Analyzing the Relationship between Topography and Climate

Overview:
In this lesson, students learn about the major mountain ranges, river valleys, and other physical features of Oregon and analyze their impact on precipitation and temperature across the state. Students locate and identify the major physical features and place them on a giant blank map of Oregon. When the map is complete, students will analyze climographs from different parts of the state to see how the physical layout of Oregon affects precipitation and temperature.

Geographic Question:
How does topography influence climate patterns in Oregon?

Connection with Curriculum:
Learning level (3-5) Geography and Science

Objectives:
Using the Student Atlas of Oregon, students will be able to locate and label important topographic features such as rivers, mountains, valleys, and mountain ranges, on a blank outline map of Oregon, and will analyze how these physical features affect Oregon’s precipitation and temperature.

National Geography Standards:
#1 - How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information.
#4 - The physical and human characteristics of places.

Oregon Geography Standards:
3.10. Identify and compare physical features of Oregon and other Northwestern states.
4.8. Use geographical tools (e.g. maps, GIS, Google Earth) to identify absolute and relative locations and physical characteristics of places in Oregon.

Oregon Science Content Standard:
3.2.E Identify Earth as a planet and describe its seasonal weather patterns of precipitation and temperature.

English Language Proficiency Standards for ELD:
Cause and Effect - Verb Forms

Language Objectives:
Function: Cause and Effect
Form: Verb forms (past tense and conditional)

Beginning: Not Applicable

Intermediate: Descriptive sentence with past-tense verbs

Advanced: If ___ had/ hadn’t ____ , ___ would/ wouldn’t have ____.
Targeted Language Skills:

*Reading*: Students will be able to read and label landforms on a map.

*Writing*: Students will write a rationale explaining why one might visit Oregon.

*Listening*: Students will actively listen to peers during small group and whole class discussions.

*Speaking*: Students will actively participate in small group and/or whole class discussion.

Key Vocabulary:

- ocean
- precipitation
- lake
- river
- climate
- topography
- mountain
- recreation
- valley

Materials:

- From the *Student Atlas of Oregon*, [www.studentatlasoforegon.pdx.edu](http://www.studentatlasoforegon.pdx.edu), copies of the following maps for each student (English and Spanish versions):
  - *Rivers and Lakes*
  - *Physical Regions of the Pacific Northwest*
  - *Oregon climate*
  - *Average annual Precipitation*
  - *Average January Temperatures*
  - *Average July Temperatures*
  - *Recreation and Tourism*

- Overhead copies of the maps
- Blank outline map of Oregon for each student (at the end of this lesson)
- Giant blank map of Oregon for chalkboard/whiteboard
- Pencils, colored pens, markers etc.
- Pictures of landforms (rivers, mountains, lakes, oceans, etc.), including some key landmarks in Oregon
- List of descriptive adjectives available

Presentation Steps:

1. Ask students about vacations, camping, or day trips that they have taken in Oregon. What did the land look like? Teacher will provide examples of adjectives to use when describing landforms (high, low, flat, wet, dry). Introduce types of landforms and use pictures as visual aids (e.g. mountains, lakes, rivers etc.). Discuss why Oregon is a great place to live.

2. Show students the *Rivers and Lakes* map of Oregon and the *Physical Regions of the Northwest* map. Have students identify key landmarks in Oregon which make Oregon unique and special.

3. Hand out blank outline maps of the state to each student and a list of physical features that you want them to label. Display landform names and pictures for students throughout the lesson. Allow time for students to work in pairs and come together as a class to complete the class map on the board.

4. Distribute the *Climographs*, *Average Annual Precipitation*, and the *Recreation and Tourism* maps. Have students examine these maps and their own maps of Oregon. Ask them to discuss with their partner, and form conclusions, about how the topography of the state influences precipitation and temperature.
5. Use think-pair-share as the format for the following questions (refer to class map when discussing as whole class):
   a) Why is the Willamette Valley so wet?
   b) Why does Eastern Oregon have a different climate pattern from Western Oregon?
   c) How is climate pattern in Astoria different from that in Burns or Klamath Falls? Explain why these differences occur.
   d) How do the mountain ranges affect the climate and weather of Oregon?

6. Have students write a letter to a student in a different state telling them about Oregon and how this state is a great place to live and/or to visit for a vacation. Students will create a postcard including a picture of their favorite Oregon landmark, and label landforms and features.

Assessment:
Students should be assessed formatively and summatively. The formative assessment will be teacher observation of student participation in discussions and critical analyses. The summative assessment will be the map of Oregon that they create and the letter that they write.

Map Elements:
- Fun and informative title
- Easy to understand key/legend
- Map is visually appealing, neat, and easy to read
- All landmarks from the list have been correctly labeled on the map

Adaptations:
This lesson allows both logical and creative thinkers to be actively involved. By having students write, create a map, and think critically, students will have several different avenues to display their learning. This is also a good vocabulary lesson for ELL students or students who are new to Oregon. Students become very familiar with the layout and the geographic features of Oregon.

Extensions:
- Students create a travel brochure for tourists.
- Students plan a family vacation in Oregon, incorporating the various Oregon landmarks.
- Students can study one particular aspect of Oregon geography.
- Students can play a landform matching game, individually or with a partner, using pictures from the lesson or locate other pictures in magazines and match images to vocabulary terms.

Original Author: Erin Rhodes
Lesson adapted by: Brianna Kibby and Margarita Herrera
The final editing and adaptations for an ELL classroom were completed by the OGA Spanish Student Atlas of Oregon Task Force 2011.