1.3 Analyzing the Relationship between Topography and Climate

Overview:
In this lesson, learners review the major mountain ranges, river valleys, and other physical features of Oregon and analyze their impact on precipitation and temperature across the state. Learners will analyze climographs from different parts of the state to see how the physical layout of Oregon affects precipitation and temperature.

Objectives:
Using the *Student Atlas of Oregon*, learners 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.

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

Key Vocabulary:
ocean  river  mountain
precipitation  climate  recreation
lake  topography  valley

Materials:
- From the *Student Atlas of Oregon*, [www.learneratlasoforegon.pdx.edu](http://www.learneratlasoforegon.pdx.edu), copies of the following maps for each learner (English and Spanish versions):
  - *Rivers and Lakes*, pg. 30
  - *Physical Regions of the Pacific Northwest*, pg.13
  - *Climographs*, pg.22
  - *Average annual Precipitation*, pg.21
  - *Average January Temperatures*, pg.19
  - *Average July Temperatures*, pg.20
  - *Topography*, pg.15
  - *Elevation Cross Sections*, pg.16
  - *Recreation and Tourism*
  - *Weather Extreams.*
- Overhead copies of the maps
- Blank outline map of Oregon for each learner (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 learners about vacations, camping, or day trips that they have taken in Oregon. What did the land look like? Locate places learners have visited on the Recreation and Tourism map. 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 learners the Rivers and Lakes map of Oregon and the Physical Regions of the Northwest map. Have learners identify key landmarks in Oregon which make Oregon unique and special.

3. Hand out blank outline maps of the state to each learner and a list of physical features that you want them to label. Display landform names and pictures for learners throughout the lesson. Allow time for learners to work in pairs and come together as a class to complete the class map on the board. If learners did Activity 1.1 Our Oregon they can add to the map they created in that lesson rather than starting a new map.

4. Distribute all the remaining maps or refer learners to the maps in the Student Atlas of Oregon. Have learners 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 learners write a letter to a learner 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. Learners will create a postcard including a picture of their favorite Oregon landmark, and label landforms and features.

Assessment:
Learners should be assessed formatively and summatively. The formative assessment will be teacher observation of learner 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 learners write, create a map, and think critically, learners will have several different avenues to display their learning. This is also a good vocabulary lesson for ELL learners or learners who are new to Oregon. Learners become very familiar with the layout and the geographic features of Oregon.
Extensions:
- Learners create a travel brochure for tourists.
- Learners plan a family vacation in Oregon, incorporating the various Oregon landmarks.
- Learners can study one particular aspect of Oregon geography.
- Learners 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.

Adapted from the Oregon Geography Project
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