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## THE DISAPPEARANCE OF LAKE CHAD

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# THE DISAPPEARANCE OF LAKE CHAD

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**Grade Level:** 6<sup>th</sup> – 8<sup>th</sup> Grade

## **Purpose/Overview:**

Students will analyze the significance a lake can have on an area of the world.

Students will examine how a change in the lake can directly affect the lives of humans and other living creatures.

Students will determine the changes in the environment of distant places around the explosion and organize these affects in a poster project.

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

### **Geographic Elements & Standards:**

Environment and Society

16: The changes that occur in the meaning, use, distribution, and importance of resources

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.**

B.4. Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.

#### **Content Standard 1: The student will analyze data from a geographic perspective using the skills and tools of geography.**

2. Integrate visual information, draw conclusions, and make predictions from geographic data and analyze spatial distribution and patterns by interpreting that data as displayed on globes, graphs, charts, satellite and other forms of visual imagery including data from bar and line graphs, pie charts, thematic maps, population pyramids, climographs, cartograms, contour/relief maps, GIS systems, and diagrams.

4. Integrate visual information and apply the skill of mental mapping of the political and physical features of Earth's surface and to organize information about people, places, and environments.

#### **Content Standard 2: The student will examine the human and physical characteristics of the major regions of the Eastern Hemisphere.**

5. Explain and summarize how and why regions change over time through physical and human processes which operate to modify Earth's surface including the
  - B. Impact of overgrazing and drought leading to desertification in the Sahel.

**Geographic Themes:** Location, Place, Movement, and Human-Environment Interaction

**Objectives:**

Students will:

1. Locate Africa on a world classroom map.
2. Locate and label Lake Chad and the surrounding countries on a map of Africa.
3. Determine the importance of the fresh water to living creatures and categorize the importance of water to specific groups.
4. Analyze the outcomes on the specific groups if the water began to disappear.

**Materials:**

“Lake Chad Disappearing Water” Vocabulary words

Data sheet on Lake Chad

What if there was no more lake? Worksheet

Africa map with location of Lake Chad

Lake Usage Comparison Chart

Nystrom Classroom Atlases

Colored Pencils

Pencil

**Time Frame:** 2 class periods

**Procedures:**

*Day 1*

1. Ask students to locate Africa on the classroom world map.
2. Hand out the maps of Africa with Lake Chad located on it. Ask students if they have ever heard of Lake Chad as they label it on the map.
3. Discuss the importance of this lake in Africa by examining its location.
4. Label the countries that surround Lake Chad in Africa on the map using the classroom atlases.
5. Hand out the cut up vocabulary words and definitions from the “Lake Chad Disappearing Water” vocabulary related to the disappearance of Lake Chad to students. Allow 2-3 minutes for students to find their match. Discuss and correct, if necessary.
6. Hand out an actual copy of the “Lake Chad Disappearing Water” vocabulary list for students to study.

*Day 2*

1. Review the “Lake Chad Disappearing Water” vocabulary from the day before.
2. Discuss that Lake Chad is a fresh water lake. Examine the sources for fresh water (mountain snow, springs, rain, etc.)
3. Have students paired into groups of 2 and allow 5 minutes for them to make a list of uses for fresh water. Have one student from each group report their answers orally. Write each group's answers on the board and discuss as a class.

4. Hand out the Lake Usage comparison chart to each group and have them write information for each category on how they use lake water. (3 categories: People, Animals, Plants)
5. Hand out the Lake Chad Data sheet to students and discuss as a class. Be sure to ask their opinion on why they believe Lake Chad is decreasing.
6. Hand out the Where did Lake Chad go? Worksheet and have students answer the questions by using the Lake Chad Data sheet and reasoning.

### **Assessment Options:**

#### Option 1

1. Take a grade on the “Where did Lake Chad go?” worksheet once students have completed the questions and drawing.

#### Option 2

1. Students will create a hand drawn map of Africa on construction paper which will include the location of Lake Chad as it appears in the present day (2012).
2. Students will label the countries in Africa that surround Lake Chad in different colors.
3. Students will illustrate one way that each category discussed in class (People, Animal, Plant) uses Lake Chad today.
4. Students will list three ways that each category (People, Animal, Plant) would be affected if a decrease in a lake, in particular Lake Chad, occurred.

### **Extension and Enrichment:**

Students can explore efforts by the Lake Chad Basin Commission to revive Lake Chad by diverting water from the Ubangi River and building canals from the Congo Basin.

Students can conduct research on the Great Lakes in the United States and examine the changes over time.

**Connections:** Science, History

### **Resources:**

Wikipedia: “Lake Chad”

[http://en.wikipedia.org/wiki/Lake\\_Chad](http://en.wikipedia.org/wiki/Lake_Chad) - CITEREFWaterNews2008

Free World Maps: Political Map of Africa

<http://www.freeworldmaps.net/africa/political.html>

World Atlas: Map of Chad

<http://www.worldatlas.com/webimage/countrys/africa/td.htm>

Circle of Blue: “Vanishing Lake Chad – A Water Crisis in Central Africa” [includes 17 second video of superimposed satellite photos from 1963 to 2007]

<http://www.circleofblue.org/waternews/2008/world/vanishing-lake-chad-a-water-crisis-in-central-africa/>

NASA’s Earth Observatory article: “From the Dust Bowl to the Sahel”

<http://earthobservatory.nasa.gov/Features/DustBowl/>

Causes and Effects of Desertification – Case Study: The Sahel Desert [includes Lake Chad]

<http://desertificationb.tripod.com/id3.html>

## **“Lake Chad Disappearing Water” Vocabulary**

**Area:** The measure, in square units, of the interior region of a 2-dimensional figure or the surface of a 3-dimensional figure.

**Basin:** A depression in Earth’s surface. Some basins are filled with water; others are dry some or most of the time.

**Condensation:** The changing of a gas into a liquid, for example, when water vapor changes to liquid water.

**Drought:** A prolonged period of greatly reduced precipitation.

**Evaporation:** The changing of a liquid into a gas, for example, when water turns into water vapor.

**Fresh Water:** Water that is not salty.

**Irrigation:** How farmers bring water to plants; along channels or by using machines.

**Lake:** A body of water surrounded by land.

**Precipitation:** Water that falls from the atmosphere to the Earth’s surface in the form of rain, snow, sleet, and hail.

**Rain:** Liquid precipitation.

**Volume:** The number of cubic units it takes to fill a figure.

**Water Cycle:** The circular journey of the Earth’s water from sea to the air and back again. The movement of water between earth and the air in three stages: evaporation, condensation, and precipitation.

## Lake Usage Comparison Chart

Write a list of how people, animals, and plants use lakes.

**People:**

**Animals:**

**Plants:**

## **Lake Chad Data Sheet**

**Lake Chad is located on the southern edge of the Sahara. It borders the countries of Chad, Niger, Nigeria, and Cameroon.**

**In the 1960s Lake Chad was larger than the state of Vermont. Vermont is 24,900 sq. km. (9,614 sq. mi.).**

**Presently Lake Chad is smaller than the state of Rhode Island. Rhode Island is 3,139 sq. km. (1,212 sq. mi.).**

**In 1963 Lake Chad had a surface area of 25,000 sq. km. (9,653 sq. mi.).**

**In 2003 Lake Chad was only 1/20 the size it was in 1963.**

**From 1966-1975 there has been a 30% decrease in size, only 5% was due to irrigation. The rest was due to drier weather conditions.**

**From 1983-1994 irrigation accounted for 50% of decrease in area of the lake. This shows a direct cause and effect. Drier conditions result in a need for more irrigation to water crops.**

## **What if there was no more lake?**

**1. How would people, animals, and plants be affected if a lake started to dry up and eventually disappear?**

**The effect on people:**

**The effect on animals:**

**The effect on plants:**

**Draw a picture showing one of these effects.**





<http://www.freeworldmaps.net/africa/political.html>