



Desertification: Cause and Effect

Students learn about the causes and effects of desertification threatening the African Sahel.

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Grade Level	6-8 and High School
Duration	4-5 class periods

National Geography Standards

ELEMENT TWO: PLACES AND REGIONS

4. The physical and human characteristics of places.

ELEMENT THREE: PHYSICAL SYSTEMS

7. The physical processes that shape the patterns of earth's surface.

ELEMENT FIVE: ENVIRONMENT AND SOCIETY

15. How physical systems affect human systems.

Arizona Geography Strand

Concept 2 Places and Regions Grade 6

PO 2 Describe the factors that cause regions and places to change.

Grade 7

PO 1 Describe the human and physical characteristics of places and regions.

PO 2 Explain the concept of regions and why they change.

High School

PO 3. Examine geographic issues (e.g., drought in Sahel, migration patterns, desertification of Aral Sea, spread of religions such as Islam, conflicts in Northern Ireland/Ireland, Jerusalem, Tibet) in places and world regions.

Concept 3 Physical Systems

(Strand 6 Earth and Space Science Concept 1 Structure of the Earth)

Grade 7

PO 3 Explain the following processes involved in the formation of the Earth's structure

- erosion
- deposition
- plate tectonics

Other Arizona Standards

Strand 2 World History Concept 9 Contemporary World Grades 7 and 8

PO 3. Analyze how world events of the late 20th century and early 21st century (e.g., terrorism, globalization, conflicts, interdependence, natural disasters, advancements in science and technology, environmental issues) affected, and continue to affect, the social, political, geographic, and economic climate of the world.

High School

PO 4. Examine environmental issues from a global perspective (e.g., pollution, population pressures, global warming, scarcity of resources).

Strand 5 Economics Concept 1 Foundations of Economics Grade 6

PO 1. Identify how limited resources and unlimited human wants cause people to choose some things and give up others.

PO 2. Determine how scarcity, opportunity costs, and trade-offs influence decision-making.

Grades 7 and 8

PO 1. Explain how limited resources and unlimited human wants cause people to choose some things and give up others.

PO 2. Analyze how scarcity, opportunity costs, and trade-offs influence decision-making.

Grade 8

PO 3. Analyze how individuals, governments and businesses make choices based on the availability of resources.

High School

PO 1. Analyze the implications of scarcity:
a. limited resources and unlimited human wants influence choice at individual, national, and

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- volcanism

Concept 5 Environment and Society

Grade 6

PO 1 Describe ways that human dependence on natural resources influences economic development, settlement, trade and migration.

PO 2 Describe the intended and unintended consequences of human modification (e.g., irrigation, aqueducts, canals) on the environment.

Grade 7

PO 3 Describe how humans modify environments (e.g., conservation, deforestation, dams) and adapt to the environment.

Grade 8

PO 1 Describe how humans modify ecosystems (e.g., deforestation and desertification).

High School

PO 1. Analyze how the Earth's natural systems (e.g., Gulf Stream permitting habitation of northern Europe, earthquakes, tsunamis, periodic droughts, river civilizations) affect humans.

PO 4. Analyze the environmental effects of human use of technology (e.g., irrigation, deforestation, overgrazing, global warming, atmospheric and climate changes, energy production costs and benefits, water management) on the environment.

international levels

Reading Standards for 6-8 for Literacy in History/Social Studies

Key Ideas and Details

6-8.RH.1 Cite specific textual evidence to support analysis of primary and secondary sources.

9-10.RH.1 Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.

Craft and Structure

6-8.RH.4 and 9-10.RH.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.

Integration of Knowledge and Ideas

6-8.RH.7 Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.

Range of Reading and Level of Text Complexity

6-8.RH.10 By the end of grade 8, read and comprehend history/social studies texts in the grades 6–8 text complexity band independently and proficiently.

9-10.RH.10 By the end of grade 10, read and comprehend history/social studies texts in the grades 9–10 text complexity band independently and proficiently.

Writing Standards for 6-8 for Literacy in History/Social Studies, Science, and Technical Subjects

Text Types and Purposes

6-8.WHST.1 Write arguments focused on *discipline-specific content*.

a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.

b. Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources.

c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.

d. Establish and maintain a formal style.

e. Provide a concluding statement or section that follows from and supports the argument presented.

9-10.WHST.1 Write arguments focused on *discipline-specific content*.

a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear

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relationships among the claim(s), counterclaims, reasons, and evidence.

b. Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns.

c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.

d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.

e. Provide a concluding statement or section that follows from or supports the argument presented.

Production and Distribution of Writing

6-8.WHST.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

a. Produce clear and coherent functional writing (e.g., formal letters, envelopes, procedures, labels, timelines, graphs/tables, experiments, maps, captions, charts, diagrams) in which the development, organization, and style are appropriate to task, purpose, and audience.

9-10.WHST.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

a. Produce clear and coherent functional writing (e.g., formal letters, envelopes, experiments, labels, timelines, graphs/tables, procedures, charts, maps, captions, diagrams, sidebar, flow charts) in which the development, organization and style are appropriate to task, purpose, and audience.

Research to Build and Present Knowledge

6-8.WHST.9 and 9-10.WHST.9 Draw evidence from informational texts to support analysis, reflection, and research.

Overview

The desert environments around the world are expanding every day due to both natural causes such as drought, wind, and erosion, as well as human causes such as overgrazing, poor conservation practices, and lack of crop rotation. This process of desert expansion is called desertification and is threatening the Sahel region in northwest Africa.

Purpose

In this lesson, students will become familiar with the causes and effects of desertification, through a variety of modalities including: taking vocabulary notes, reading an environmental article, completing cause and effect graphic organizers and writing an expository essay.

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Materials

- African Regions Map
- African Regions Map (with place names)
- Teacher Background Notes on Physical Regions of Africa
- Vocabulary T-Chart on Desertification
- Vocabulary T-Chart Answer Key
- Cause and Effect Student Model #1
- Cause and Effect Answer Key for Model #1
- Desertification Article (for 6-8 readers)
- USGS Desertification Article (for High School readers)
- Cause and Effect Sequences #1, #2, and #3
- Cause and Effect Sequence Answer Keys for #1 and #2
- Writing Prompt for Cause and Effect of Desertification
- Desertification Essay Ideas and Content Rubric
- Desertification Essay Word Choice Rubric
- All answer keys should be made into overheads.

Objectives

The student will be able to:

- locate: the Sahel, Sahara Desert, Kalahari Desert, Namib Desert, Atlas Mountains, Ethiopian Highlands, Drakensberg Mountains, savanna, tropical rainforest, Nile River, Congo River and Great Rift Valley on a map of Africa.
- define vocabulary words related to desertification.
- read an environmental article on desertification.
- diagram cause and effect sequences of desertification on a graphic organizer.
- write an expository essay on the causes and effects of desertification.

Procedures

SESSION ONE

1. Brainstorm with the students: *What it is like in Africa? What is the landscape like, the people, etc?* Write on the chalkboard as the students give their impressions.

2. Distribute the African Regions Map and have students label and color the regions. Display the African Regions Map (with place names) as an Answer Key on the overhead projector.

3. Discuss the physical geography of each of the regions, as they copy and color. (Information on the regions is located in the Teacher Background Notes.)

4. Distribute the Vocabulary T-Chart and have students fill in the definitions from the overhead.

SESSION TWO

1. Distribute the Cause and Effect Student Model #1. Discuss the Cause and Effect Sequence Example, then demonstrate how to diagram the sequence into the Graphic Organizer, using the Cause and Effect Answer Key for Model #1.

2. Distribute the appropriate Desertification Article (either for 6-8 or High School readers). Discuss how the cause and effect sequence model can be used to interpret information in the article.

3. Instruct students that while they read the article, to look for examples of cause and effect sequences.

4. Distribute the Cause and Effect Sequence #1 to guide students in completing the cause/effect sequence on Desertification. Help students diagram on the graphic organizer, using the Answer Key for Sequence #1.

SESSION THREE

1. Redistribute the Desertification Article and hand out Cause and Effect Sequences #2 and #3.

2. Allow students to work in pairs and explain they will need to perform the following tasks:

- ◆ Reread the article and identify specific cause and effect examples of desertification.
- ◆ On Cause and Effect Sequence #2, formulate a complete three-step sequence in full sentences.
- ◆ Diagram the three-step sequence on the graphic organizer.
- ◆ Do Cause and Effect Sequence #3 next, utilizing the above procedures for Sequence #2.

SESSION FOUR

1. Distribute Writing Prompt for Cause and Effect of Desertification and discuss the criteria for the writing assignment.

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2. Distribute the Desertification Essay Word Choice and Desertification Essay Ideas and Content Rubrics for the expository essay

3. Students write a Cause and Effect expository essay utilizing the Cause and Effect Sequences #1, #2, #3 and Vocabulary T-Chart.

Assessment

Grade the Cause and Effect sequencing graphic organizers #1, #2, and #3 for accuracy and completeness. Student should score 80% or higher.

Utilize the Desertification Essay Ideas and Content Rubric and the Desertification Essay Word Choice Rubric to grade the paper. Mastery is considered 4 or higher in each category.

Extensions

Have students analyze Cause and Effect Sequences on deforestation (e.g. destruction of the tropical rainforests or other types of forests, such as deciduous or temperate coniferous). (See Deforestation lesson)

Have students compare desertification with deforestation by writing a paragraph comparing and contrasting desertification with deforestation.

Sources

- *Expanding Deserts* by Paula Hogan
- *The Spread of Deserts* by Ewan McLeish
- *Last Frontiers for Mankind: Deserts* by Lawrence William
- United Nations Secretariat of the Convention to Combat Desertification
<http://www.unccd.int/main.php>
- UN Food and Agriculture on desertification
<http://www.fao.org/desertification/default.asp?lang=en>
- Land Degradation and Desertification
http://sedac.ciesin.columbia.edu/tg/guide_main.jsp
- National Geographic Video "Africa's Physical Features"
- NGS Picture Pack transparencies "Geography of Africa"
- NGS Africa's Natural Realms Map, September 2001