Desert Deception: Believe It or Not?

Author	Dina Garrett
Grade Level	6
Duration	2 class periods

National Standards

GEOGRAPHY
Element 1: The World in Spatial Terms
1. How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information
Element 3: Physical Systems
8. The characteristics and distribution of ecosystems and biomes on Earth's surface
Element 6: The Uses of Geography
18. How to apply geography to interpret the present and plan for the future

NEXT GENERATION OF SCIENCE STANDARDS
MS. Weather and Climate
MS-ESS2-6 Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things. These interactions vary with latitude, altitude, and local and regional geography, all of which can affect oceanic and atmospheric flow patterns.

AZ Standards

ELA
Reading
Integration of Knowledge and Ideas
6.RI.7 Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
Writing
Production and Distribution of Writing
6.W.4 and 7.W.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

MATHEMATICS
Statistics and Probability
6M.SP.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.

Arizona Social Science Standards

GEOGRAPHY
The use of geographic representations and tools helps individuals understand their world.
6.G1.1 Use and construct maps, graphs, and other representations to explain relationships between locations of places and regions. Key concepts include major landforms and water bodies, countries, cities, ecosystems, climate, languages, religion, economic systems, governmental systems, population patterns, disease, trade routes, and settlement patterns
7.G1.1 Use and construct maps and other geographic representations to explain the spatial patterns of cultural and environmental characteristics. Key tools and representations such as maps, globes, aerial and other photos, remotely sensed images, tables, graphs, and geospatial technology
7.G1.2 Analyze various geographic representations and use geographic tools to explain relationships between the location of places and their environments.
Human-environment interactions are essential aspects of human life in all societies.
7.G2.2 Analyze cultural and environmental characteristics that make places both similar and different.
Global interconnections and spatial patterns are a necessary part of geographic reasoning.
6.G4.1 Explain why environmental characteristics vary among different world regions. Key concepts include but are not limited to latitude, elevation, landforms, location, and human factors
7.G4.1 Analyze cultural and environmental characteristics among various places and regions of the world.

SIOP Elements		
Preparation Adapting content Linking to background **Linking to past learning** Strategies used	**Scaffolding** **Modeling** Guided practice Independent practice Comprehensible input	**Grouping Option** Whole class **Small groups** **Partners** **Independent**
Integrating Processes **Reading** **Writing** **Speaking** **Listening**	**Application** Hands on Meaningful Linked to objectives **Promotes engagement**	**Assessment** **Individual** **Group** **Written** Oral

Arizona English Language Proficiency Standards

Stage IV

Basic Comprehension of Oral Communications-

Standard 1: The student will listen actively to the ideas of others in order to acquire new knowledge.

B-9: determining main ideas and supporting details from content area presentations and discussions.

Standard 2: The student will express orally his or her own thinking and ideas. The student will communicate orally by:

Language

Standard 2: The student will acquire English language vocabulary and use it in relevant contexts. The student will demonstrate knowledge of vocabulary by:

B-14: using reference materials, print and/or electronic, to identify meanings, spelling, pronunciation, and usage of words.

Reading

Standard 4: The student will analyze text for expression, enjoyment, and response to other related content areas. The student will demonstrate knowledge of reading comprehension by*:*

B-4: answering who, what, where, when, why, which and how questions about text.

B-8: summarizing the main idea and supporting details from text.

B-21: applying understanding of content area vocabulary within math, science and social studies texts.

B-28: interpreting information in functional documents (*e.g., maps, schedules, letters, graphic organizers*) for a specific purpose.

Writing

Standard 1: The student will express his or her thinking and ideas in a variety of writing genres.

B-4: writing a paragraph based on research using topic sentences, main ideas, relevant facts, details, and concluding statements.

Overview

Deserts cover about one-fifth of our Earth. A desert is defined as an arid region that receives less than 10 inches of precipitation per year. The desert biome is unique with plants and animals that can survive

with very little water. Traditionally, deserts have had sparse settlements but now there are some very large American cities that are in desert regions such as Las Vegas, Nevada, and Phoenix, Arizona.

Purpose

In this lesson students create a climograph and learn how deserts can be found in various parts of the world. They will also learn about Hadley Cells and why there are deserts.

Key Vocabulary

climograph: a graph that shows average precipitation and temperature for a place
desert: land with little rainfall
number line: a line with equal spaces and the points equal the numbers shown
dot plot: chart of data using circles to mark the points of data
histogram: a bar graph with no spaces between bars
line graph: a chart that connects data points with a line
box plot: a way to graph data through quartiles
data: numerical information

Materials

- Computer, Internet access and projector
- The World Map
- Desert Map Work and Answer Key
- Graph paper
- Markers or highlighter pens
- Whiteboards and dry erase markers
- Document camera for showing group graphs (optional)
- Vocabulary Cards
- Vocabulary Test and Answer Key

Objectives

The student will be able to:

- Identify desert climates along similar latitudinal coordinates.
- Identify the appropriate graph to use with a set of data
- Create a graph to properly illustrate the data set provided.

Procedures

Prerequisite Skills: Students can locate places by latitude and longitude. Students know how to make bar and line graphs.

SESSION ONE

Engage:
1. Open the lesson by exploring the website: http://discoveringegypt.com/pyramids-temples-of-egypt/pyramids-of-giza/ to learn about the desert climate of Giza, Egypt. **(Integrating Processes: Reading)**
2. As the website is explored, have students write at least 5 descriptions of the Egyptian desert using their senses. **(Application: Promotes engagement)** Have students share their responses and record them on the whiteboard.
3. Then ask, "Are deserts around the world all the same or are they different?"

Explore:
4. Distribute the World Map and the Desert Map worksheet. **(Integrating Processes: Writing)** Have students locate the five desert cities by latitude and longitude and give each group a city to graph. **(Grouping option: Small groups)** Before students begin, model how to make a climograph by using the following information for Antarctica (another desert—believe it or not). **(Scaffolding: Modeling)**

Average Precipitation in Inches

Jan	.7	July	.5
Feb	.8	Aug	.5
Mar	.6	Sept	.4
Apr	.6	Oct	.5
May	.9	Nov	.5
June	.9	Dec	.4

Average Temperature in Fahrenheit

Jan	30	July	-21
Feb	19	Aug	-23
Mar	4	Sept	-17
Apr	-2	Oct	-9
May	-6	Nov	11
June	-4	Dec	22

5. Explain how the graphs will be scored.

Explain:
6. When groups have completed their graph, **(Preparation: Linking to Past Learning)** have those who worked on one city gather and share to make sure their graphs are correct. Then have the

one person from this larger group share orally the graph of his/her city with the class. **(Integrating Processes: Speaking and Listening)**

SESSION TWO

7. Have students return to their small groups and complete the questions and essay either individually or as a group. **(Integrating Processes: Writing) (Assessment: Group or Individual, Written)**

Elaborate:
8. Show Why Does the Earth Have Deserts? https://www.youtube.com/watch?v=T6Us1sPXBfA (2 minutes) You may want to show it more than once. **(Integrating Processes: Listening)**
9. Have students draw a sketch and write out the steps so they can remember the concept of Hadley Cells and the creation of deserts. Now return their World Map from Session One and have them color in the deserts of the world using an atlas or reference map. Add a symbol for desert into their legend with their five dots of color. **(Grouping option: Individual)**

Evaluate:
10. Pair up students. **(Grouping option: partners)** Introduce the idea that mathematicians use a variety of graphs dependent on the kind of data they wish to display. Hand out vocabulary cards to students. Have them discuss which ones of these kinds of graphs would work for showing climate information such as precipitation and temperatures.

Assessment

Science
The sketch and the written steps regarding Hadley Cells and the creation of deserts can be graded. Mastery will be seen as all steps given in correct order and an accurate drawing.

Mathematics, Geography, and Reading
Group climographs can be graded using the scoring guide provided on the worksheet. Mastery will be considered 40 points or higher.

Writing, Geography, and Reading
The questions and the essay question can be graded for accuracy according to points given. Mastery will be considered 80% or higher.

Vocabulary Test can be given. Mastery will be considered 80% or higher.

Geography
Map work can be graded for accuracy. Mastery will be considered 80% or higher.

Extensions

- Expand on the creation of different kinds of graphs and their uses in other lessons.
- Connect through a science experiment simulating Hadley Cells.
- Research rainforest regions with other data sets and do similar activities.

Sources

Latitude and Longitude finder
http://www.worldatlas.com/aatlas/latitude_and_longitude_finder.htm

World Map from Arizona Geographic Alliance
http://geoalliance.asu.edu/azga/

Rainfall and Temperature Information
http://www.weatherbase.com

Why Does the Earth Have Deserts?
https://www.youtube.com/watch?v=T6Us1sPXBfA

Map of Main Deserts of the World
http://www.armystudyguide.com/content/army_board_study_guide_topics/desert_operations/map-of-the-main-desert-ar.shtml