixes," as well as long-term solutions to tackle the sources of the pollution entering the river. Over $50 million dollars have been invested in projects, paid for jointly by the U.S. and Mexico, to control and treat the sewage and runoff before it enters the waterways. These projects include the installation of modern sewer pipes and sewage cleaning equipment, the construction or modernization of pumping stations and sewage treatment plants (including the Las Arenitas Wastewater Treatment Plant), and the treatment of runoff from cities, storms, and agricultural areas. This joint effort has substantially improved the New River's ability to support wildlife and has resulted in measurably cleaner water flowing through the New River.

Big Bend National Park:
Because air quality was getting worse on both sides of the border, the United States and Mexico formed a Binational Air Work Group in 1990. This group's purpose is to discuss the air quality issue. They began by trying to investigate where the pollution originated. But the two countries never came to an agreement over the source. Eventually, Mexico pulled out of the group and did not participate in further research.

Ciudad Juárez-El Paso Border Crossing:
Both sides of the border are cooperating to address the issue of air quality in the region. Local communities, with the support of national agencies, are working to promote alternative fuels, like biodiesel. They are also making more fuel-efficient trucks available to Mexican drivers. The national governments are working to reduce idling from trucks on the international bridges. They are managing traffic better and making border crossings more efficient. El Paso and Ciudad Juárez are also using U.S. EPA grants to train mechanics to repair vehicle exhaust systems.
Another success story relates to Metales y Derivados (may-tal-ays ee dair-ee-vah-dohs), an abandoned lead smelting facility. This smelter was once owned by a U.S. corporation. It was closed down in 1994 for failing to comply with Mexican environmental laws and regulations. The abandoned site contains about 6,000 tons of hazardous wastes that pose health risks to Mexican citizens. The two countries are working together to cleanup this site.
Asarco Smelting (copper and lead mine) near El Paso:
In 1999, Asarco suspended operations in El Paso. They closed the plant because of falling copper prices and because Asarco’s air quality permit was not renewed. (The company applied to renew its state air quality permit with the states of Texas and New Mexico. Both states denied the company a permit.) Some cross-border cooperation has occurred. The Mexican Senate’s Border Affairs Commission hosted a binational forum on Asarco in 2005. At the forum, local lawmakers, non-governmental organizations, and federal agencies met to discuss Asarco. The group focused on air and soil quality issues, the mining operations, and safe cleanup of the byproducts.

The Colorado River Basin:
In 2005, seven states and the U.S. federal government began to renegotiate the water allocations for the states along the Colorado River. Various U.S. agencies have partnered with Colorado Basin communities to implement wetland restoration projects. Such projects help preserve natural systems along the river and improve the river’s water quality. U.S. and Mexican authorities agree the two countries need to cooperate to improve water quality. They also need to increase water availability for people on both sides of the border. The two nations have begun discussing water needs and ways to protect the limited water source for everyone.
LESSON 3
From a Different Perspective

In this lesson, students take on the roles of members of various U.S. and Mexican stakeholder groups (governmental, non-governmental, indigenous, and so on) active in and around the Rio Grande River.

Each student receives information about the assigned group; they use that information to learn about the group’s perspective on how best to manage the resources of the Rio Grande. During one class period, students read this background information about their groups and prepare presentations for a simulated “Conference on Environmental Partnerships between the United States and Mexico.” All members of the group have a specific role to fulfill in the conference simulation, during which students present their groups’ perspectives and learn about the perspectives of other stakeholders.

A discussion following the conference engages students in analyzing how the various stakeholders in the two nations assess environmental issues and balance them with the social, economic, and political needs of their country.
Learning Objective

Describe the difference between the two countries in terms of how each assesses and balances social, economic, political, and environmental factors in its decisions about the use and management of natural systems and the ecosystem goods and ecosystem services they produce.

Background

The water from the Rio Grande (or Rio Bravo as it is called in Mexico) accounts for most of the drinking water for populations on both sides of the border. The economic growth in this area over the last 20 years has decreased the poverty in the region; however, the rate of poverty in this part of the border region is still much higher than the rest of the United States and Mexico.

The economic growth has also directly and indirectly influenced the water quality in the river. An increase in industrialization and population has led to greater risk of contamination of the water. The act of treating the water, tracking hazardous waste, and enforcing environmental laws, has been a difficult task for the local, state, and federal governments of both nations. In some areas of the Rio Grande, people are urged to avoid any contact with the water in order to avoid getting sick.

In addition to affecting the quality of drinking water, population growth has affected the habitats of many aquatic and terrestrial species. In many cases, the growth has resulted in consumption of wildlife habitats for building sites.

Many stakeholders are involved in trying to address the water quality issue along the Rio Grande: the Texas Water Department Board, the Office of Rural Community Affairs, the Border Environment Cooperation Commission (BECC), residents, workers and owners of the maquiladoras, farmers, indigenous groups, and local government officials. Many have started to work together to decrease water pollution and increase the water supply.

One constraint is that monies are needed to reach these goals. Just recently, the Comisión Nacional del Agua (CAN), Mexico’s National Water Commission, asked the North American Development Bank (NADB) for funds to help bolster the infrastructure related to irrigation and municipal water distribution systems throughout the river basin. CAN estimates the total cost of these improvements to be $40 million just in the area surrounding the Rio Grande. The BECC is also trying to work with the indigenous groups along the border to encourage involvement in the process. The goal is to get as many stakeholders as possible involved in the research, planning, and policy development process.

Key Vocabulary

Allocation: The quantity of something, such as water, that is distributed to areas, communities, groups, or individuals according to a specific plan and for a specific purpose.

Indigenous: Originating in a particular region or country.

Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT): The Mexican government agency that is responsible for the protection, restoration, and preservation of the natural environment.

Stakeholders: Individuals, groups, or organizations that have an interest in or concern about a particular action or decision.

U.S. Environmental Protection Agency (U.S. EPA): The U.S. government agency that implements federal laws designed to promote public health by protecting air, water, and soil from pollution.
Summary of Activities

Students read about the Rio Grande and work in groups to prepare for a simulated conference. They present the perspectives of various stakeholders concerned about water quality issues in the Rio Grande watershed and discuss the factors important to these stakeholders.

Instructional Support

See Extensions & Unit Resources, pages 32–33.

Prerequisite Knowledge

Students should know to:
- living things cause changes in the environment in which they live: some of these changes are detrimental to the organism or other organisms, and some are beneficial.
- rivers and streams are dynamic systems that erode, transport sediment, change course, and flood their banks in natural and recurring patterns.
- the location and effects of urbanization, renewed immigration, and industrialization in America following the Industrial Revolution (for example, the effects on the social fabric of cities, wealth and economic opportunity, the conservation movement).

Advanced Preparation

Gather and prepare Materials Needed.
- Teacher’s Masters:
  - The Stakeholders: prior to Session 3, cut one set for the classes.

Gather and prepare A-V Materials:
- Gather from previous lessons:
  - United States–Mexico Border Region student maps from Lesson 3
  - United States–Mexico Border Region, Visual Aid #1

Create Stakeholder Groups:
- Pre-assign students to one of the eight stakeholder groups.

Set up Conference Area:
- Prior to Session 3, arrange the classroom furniture to create a “conference” area that allows the members of each stakeholder group to sit together and, when the time comes, present their information to the rest of the class.
## Lesson 4

### Materials Needed

<table>
<thead>
<tr>
<th>Activity Supplies:</th>
<th>Audio-Visual Materials</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>• timer <em>(optional)</em></td>
<td>• Who Are the Stakeholders?</td>
<td>Preparation Time</td>
</tr>
<tr>
<td>• A-V Equipment:</td>
<td>• Conference Roles 1 and 2,</td>
<td>40 min.</td>
</tr>
<tr>
<td>• projection system, screen</td>
<td>• Visual Aids #5 and 6</td>
<td>Instructional Time</td>
</tr>
<tr>
<td>• Class Supplies:</td>
<td>• Agenda for the Conference,</td>
<td>Session 1 - 50 min.</td>
</tr>
<tr>
<td>• colored markers</td>
<td>• Visual Aid #7</td>
<td>Session 2 - 50 min.</td>
</tr>
<tr>
<td>• chart paper <em>(optional)</em></td>
<td></td>
<td>Session 3 - 50 min.</td>
</tr>
<tr>
<td>• drawing paper</td>
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<tr>
<td>• pencils or pens</td>
<td></td>
<td></td>
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<tr>
<td>• scissors</td>
<td></td>
<td></td>
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<tr>
<td>• tape or thumbtacks</td>
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</tbody>
</table>

### Visual Aids:

- Who Are the Stakeholders? Visual Aid #4
- Conference Roles 1 and 2, Visual Aids #5 and 6
- Agenda for the Conference, Visual Aid #7

### Preparation Time

- 40 min.

### Instructional Time

- Session 1 - 50 min.
- Session 2 - 50 min.
- Session 3 - 50 min.

### Safety Notes

- None

### Student Edition:

- Background on the Rio Grande or Río Bravo, pages 11–12
- The Stakeholders and Conference Roles, pages 13–14

### Student Workbook:

- Environmental Conference Questionnaire, page 12
- Conference Notes, pages 13–14

### Teacher's Masters:

- The Stakeholders, pages 2–5
Vocabulary Development

Redistribute the students’ individual Student Workbooks and use the Key Unit Vocabulary to introduce new words to students as appropriate.

Session 1

Step 1

Ask students to name the rivers discussed in the previous lessons that raise issues for both the United States and Mexico. (Colorado and Tijuana rivers) Tell students that these are not the only rivers affecting the relationship between the two nations.

Distribute a United States–Mexico Border Region student map to each student. Project United States–Mexico Border Region (Visual Aid #1). Ask students to look at the map and find the river that creates a natural boundary between the two nations. (The Rio Grande)

Tell students that the Rio Grande begins in the Rocky Mountains (Colorado) and flows south 1,885 miles (3034 km) through New Mexico and Texas before it ends in the Gulf of Mexico. For about 600 miles (966 km), the river serves as the border between the United States and Mexico. The river flows through mountains and forests, deserts, and wetlands. It is an important resource for the people of the area, as well as for the diverse plant life and wildlife in the watershed.

Step 2

Distribute a Student Edition to each student. Tell them to turn to Background on the Rio Grande or Rio Bravo, (Student Edition, pages 11–12) Read the article as a class and discuss any unfamiliar vocabulary. When the class has completed the reading, ask the following questions:

- What are the water quantity problems involving the Rio Grande? (A severe drought in the region has affected Mexico’s ability to give the United States all of the water called for by a 1944 treaty. As population grows, so does the water use, which causes problems. Another issue is the invasive species that consume large amounts of water, leaving less for the people and natural systems in the region.)

- What are the water quality problems involving the Rio Grande? (The rapid population growth and lack of infrastructure to treat the water are resulting in reduced water quality. Some people do not have access to clean water, and people may become sick from the water.)

Step 3

Project Who Are the Stakeholders? (Visual Aid #4) and introduce students to the stakeholders connected to problems and issues concerning the Rio Grande. Explain to the students that they are going to work in groups; each group will try to understand the perspectives of one stakeholder group so that they can represent that stakeholder at a conference. In their group, each student will have a particular job to do. Although they have been pre-assigned to a stakeholder groups, once in their groups, students can choose their job for the conference.
Step 4
Project Conference Roles (Visual Aids #5 and #6). Tell students to turn to The Stakeholders and Conference Roles (Student Edition, pages 13–14). Explain to students that each of them will aid their group in preparing a 3–5 minute presentation to be given at a “Conference on Environmental Partnerships.” Read over the job descriptions on Conference Roles. Tell students that they will most likely be in groups of four or five (depending on class size), and if there are only four students in their group, they can eliminate the “Designer of Handout” role, or have one student take two roles.

Step 5
Project Who Are the Stakeholders? again and have students gather in their pre-assigned groups in various locations around the room, taking their Student Editions, Student Workbooks, and student maps with them. Direct students to use the remaining class time to discuss the conference roles with their group in preparation for the next session.

At the end of the session, gather Student Editions, Student Workbooks, and student maps.
Session 2

Step 1

Project *Who Are the Stakeholders?* and have students gather in their pre-assigned stakeholder groups. Distribute the appropriate section of *The Stakeholders* (Teacher's Masters, pages 2–5) to each group. Direct each group to choose one member to read the group description aloud to the other members of the group.

When each group is finished reading their section of *The Stakeholders*, redistribute the students' individual *Student Workbooks*. Tell them to turn to *Environmental Conference Questionnaire* (Student Workbook, page 12). Instruct the groups to read and discuss the background information about their stakeholder group using *Environmental Conference Questionnaire* to guide their discussion. They should also choose the job each group member will take to prepare for and present at the conference and note that information on *Environmental Conference Questionnaire*.

Step 2

Instruct the groups to spend the rest of the class period preparing for the conference by completing their research, writing their speech, and creating their map or other visual aid for use at the conference.

Project *Conference Roles* while the groups work.

Step 3

Gather the *Student Editions*.

At the end of the session, have students take their *Student Workbook* home to continue to prepare for the conference.
Session 3

Step 1
Direct members of the stakeholder groups to sit together in the “conference area.” If the groups have made any visual aids for their presentations (maps, posters, etc.), have students post them now.

Step 2
Redistribute the students’ individual Student Workbooks. Project Agenda for the Conference (Visual Aid #7) and tell students to turn to Conference Notes (Student Workbook, pages 13–14). Welcome all the groups to the conference by reading aloud the opening remarks. Point out that each group will have five minutes to present its perspective on the Rio Grande issues. Explain that while each group presents, the other participants at the conference should listen and fill out the chart on the Conference Notes. Suggest to students that they make brief notes because writing space is limited.

Step 3
Begin the presentations with the first group on the agenda. Keep time for each group. After all groups have presented, conclude the conference by asking the participants the following questions:

- Why are the environmental issues surrounding the Rio Grande so complicated? (The environmental issues have many different causes. The growth of the economy encourages immigration to the area. This growth puts stress on water resources. Also, the people in the area are generally very poor, making it difficult to improve the infrastructure and availability of clean water.)
- When stakeholders try to make decisions about the management of resources, why is it complicated? (People have many different views on what is important. Some groups need or want the economy to flourish, yet this can influence water quality and quantity. Other groups would like to be more protective of the water and other natural resources, yet many economies are built upon the resource. If the water becomes too limited, then the economy might suffer. Another important reason is that the Rio Grande is a transboundary watershed that influences the political relationship between the United States and Mexico.)
- How can stakeholders balance everyone’s social, economic, and political concerns when dealing with environmental issues? (All people involved in the process need to understand the various positions. They need to acknowledge and accept other viewpoints and be willing to work with each other to come to some sort of agreement.)

Step 4
Give students the remaining class time to complete Conference Notes.
Gather the materials students used in their presentations.
Collect Student Workbooks and use Environmental Conference Questionnaire and Conference Notes for assessment.
Lesson Assessment

**Description**

Students use the *Environmental Conference Questionnaire* (Student Workbook, page 12) to prepare a presentation that assesses their achievement of the learning objective: “Describe the difference between the two countries in terms of how each assesses and balances social, economic, political, and environmental factors in its decisions about the use and management of natural systems and the ecosystem goods and ecosystem services they produce.” To demonstrate what they have learned, students provide written responses to questions. On *Conference Notes* (Student Workbook, pages 13–14), to demonstrate what they have learned, students complete a chart.

**Suggested Scoring**

An Answer Key and Sample Answers for the *Environmental Conference Questionnaire* are provided on pages 85–86. Use the *Group Presentation Scoring Tool* on page 2 of *The Stakeholders and Conference Roles* to assess the groups’ work. There are 12 total points possible. An Answer Key and Sample Answers for *Conference Notes* are provided on pages 87–88. There are 40 total points possible.
Background on the Rio Grande or Río Bravo

The Rio Grande or Río Bravo (its name in Mexico) begins in the Rocky Mountains in Colorado and runs south through New Mexico. Eventually, the river becomes part of the border between the United States and Mexico. This river is at the center of an international controversy pitting the United States against Mexico. Two major concerns involving the Rio Grande are water allocation and water quality.

Several factors have created a water shortage problem in parts of the Rio Grande. An ongoing drought since the 1990s has decreased the amount of groundwater. That means Mexico has less water to give to Texas. A 1944 treaty says Mexico must give Texas a certain amount of Rio Grande water. But, because of the drought, Mexico has been unable to deliver. A water shortage becomes more of a problem as the area’s population grows. Another concern is invasive weeds that grow in the water. These weeds, such as the water hyacinth, use a lot of water. All three problems—drought, growing demand, and aquatic weeds—have reduced the flow in the Lower Rio Grande. As a result, sandbars have formed. They prevent water from flowing to the Gulf of Mexico, which then affects downstream communities, agriculture, and natural systems. Experts estimate the economic impacts at $400 million annually.
A second major issue with the Rio Grande is water quality. The population of the region along the river is growing rapidly. Wastewater treatment cannot keep up. Many people in the region cannot get safe water. Raw sewage increases the amount of bacteria in the water. The bacteria, in turn, increase the risk of people getting diseases like hepatitis A. Agricultural runoff also pollutes the water, harming the natural river systems. Water quality issues are especially difficult for the poorer communities in the area. These include indigenous groups, farmers, and colonia residents. Many have little access to clean water or adequate sewage treatment facilities.

The environmental issues surrounding the Rio Grande are binational, and therefore, the two nations’ governments are working together to address water quality and water allocation issues in the region. The U.S. Environmental Protection Agency (U.S. EPA) is one of those agencies. The Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT) is the other. The two agencies have created a binational program to improve the natural and human systems in the region.
Who are the Stakeholders?

Conference Roles

**Speech Writer**
Responsibility: To write a three to four minute speech about your stakeholder group.
You must include:
- background on your group (who you are, where you are located)
- how you influence or are influenced by the Rio Grande/Rio Bravo
- what factors affect your decisions about the river
- your goals involving the river

**Speaker**
Responsibility: To present the three-four minute speech at the “Conference on Environmental Partnerships.” Because you are presenting the speech, you should practice reading the speech before the conference. You may also be involved in writing the speech. You should also be familiar with the map you will show the audience during your presentation at the conference. That map is being made or found by your Cartographer.

**Cartographer**
Responsibility: To create or find a map that shows where your group is located and how it is connected to the Rio Grande/Rio Bravo. (If your group is the Border Environment Cooperation Commission (BECC) or U.S. Fish and Wildlife Service, you should prepare a general map of the region that shows the main cities and communities, as well as where the river flows.)

**Researcher/Editor**
Responsibility: To make sure the content presented in the handout and speech is accurate, the content on the map is accurate, and vocabulary is used correctly. While the other members of the group are writing and preparing maps, you should help provide content to be included in the speech, map, and any handouts your group chooses to give out.

**Designer of Handout (optional)**
Responsibility: To create a handout to share with the other conference members. The handout should include some background on your group, how you are connected to the Rio Grande/Rio Bravo, your goals, and how you suggest attaining those goals.
The following tool will be used by the class to score your group's presentation:

**Group Presentation Scoring Tool**

<table>
<thead>
<tr>
<th>Presentation Elements</th>
<th>4 points</th>
<th>3 points</th>
<th>2 points</th>
<th>1 point</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Speech</strong></td>
<td>It was well written and presented details clearly. It adhered to the time limit.</td>
<td>It was well written and presented. It was too short/too long.</td>
<td>It lacked depth of content and/or was difficult to follow. It did not adhere to the time limit.</td>
<td>It Included limited information. The speaker was unprepared.</td>
</tr>
<tr>
<td><strong>Handout (optional)</strong></td>
<td>It contains information on all of the four requirements, clearly presented.</td>
<td>It contains information on three of the four requirements, clearly presented.</td>
<td>It contains information on two of the four requirements. The information may not be clearly presented.</td>
<td>It contains information on one of the four requirements. The information may not be clearly presented.</td>
</tr>
<tr>
<td><strong>Map</strong></td>
<td>It neatly and accurately shows the region and how the group is connected to the river.</td>
<td>It shows the region and how the group is connected to the river.</td>
<td>It is hard to read and does not show how the group is connected to the river.</td>
<td>It is hard to read and/or inaccurate.</td>
</tr>
<tr>
<td><strong>Total Points:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Environmental Conference Questionnaire
Lesson 4

Name: ____________________________

Instructions: After reading about and discussing your stakeholder group, answer the following questions:

1. Who does your group represent?
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

2. How is this stakeholder or group of stakeholders connected to the Rio Grande?
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

3. What is your role in the group?
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

4. What do you need to do to prepare for the conference?
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
### Image Description

The image contains a table with various headings and columns. The headings include "RESIDENTS," "Service and Wildlife," "U.S. Fish and Wildlife," and "Group Environmental." The table columns are labeled with questions such as "What factors influence the group?" "What are the group's decisions about the river?" and "How does the river affect the group?" The table also mentions the "Río Grande." The table is incomplete with blank cells.

### Instructions

Instructions: Complete the following chart while you listen to the presentation. Fill in the column for your stakeholder group as well. (5 points per row)
<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Mexico</th>
<th>Magniudora</th>
<th>Texas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmers In</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Kikapu</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Where is the group located?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How does the river affect the group?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What factors influence the group?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What are the group's decisions about the river?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Name:
Border Environment Cooperation Commission (BECC) (Group 1)

As part of the North American Free Trade Agreement, Mexico and the United States created the BECC in 1993. Its purpose is to “help preserve, protect and enhance the environment of the border region in order to advance the well-being of the people of the U.S. and Mexico.” To do this, the BECC assists states and local agencies in developing projects to increase infrastructure in the border region, analyze environmental projects, and evaluate the social and economic benefits of the projects. It is a binational group with headquarters in Ciudad Juárez and El Paso. The BECC has been responsible for numerous infrastructure projects—from wastewater treatment plants to sewage upgrades.

As a member of the BECC, you are very concerned about the storm sewer network in the city of Nuevo Laredo, Tamaulipas. The current system contains pipes that have deteriorated. Serious flooding occurs during rain storms. When the roads flood, the storm water runs into the sanitary sewer. Untreated sewage then flows into the Rio Grande.

As a result, the people of Nuevo Laredo face increased risk of getting sick from dirty water. The sewage continues downstream, affecting hundreds of thousands of other people and ecosystems. Your hope is to get the money for the project, and to generate support from local people, organizations, and federal agencies. The project will need a lot of financial support, as well as patience.

Santa Fe Environmental Group (Group 2)

You are members of a Santa Fe environmental group that has filed a lawsuit against the U.S. government. Your group blames the government for the plight of the Rio Grande silvery minnow. The Endangered Species Act protects that fish, one of five native species of fish left in the Rio Grande. Yet it is in danger of becoming extinct—and you believe it is the government’s fault.

The Rio Grande silvery minnow was once one of the most abundant species of fish in the Rio Grande watershed. Due to drought, dam construction, water extraction, and poor water quality, the minnow has disappeared from 95% of its habitat. Most of the water in the Rio Grande is allocated to municipal, industrial, and federal use. There just is not enough water in the Rio Grande to support the silvery minnow. A Conservation Water Agreement between New Mexico and the federal government required 100,000 acre-feet of water to be set aside for endangered species. However, because of the severe drought over the past 10 years, the federal government had to use water that was supposed to be set aside for endangered species. The silvery minnow population has continued to decline.

Many environmentalists think of the silvery minnow as “the canary in a coal mine” for the Rio Grande. The health of the silvery minnow foretells the health of the river. Your group believes that the death of the silvery minnow in the wild means the death of the larger Rio Grande ecosystem.
**U.S. Fish and Wildlife Service (Group 3)**

You work for the Fish and Wildlife Service, an agency of the U.S. government. You are concerned about freshwater ecosystems in Texas. These ecosystems contribute to the natural and human systems. Freshwater in Texas is an economic source for tourism, agriculture, and urban development. It also is home to many endangered aquatic species. More than 20 of the 170 freshwater species found in Texas are endangered. Environmental changes like dam construction, irrigation, salinization, nonnative species, and pollution all influence the fish and wildlife that inhabit the streams.

These environmental changes influence the natural systems and the freshwater species, in some cases changing the entire ecosystem. Monitoring the ecosystems and evaluating the human effect on the streams is important to you, as is understanding the relationships between human activities and natural systems. Your studies provide a guide to how human activities influence the natural systems and what changes must occur in order to preserve natural habitats. Fish are good indicators of the environmental health of a stream. Studies show that humans have introduced over a dozen nonnative species to Texas and that at least 20% of fish species need conservation efforts, as does the aquatic environment.

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**Residents of Ciudad Juárez, Mexico (Group 4)**

You live in Ciudad Juárez, the largest border city along the Río Bravo. Domestic water use is one of the major issues for the city. Agriculture uses all of the water Ciudad Juárez receives from the Río Bravo. The residents must draw from the Hueco Bolson aquifer, a large underground reservoir, for household use. However, humans take water in the aquifer at a faster rate than it recharges. Therefore, many residents in the city must use one of the 145 wells located in the city. The city should close some of these wells because the water is polluted due to the lack of wastewater treatment facilities. The problem is especially serious in the downtown area.

One solution to the city's water issue is to clean the water in the Río Bravo so residents could use it. Then, farmers could tap into alternative water supplies like the Mesilla Bolson and Bismarck Aquifers. The main issue is how to restore and clean the water in the Río Bravo. Some have suggested building a water treatment plant on the Mexican side of the border to clean the incoming water from upstream. However, such a plant is expensive, and the Mexican government has not allocated enough money to build a plant. Your group would like to see the Border Environment Cooperation Commission (BECC) and the North American Development Bank (NADB) support this project. Building a treatment plant on the Río Bravo would allow the residents of Ciudad Juárez to use the river as a source for drinking water. Residents would no longer have to walk to one of the wells, gather the water, and carry it back to their homes. It would also give the citizens of the city hope for the future: they would know that clean, potable water would be available for years to come.
City Planners in Brownsville, Texas (Group 5)

As a member of the city planners in Brownsville, Texas, you want to allow for growth in the region. But, you are also concerned about biodiversity. Developers have begun to drain the resacas to provide land for housing developments. Resacas are former channels of the Rio Grande that have been cut off from the river due to land development and construction of levees and dams. Brownsville has over 3,500 acres of resaca habitat. The water used to empty into the Rio Grande during times of flooding, but with development, the water remains stagnant. There is a lot of wildlife found in these wetland areas and the water today is used for drinking water, residential use, and agriculture. The condition of the resacas has been deteriorating due to the low flow. The shallow water contains high levels of heavy metals, automotive oil, sewage, and pesticides. Recent studies of fish in the resacas have found high levels of heavy metals in the fish tissue.

Draining the resacas seems like a good idea because Brownsville needs more land for the growing population; however, the resacas still provide aquatic habitats for a variety of fish, reptiles, and birds. The pollution in the resacas is beginning to affect the wildlife and plants, and if the city continues to use the water for drinking, then the area needs to be restored. While it is important to all members of the city planners to preserve the ecosystem, financially the city would benefit from having more housing, and financial resources are scarce.

Maquiladora Owners (Group 6)

You are some of the many maquiladora owners in the U.S.–Mexico border region. Maquiladoras exist in many parts of Mexico, but there are more in the border region than anywhere else. Many residents view the maquiladoras in the border region as the source of environmental problems, including poor water quality and contaminants in the soil. However, every story has at least two sides.

The maquiladoras you own have brought jobs to the border region. Very few factories break any of the environmental laws set out by the U.S. and Mexican governments. The maquiladoras must return any waste produced in the factories to their country of origin for disposal. Many owners, such as you, do just this. As for those who break the law, you believe that the Mexican government needs to do its part in enforcing the environmental laws. The water quality in the Rio Grande is declining, but that is not just from maquiladoras. Population growth in the area is the real issue.

The ecosystem in the area is fragile, and the increase in population in the region influences the natural systems. However, the maquiladoras are improving the economy in the area, and thus providing more money for solving environmental problems. The maquiladoras employ over 1 million workers. As maquiladora owners, you believe that both the services you provide and environmental protection are important. Communities and local government officials are responsible for taking care of the environment.
Farmers in Northern Mexico (Group 7)

You are members of a group of sugar cane farmers who live in Northern Mexico. Your families have lived on the land for generations. Your fathers and grandfathers produced cotton using water from the Río Bravo. You began your farming careers growing cotton too, but in the past 20 years water quality and quantity have declined. Because of this, you have had to switch from growing cotton to raising sugar cane. Sugar cane does not require as much water as cotton. Years of drought have forced you to stop farming all of your land because you do not have enough water. Farming less land meant you grew less sugar cane and made less money for your family.

The type of irrigation system you use is not efficient, but you do not have the money to switch irrigation methods. Because irrigated agriculture accounts for a large portion of water use in the region, governments encourage farmers to use more efficient irrigation systems. The Mexican government would like farmers to start using more efficient systems, like the drip system, but the government does not have money allocated to help the farmers do this.

Some government officials have discussed raising the price of water. Higher prices would force farmers to change irrigation systems or start planting crops that are not as water-intensive. But, this idea faces challenges. Sugar cane is a perennial crop that comes back every year. To change crops now, after already investing money in sugar cane, would be difficult financially. While the environment is important to you, as it is, your family can barely get by. Changing the irrigation system or crops would not be possible unless the government provides financial and technical assistance.

The Kikapu (Group 8)

The Kikapu are American Indians who originated in the Great Lakes area. Today, they live in Kansas and Oklahoma, as well as along the Río Grande in Northern Mexico and southern Texas. As a Kikapu, you graze cattle on the land and also grow wheat and other crops. Much of the land was under the ejido system, meaning that the government owned the land where your group lived communally. However, in 1991, Mexico eliminated the system. The government sold much of the land to corporations and some farmers. Because of the poverty rate among most indigenous groups, including yours, you can not afford to buy the land you farm. You also have little access to services like telephone, mail, and health care.

Historically, in some parts of the nation, large-scale water rights have not included American Indians. In California, however, Indian tribes have water rights. For example, the tribes have a significant influence on the management of the Klamath River. Nor do many of these groups have sufficient legal representation to help them maintain rights to the water. In the 1940s, the American Smelting and Refining Company (Asarco) pumped out excessive amounts of groundwater, leaving your community unable to support yourselves. Today you must use channeled or diverted water to irrigate your crops. In the desert environment where you live, droughts and issues with water quantity and quality greatly affect your community. The emissions from power plants located in Coahuila, Mexico, and Eagle Pass, Texas, directly affect the air, water, and soil where you live. Many members of your community have complained of sickness and eye irritation from the quality of water in the Río Grande.
Environmental Conference Questionnaire
Lesson 4

Name: ____________________________

Instructions: After reading about and discussing your stakeholder group, answer the following questions:

1. Who does your group represent?
   Answers depend on the stakeholder group assigned.
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

2. How is this stakeholder or group of stakeholders connected to the Rio Grande?
   See p. 86 for Sample Answers for each of the assigned stakeholder groups.
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

3. What is your role in the group?
   Answers will depend on the role chosen by each student from Conference Roles.
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

4. What do you need to do to prepare for the conference?
   Answers will vary. Some examples include: write a speech, create a map, create a handout, make a sign.
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
Environmental Conference Questionaire

Sample answers for Question 2:

How is this stakeholder, or group of stakeholders, connected to the Rio Grande?

The Border Environment Cooperation Commission: They are concerned about the quality of the Rio Grande. Their main focus is the lack of infrastructure in Nuevo Laredo to deal with rain storms. Lack of infrastructure causes sewage to contaminate the water. They are looking for financial help to try and rebuild the infrastructure in this area.

Santa Fe Environmental Group: They are very concerned about the Rio Grande Silvery Minnow, which is endangered due to lack of water in the Rio Grande. They believe people must try to change policy so that the environment is not destroyed.

U.S. Fish and Wildlife Service: Their job is to manage and preserve the aquatic ecosystem of the Rio Grande. The water quality and quantity are decreasing due to human activity. This has a major effect on the endangered species of the area, as is the introduction of nonnative species.

Resident of Ciudad Juárez, Mexico: They are urban dwellers who depend on the river and the aquifers for drinking water. They now have to walk further to get water from the wells as some have been closed due to contamination. The lack of water treatment plants causes this contamination.

City Planner in Brownsville, Texas: They see the river as a resource and need it for drinking water; however, they also would like to use the area where the river flows for development. Their population is rapidly growing, and needs more space. The Rio Grande is polluted and the water quantity is diminished. Either the ecosystem associated with the river needs to be restored, or the area needs to be used for houses.

Maquiladora Owners: They are connected to the Rio Grande because some other owners do not abide by the environmental laws and dispose of byproducts in the river, causing contamination. They believe the Mexican government must do more to enforce environmental laws so that people do not blame owners, like themselves, for the contaminated water.

Farmer in Northern Mexico: They use water from the Rio Grande to grow sugar cane. Their fathers and grandfathers grew cotton, and this generation tried to do the same. But, the amount of water is diminishing. They struggle to keep the sugar cane crops alive during droughts, which influences their livelihoods.

Kikapu (indigenous people): They use the water in the river for irrigation of their farmland and the groundwater for domestic use. They have never really had access to water rights on the Rio Grande and feel left out of the process.
**Conference Notes**
Lesson 4 | page 1 of 2

Name: __________________________

**Instructions:** Complete the following chart while you listen to the presentations. Fill in the column for your stakeholder group as well. (5 points per row)

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Where is the group located in relation to the Rio Grande?</th>
<th>How does the river affect the group? How does the group affect the river?</th>
<th>What factors influence the group’s decisions about the river?</th>
<th>What are the group’s goals for the river?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Border Environment Cooperation Commission (BECC)</td>
<td>The group’s headquarters is in Ciudad Juárez and El Paso. Both cities are located on the river.</td>
<td>The group affects the river by trying to protect the water and ecosystems surrounding the water. They are not directly affected by the river.</td>
<td>The BECC is most concerned for the health of the environment and human population. All of the political, social, and economic factors must be considered when trying to improve the natural system.</td>
<td>One of the main goals is to improve the storm drain infrastructure in Nuevo Laredo. To do this, they must generate support from citizens and governmental officials and raise money.</td>
</tr>
<tr>
<td>Santa Fe Environmental Group</td>
<td>Santa Fe is located in New Mexico, through which the Middle Río Grande runs. The Middle Río Grande is a tributary of the Río Grande River.</td>
<td>This group affects the river by advocating for the restoration of the natural ecosystem.</td>
<td>The main factor that influences their decision is to protect the environment. The social, political, and economic influences are not as important as preserving the environment.</td>
<td>The main goal is to save the Río Grande silvery minnow, which is endangered. The group sued the federal government to try to get more water flowing through the river to promote a healthier habitat for the minnow.</td>
</tr>
<tr>
<td>U.S. Fish and Wildlife Service</td>
<td>This agency is located all over the United States. This office, in particular, is located in Texas—not necessarily on the river.</td>
<td>This agency greatly influences the river by monitoring the ecosystems and working to preserve and restore habitats.</td>
<td>The main factor that influences their decisions is the goal of protecting the environment. The social, political, and economic influences are not as important as preserving the environment.</td>
<td>The main goal of this agency is to work to reduce water pollution so that the ecosystem is healthier. They seek to decrease toxins, pesticides, and salt to preserve and restore the natural ecosystem.</td>
</tr>
<tr>
<td>Residents of Ciudad Juárez, Mexico</td>
<td>They live in Ciudad Juárez in Mexico, which is located on the Río Grande.</td>
<td>They use the river for domestic and industrial purposes. They also influence the river by allowing contaminants to flow into the river due to the lack of infrastructure.</td>
<td>The quality of life for the residents is the most influential factor in their decisions. Also, the lack of funds available to them and their country influences what they can accomplish.</td>
<td>The main goal of these people is to improve the water quality and quantity of the Río Grande so that the farmers can use water from the aquifers instead of taking water from the river (and away from them). They would also like to build a water treatment facility to clean the water in the river.</td>
</tr>
<tr>
<td>Stakeholders</td>
<td>Where is the group located in relation to the Rio Grande?</td>
<td>How does the river affect the group? How does the group affect the river?</td>
<td>What factors influence the group's decisions about the river?</td>
<td>What are the group's goals for the river?</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-----------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>City Planners in Brownsville, Texas</td>
<td>The city of Brownsville is located near the Rio Grande. It is built on the resacas of the river.</td>
<td>The city planners have to make sure there is enough housing and development for the people. This means using the land in the river ecosystem.</td>
<td>The financial costs of preserving the ecosystem, rather than the environmental costs, are more than what the city would make if the resacas were drained and houses were built there.</td>
<td>To make sure that the river and its resources are put to the best use in terms of benefiting the people of the city.</td>
</tr>
<tr>
<td>Maquiladora Owners</td>
<td>This group is located on the Mexican side of the border, not necessarily right on the Rio Grande.</td>
<td>This group uses the water for industrial purposes, and some owners dump byproducts of their factories directly into the river.</td>
<td>The most important influence for this group is economic. They are concerned about the costs of cleaning their byproducts. At the same time, they also contribute a lot to the local economy.</td>
<td>This group would like the Mexican government to be more responsible and enforce the environmental laws so that the public does not view all maquiladora owners as polluters.</td>
</tr>
<tr>
<td>Farmers in Northern Mexico</td>
<td>This group is located in Northern Mexico along the Rio Bravo.</td>
<td>The farmers have been using the water from the river for centuries. The river provides economic gains for the farmers and allows them to continue farming.</td>
<td>Economics is the major influence. The farmers can not afford to switch from water-intensive crops or to more water-efficient irrigation systems. Their families have been farming in this area for centuries and want to continue.</td>
<td>One of the major goals of this group is to try to get the Mexican government to assist them in use more water-efficient farming techniques. They also need to figure out a way to continue to live and farm during periods of drought.</td>
</tr>
<tr>
<td>The Llupu</td>
<td>This group lives along the river in southern Texas and Northern Mexico.</td>
<td>This group uses the water from the river to live. They must divert much of the water because the quantity of water has decreased in recent years.</td>
<td>Because the group has not been included in water rights laws, political influence is very important. Since the water is the only way they can sustain life in the desert environment, the economic effects are very important as well.</td>
<td>This group would like to have more legal access to the water. They also would like the pollution from a nearby factory to cease, as the pollutants are getting into the soil and water and making people sick.</td>
</tr>
</tbody>
</table>
The United States and Mexico: Working Together
VA #1 United States–Mexico Border Region

Ecological Regions
- California Coastal Sage-Chaparral and Oak Woodlands
- Chihuahuan Desert
- Mediterranean Archipelago
- Sonoran Desert
- Southern Texas Plains/Interior Plains and Hills with Xerophytic Shrub and Oak Forest
- Western Gulf Coastal Plain

Highways
- Interstate Highway
- International Border
### VA #2 Population Data for Six Border Cities

<table>
<thead>
<tr>
<th>City</th>
<th>Area, square miles (square kilometers)</th>
<th>Population Density, people per square mile (people per square kilometer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Diego</td>
<td>372 (964)</td>
<td>3,871 (1,494)</td>
</tr>
<tr>
<td>Tijuana</td>
<td>246 (637)</td>
<td>5,727 (2,212)</td>
</tr>
<tr>
<td>Yuma</td>
<td>107 (276)</td>
<td>725 (281)</td>
</tr>
<tr>
<td>Nogales</td>
<td>647 (1,675)</td>
<td>1,002 (387)</td>
</tr>
<tr>
<td>Presidio</td>
<td>2.7 (7)</td>
<td>1,623 (626)</td>
</tr>
<tr>
<td>El Paso</td>
<td>251 (649)</td>
<td>2,260 (874)</td>
</tr>
</tbody>
</table>

Note: These 2006 estimates reflect U.S. Census Bureau's count of permanent residents, not the transient population.
VA #3 Population Graph

Total Population Projection for the U.S.–Mexican Border Region

Population (in millions)

- High
- Medium
- Low

Year

11,860,558


Note: These numbers reflect U.S. Census Bureau's count of permanent residents, not the transient population.
VA #4 Who Are the Stakeholders?

- Border Environment Cooperation Commission (BECC)
- Santa Fe Environmental Group (flag of Santa Fe)
- U.S. Fish and Wildlife Service (official symbol)
- Residents of Ciudad Juárez, Mexico (official city seal)
- City Planners in Brownsville, Texas (official city seal)
- Maquiladora Owners
- Farmers in Northern Mexico
- The Kikapu
Speech Writer
Responsibility: To write a three-four minute speech about your stakeholder group. You must include:
- background on your group (who you are, where you are located)
- how you influence or are influenced by the Rio Grande/Río Bravo
- what factors affect your decisions about the river
- your goals involving the river

Speaker
Responsibility: To present the three-four minute speech at the "Conference on Environmental Partnerships." Because you are presenting the speech, you should practice reading the speech before the conference. You may also be involved in writing the speech. You should also be familiar with the map you will show the audience during your presentation at the conference. That map is being made or found by your Cartographer.
VA #6 Conference Roles 2

Cartographer
Responsibility: To create or find a map that shows where your group is located and how it is connected to the Rio Grande/Rio Bravo. (If your group is the BECC or U.S. Fish and Wildlife Service, you should prepare a general map of the region that shows the main cities and communities, as well as where the river flows.)

Researcher/Editor
Responsibility: To make sure the content presented in the handout and speech is accurate, the content on the map is accurate, and vocabulary is used correctly. While the other members of the group are writing and preparing maps, you should help provide content to be included in the speech, map, and any handouts your group chooses to give out.

Designer of Handout (optional)
Responsibility: To create a handout to share with the other conference members. The handout should include some background on your group, how you are connected to the Rio Grande/Rio Bravo, your goals, and how you suggest attaining those goals.
Welcome to the first annual Conference on Environmental Partnerships between United States and Mexico. We have come together today to learn about the people and organizations that care about and are influenced by the Rio Grande/Río Bravo. As the population continues to increase in the border region, concern grows regarding the quality of water and having enough water available for people and businesses on both sides of the border.

We will begin by having each stakeholder group present their perspective. Each group has five minutes to present. The groups will present in the following order:

1. Border Environment Cooperation Commission (BECC)
2. Santa Fe Environmental Group
3. U.S. Fish and Wildlife Service
4. Residents of Ciudad Juárez, Mexico
5. City Planners in Brownsville, Texas
6. Maquiladora Owners
7. Farmers in Northern Mexico
8. The Kikapu

During the presentations, take notes on how the other groups are connected to the Rio Grande, using Conference Notes. Once all groups have presented, we will discuss some questions as a group.