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## THE DESTRUCTION OF THE ARAL SEA

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# THE DESTRUCTION OF THE ARAL SEA

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**Grade Level:** 7<sup>th</sup>

## **Purpose/Overview:**

To acquaint students with how human-environmental interaction can result in irreparable damage to water resources.

## **National Geography Standards from *Geography for Life***

### **Geographic Elements and Standards:**

The World in Spatial Terms --

1: How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective

Environment and Society --

14: How human actions modify the physical environment

The Uses of Geography --

18: How to apply geography to interpret the present and plan for the future

## **Oklahoma C<sup>3</sup> Standards:**

### **Grade 7 World Geography: Eastern Hemisphere**

#### **Literacy Skills Standard 1: The student will develop and demonstrate Common Core Social Studies reading literacy skills.**

A.2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.

#### **Content Standard 5: The student will analyze the interactions of humans and their environment in the Eastern Hemisphere.**

3. Integrate visual information to analyze regional problems and policies having spatial dimensions in the Eastern Hemisphere, including the  
A. Management of the Aral Sea's water resources.

#### **Appendix A Literacy Skills Standard 1: The student will develop and demonstrate Common Core Social Studies reading literacy skills.**

C.7. Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.

**Geographic Themes:** Location, Region, Place, Human-Environmental Interaction

**Lesson Objectives:**

Students will learn how and why the Aral Sea has been losing water since the 1960s. Students will compare photos of how the sea has been reduced in geographical size from 1960-2011 and evaluate problems due to this reduction in water resources. Students will explain how efforts to rejuvenate the sea have been unsuccessful.

**Materials:**

Paper copies of photographs, Venn diagram or T charts, index cards, Internet connection, LCD projector, computer and screen, colored sticky notes, Oversized Post-It-note chart tablets, markers, several sets of satellite images printed from the NASA Earth Observatory website (see Resources below)

**Time Frame:** 2 to 3 45-minute class periods

**Procedures:****Opening the Lesson --**

On the board, list ways human interaction affects an area's natural resources. Discuss each answer, explaining the results of this interaction.

**Developing the Lesson --**

Divide the class into small groups; give each group a set of the NASA satellite images of the Aral Sea from 2000-2011 (see Resources below). Instruct the students to put the images in chronological order. Using the sticky notes, have students explain how the images differ. Hand out the text provided by NASA for each group to read. Students should take notes on this text, as it will come in handy later during the lesson. Once all groups have completed their reading, they will write a GIST. [A GIST is a 25-30 word paragraph, using the text and student notes, written to summarize the main points.] The final GIST will be written on the charts and read to the class. Each group will post their GIST after presenting it orally. After GISTS are posted, show the NASA Earth Observatory slideshow, giving groups time to rearrange their images if necessary. Lead a class discussion on how each image differs as the Aral Sea loses its water. Then hand out different texts written in different years by NASA. (While students are reading the next pieces of text, place the Aral Sea images on the wall, in order, and label each one by year). Students will read these and complete either a Venn Diagram or a T-Chart showing the similarities and differences in the first and second texts. These texts are found in the various resources listed at the end of this lesson.

**Concluding the Lesson --**

Each group will write on sticky notes several facts they learned from the discussions and texts and place them around the images on the wall. Ask how students feel this disaster could have been prevented.

**Closure --**

Students will write at least three specific things they learned about the Aral Sea and three things they learned about what human-environmental interaction can do to economies, resources, or both.

**Application Assessment:**

Students will write journal entries as if they lived the life of a fisherman, living and working on the Aral Sea coast, starting in 1960. Key points to include are how the fishing business fared in 1960, in the years between 2000-2011, and any overall problems encountered as the sea began to shrink. Students must base their entries on the NASA images and texts read.

**Assessment Options:**

Groups will be evaluated on the accuracy of their GIST, class discussions, sticky note details, and journal entries.

**Resources:**

NASA Earth Observatory: Aral Sea satellite images from 2000-2011

[http://earthobservatory.nasa.gov/Features/WorldOfChange/aral\\_sea.php?all=y](http://earthobservatory.nasa.gov/Features/WorldOfChange/aral_sea.php?all=y)

The Shrinking of the Aral Sea

[http://www.orexca.com/aral\\_sea.shtml](http://www.orexca.com/aral_sea.shtml)

Aral Sea profile

<http://www.worldlakes.org/lakedetails.asp?lakeid=9219>

Aral Sea Foundation

<http://aralsea.org/>

Photographs of Aral Sea from 1971-1999

[http://en.wikipedia.org/wiki/Aral\\_Sea](http://en.wikipedia.org/wiki/Aral_Sea)

Interactive Map of Aral Sea

[http://visearth.ucsd.edu/VisE\\_Int/aralsea/aral\\_map.html](http://visearth.ucsd.edu/VisE_Int/aralsea/aral_map.html)

Animated view of Aral Sea changes between 1960 and 2000

[http://visearth.ucsd.edu/VisE\\_Int/aralsea/aralanim.html](http://visearth.ucsd.edu/VisE_Int/aralsea/aralanim.html)

Earthshots: Satellite Images of Environmental Change - Aral Sea

<http://earthshots.usgs.gov/Aral/Aral>

Specialized photos of part of the Aral Sea in 1973, 1987 and 2000

<http://earthobservatory.nasa.gov/IOTD/view.php?id=1396>

Encyclopaedia Britannica article on Aral Sea

<http://www.britannica.com/EBchecked/topic/31983/Aral-Sea>

Artist's rendition of Aral Sea 1960-2004

<http://unimaps.com/aral-sea/index.html>

United Nations Environment Programme site on Aral Sea (short reading passages for students)

<http://enrin.grida.no/htmls/aralsole/aralsea/english/arsea/arsea.htm>

Miscellaneous sites on Aral Sea

<http://novaonline.nvcc.edu/eli/evans/HIS241/Notes/Geography/Aral.html>

<http://pinterest.com/lyndamt/education-aral-sea/>

<http://www.thedailybeast.com/newsweek/galleries/2009/07/21/photos--the-worst-man-made-environmental-disasters.html> - slide10

**Extension and Enrichment/Simplification:**

Using their new knowledge, have students illustrate what the sea may look like in five years, ten years, and fifteen years. Students will explain their thinking for each illustration. Simplification can be successful through using only images which show the largest differences in sea volume. Images from 1973, 1985, 1999, 2006, 2009, and 2011 are good choices.