The 3-D Map Project

Teacher: Jane Schneider

Grade Level: Intermediate: 4th, 5th, 6th grades, could be adapted for other grade levels

Lesson Summary: This unit is an integrated approach to student exploration of the geographic concepts of location, place, region, map reading, and map making.

Curriculum Connection: Geography, Art, Public Speaking, and Technology (optional)

Time Needed:
- 1 or 2 50 minute periods for students to enlarge and trace their state or continent shape, waiting students will conduct research.
- One 50-minute period to research and note the location of mountains and other landforms in the region per the instructions.
- One 50 minute period to use salt dough to form the 3-D map.
- 2 to 3 50 minute periods for students to further research natural resources, products, and animals of their region, and to draw pictures of these items per the instructions.
- 1 - 2 50 minute periods to paint the maps when they are dry.
  NOTE: the dough (depending on thickness) will take at least one week to dry sufficiently to be painted.
- One period (1.5 periods?) for students to present their map and what they learned to the class, and to complete a post-assessment (same activity as the pre-assessment).

Lesson Status: All together this is a 1.5 - 2 week project that can be interrupted in order to allow time for the dough and the paint to dry thoroughly. This unit was originally designed for a 4th/5th grade split class and is easily differentiated to accommodate all learners. Teacher acts as coach for this unit.

Materials Needed:
- Document camera and digital projector or overhead projector
- Blackline maps of states and/or continents, preferably the states will be the same scale as each other
- Butcher paper or large drawing paper for tracing the projected (enlarged) images
- Atlases and Globe(s)
- Encyclopedia and/or Computer with Internet access
  Optional: Link to GeoSpy game
  http://kids.nationalgeographic.com/kids/games/geographygames/geospy/
- Printer paper to be used for the drawings of products, natural resources, & animals

~ Materials list continues next page ~
Large markers, masking tape, scissors, pencils, erasers, crayons and/or colored pencils, glue, gold stars (optional)
And later: many batches of salt dough “clay” (recipe attached)
Tempra paint, mixing trays, water containers such as recycled 6 oz yogurt containers, soft brushes – both large and fine ones

Geography Standards:
From Geography for Life:

**Geography Standard 1:** How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective
A. Identify and describe the characteristics and purposes of geographic representations, tools, and technologies, as exemplified by being able to:
   • Examine a variety of maps to identify and describe their basic elements (title, legend, cardinal directions, intermediate directions, grid, principal parallels, meridians, scale)
   • Interpret aerial photographs or satellite-produced image to locate and identify physical and human features (e.g. mountain ranges, rivers, vegetation regions, cities, dams, reservoirs)
   • Design a map that displays information selected by the student, using symbols explained in a key
B. Show spatial information on geographic representations

**Geography Standard 2:** How to use mental maps to organize information about people, places, and environments in a spatial context
B. Use a mental map to identify the locations of places
D. Describe selected geographic features on the basis of using mental maps
Write a description from memory of the physical and human characteristics of the state in which the student lives and create a sketch map to illustrate the account

**Geography Standard 3:** How to analyze the spatial organization of people, places, and environments on Earth’s surface
A. Analyze Earth’s surface in terms of its spatial elements of point, line, area, and volume
C. Observe and compare the patterns and densities of places on Earth’s surface

**Geography Standard 4:** The physical and human characteristics of places
A. Describe and compare the physical characteristics of places at a variety of scales, local to global by being able to:
   Use cardboard, wood, clay, or other materials to make a model of a region that shows its physical characteristics (e.g., landforms, bodies of water, vegetation)

**Geography Standard 5:** That people create regions to interpret Earth’s complexity
A. Define regions by being able to use physical and human criteria

**Geography Standard 6:** How culture and experience influence people’s perceptions of places and regions
A. Describe places and regions in different ways, as exemplified by being able to:
   Make a poster or collage or use another mode of expression that reflects the student’s perception (mental map) of a place or region (e.g., my home town, historic sites, recreation areas)
Geospatial Thinking Objectives:
Geospatial thinking objectives include discussions about location, comparison, influence, region, hierarchy, and pattern (per Gersmehl). To quote Geography for Life, “Geography studies the relationships between people, places, and environments by mapping information about them into a spatial context.”

The students will:
1. Gain experience with the characteristics and purposes of geographic representations—such as maps, globes, graphs, diagrams, aerial and other photographs, and satellite-produced images
2. Become familiar with the characteristics and purposes of tools and technologies and how to use them as they apply to the study of geography
3. Display spatial information on maps and other geographic representations

Pre-activity Evaluation:
• Each student will decide on a state (5th graders) or a continent (4th graders).
• Give each student a blank sheet of paper and have them draw, as accurately as possible, a mental map of their state or continent. Also have students show as much as they already know about the region by drawing in landforms such as mountains and major rivers, the location of the capital (5th graders’ state) or famous lake, mountain peak, or human-made “wonder,” adding labels. Assure them that this is not a test but a pre-assessment!

Starting the Lesson:
Hand out the instructions packet, answer questions, direct students to put their name on their copy of the instruction packet! Help students use the document camera (or overhead projector) to trace an enlarged outline of the area they selected on butcher paper or large drawing paper.

The Lesson:
• Students will use the outline shape map they have made of their area to note mountains, major rivers, famous lakes, etc. (see instructions handout for details)
• Students research data for their maps using print and digital media
The teacher will ask open-ended questions that encourage geospatial thinking.

When everyone has all of their information sketched onto the outline map, it’s time to build the 3-D map.
• Students will cut out the outline shape map.
• Students will trace the outline of their study region on to corrugated cardboard.
• Teacher will demonstrate how to apply salt dough to the map area, how to form mountains and other landforms, sharing think-out-loud (metacognitive) strategies and applicable geographic concepts.
• Students verify that their name is on the back of the cardboard!
• Teacher or helper will distribute salt dough to each student.
• Students, using their annotated outline map as a guide, will create a 3-D map of the region selected.
Note: On the days while the maps are drying, students will research and draw small pictures of natural resources, products, and animals found in the area selected. These drawings will be colored in and cut out, being sure to include a label area and a “foot” area, which will be folded back and be used to attach the item to the painted 3-D map. See student instruction sheets for details.

- When the map has dried, students will paint it using typical physical map colors as accurately as possible (valleys are green, mountain tops are orange or brown, water is blue, etc.)
- The teacher will review proper use and care of brushes, and demonstrate and review mixing paint colors.

After the paint has dried, students will glue on the “signs’, products, and other items per the instructions list.

End the Lesson:
- Students will present completed 3-D map to the class, using their completed checklist to explain what was learned about their state or continent (public speaking). Classmates will complete a total of two “Travel Tickets”.
- Students will draw a new mental map of their region (post assessment).

Lesson Evaluation:
- Rubric attached. Both student and teacher will each fill out a rubric.
- Compare student pre-assessment mental map to that of the post-assessment mental map.
- Celebrate the learning!

References:
National Atlas: Printable versions of state, county, national maps
http://nationalatlas.gov/printable/reference.html#list

Eduplace.com: Printable versions of continents, US regions, and historic maps
http://www.eduplace.com/ss/maps/

Kidzone: state maps, birds, flag, etc
http://www.kidzone.ws/geography/usa/

Owl & Mouse: printable maps - little to huge, map puzzles, lesson ideas
http://www.yourchildlearns.com

NetState: state maps, info, geography. An extensive site for state information
http://www.netstate.com/states/

Xpeditions outline maps of the world

More lesson ideas:
National Geographic Xpeditions: Lesson plans, activities, atlas, standards, etc.
http://www.nationalgeographic.com/xpeditions/standards/
GENERAL INSTRUCTIONS for making a 3-D Map of a CONTINENT or STATE

1. Use a piece of corrugated cardboard not larger than 16” x 20” and not smaller than 11” x 17”. It is a good idea to reuse cardboard that is freely available, for instance this cardboard can be cut from a larger box top or side.

2. Look at three or four or more maps of your state/continent to learn where the landforms are located. You will want to be able to locate such things as:
   - rivers
   - lakes
   - mountain ranges
   - volcanoes
   - bays
   - deltas
   - coastline
   - valleys
   - peninsulas and/or islands

3. TRACE THE MAP: Tape a piece of the large drawing paper on the door of the cabinet at the back of the classroom. Using the document camera and digital projector, project the map of your region on the wall and trace around the borders. Use a pencil.

4. DRAW THE LANDFORMS: Locate the mountain ranges, rivers, and other special landforms of interest on your region’s map by drawing them in reasonably accurate locations.

5. CUT OUT THE MAP, AND TRACE IT ON TO YOUR CARDBOARD: Next, use some flour and salt “clay” to make a 3-D version of your region. Be sure to make the mountains taller than the river valleys! Be as accurate as you can as to the location of the landforms. Let your map dry completely.

6. WHEN THE MAP IS DRY: Paint your map using the typical and correct physical map colors to show the higher elevations, the valleys, the rivers, lakes and so on. Place a gold star to indicate the capital city if there is one.

7. PRODUCTS: Carefully draw and color 1” pictures of the main products, animals, and crops of your region. Use your best printing to label the items. Include a tab at the bottom so that it can be folded over and the item can be glued on to your map. Look at the example map, then ask if you still have questions.

8. WHEN YOU HAVE FINISHED: Fill out a Scoring Guide for 3-D Map form and place beside your map.

CONGRATULATIONS! That was a lot of work! And doesn’t it feel great to complete such a big project?
3-D MAPS DETAILS

Drawings (with a tab so it can be glued on to the map)
1" minimum, 1 ½" maximum height:

- Animals
- Products
- Natural Resources
- Manufactured Goods

Note to 5th graders: include your state bird, and at least two other state symbols such as the tree, insect, fruit, beverage, mineral etc.

State Flag (5th Graders) 3" x 2 ½"
- Draw the flag on plain paper, color it, cut it out and glue it on the cardboard someplace where it looks good to you.

5th Graders (and Australia): A gold star indicating the location of the capital.

Compass Rose

Name Labels:
1. Labels must be ½" tall and can be printed on paper and glued on to the map or printed directly on the map – your choice
   - Rivers
   - Lakes
   - Mountain Ranges or important mountain peaks
   - Neighbors: states (5th Graders), continents (4th Graders)

2. The name of the map must be a tent-folded sign that stands up and is 2" tall. Write the name of the map in UPPER CASE letters about 1½" tall on it.

Bonus points will be given for a map key. Make your key on plain paper, be sure to include examples and definitions of each color and symbol on your map, color it, cut it out, and glue it on the cardboard where it looks nice to you.
CONTINENT REPORT CHECKLIST

Research and find the information you will need for your report. Remember to write down the resource and page number for your bibliography!

☐ Area of your continent or state in square miles ________________________

☐ What percentage of the earth’s land is your continent? __________________

☐ Natural resources _______________________________________________
    ____________________________________________________________

☐ Products _____________________________________________________
    ____________________________________________________________

☐ Names of at least 5 countries on your continent ______________________,
    ____________________________, ______________________________,
    ____________________________, ______________________________,
    ____________________________, ______________________________.

Important and unusual landforms – this might include the location and name of:

☐ tallest mountain
☐ most important mountain ranges
☐ any unusual mountains such as volcanoes
☐ biggest lakes
☐ most important rivers
☐ special landmarks (such as Chimney Rock, Independence Rock, Grand Canyon, or Ayres Rock)
☐ biggest cities
☐ important bays, islands, or peninsulas
☐ beaches
☐ jungles or forests
☐ oceans or seas
☐ deserts
☐ large man-made landmarks such as canals or huge walls or giant pyramids

☐ Climate
    annual precipitation ____________________________________________
    temperature range ____________________________________________

☐ Main languages spoken _________________________________________
STATE REPORT
CHECKLIST

Full name of the state:

Date admitted to the Union (and rank):

Population (also indicate which year):

Land area (and rank):

Capital:

Flag:

Postal Abbreviation:

State Nickname:

Motto:

State Symbols:
  Flower
  Tree
  Bird
  Stone
  Animal
  Colors
  Wildflower
  Insect
  Fish
  Song
  Other

Economy:
  Agriculture

Industry:

Famous Person(s) from your state:

Important historic events associated with this state
(minimum of two)
# REGIONS: STATES AND CONTINENTS

Name_______________________________

Date________________________________

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## TRAVEL TICKET

<table>
<thead>
<tr>
<th>Name of the region</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reasons why I would like to visit this region:</strong></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
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<tr>
<td>3.</td>
<td></td>
</tr>
</tbody>
</table>
### SCORING GUIDE for 3-D MAP

<table>
<thead>
<tr>
<th></th>
<th>OK</th>
<th>Pretty Good</th>
<th>Awesome</th>
<th>My Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Shape of Map</strong></td>
<td>There is a map that shows the region. (up to 10 pts)</td>
<td>The map has been shaped pretty much like the region, and there are landforms. (11-19 pts)</td>
<td>The map has been carefully shaped and the landforms have been accurately placed. (20-25 pts)</td>
<td></td>
</tr>
<tr>
<td>25 pts possible</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Colors</strong></td>
<td>There are several colors. (up to 10 pts)</td>
<td>The colors show the differences between mountains and valleys. (11-19 pts)</td>
<td>The colors are accurately representing the elevations of the landforms. (20-25 pts)</td>
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<tr>
<td>25 points</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Products, Crops, and Animals</strong> (1” – 1 ½” tall) 25 points</td>
<td>Drawings, mostly not colored, no labels (up to 10 pts)</td>
<td>Some are colored. Labels are difficult to read. (11-19 pts)</td>
<td>Carefully drawn and accurately colored. Labels are easy to read. (20-25 pts)</td>
<td></td>
</tr>
<tr>
<td><strong>Signs</strong></td>
<td>Signs are difficult to read or are missing. (up to 10 pts)</td>
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<tr>
<td><strong>Appearance</strong></td>
<td>Add 5 points: Good. I could have worked a little harder. (up to 10 pts)</td>
<td>Add 10 points: Very nice. I could do better but this looks good. (11-19 pts)</td>
<td>Add 15 points: Excellent in every way. I did my best. (20-25 pts)</td>
<td></td>
</tr>
<tr>
<td>15 points</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>TOTAL SCORE</strong></td>
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Flour Clay

This clay DOES NOT require cooking. The clay can be baked or air-dried. Your projects should last for several years. You can also paint and/or seal your projects after drying.

Materials:
2 1/2 cups flour
1 cup warm water
1 cup salt

Directions for making the maps:
1. Mix the flour, water, and salt.
2. Form the clay into the shape of the region on the cardboard where the continent or state has been outlined. Next add mountains, rivers, bays, lakes, seashores and other landmarks where they belong.
3. Air-dry for several days. For other projects, shapes made can be baked on a cookie sheet at 300 degrees Fahrenheit for one hour to dry more quickly.
4. When your map is dry, use markers, poster paint, or watercolor to indicate the location of deserts, plains, rivers, and so on. Make cut-out drawings of the area’s animals, plants, and natural resources.
5. Refrigerate any unused clay in an airtight container to use another time.

Questions? Please email or call:

Downloaded 10/25/06 from http://www.easyfunschool.com/article1561.html and modified for our project.
The Continents and the States: Everyone has selected a region to study. Fourth Graders are researching continents, and Fifth Graders are researching a state and the region of the U.S.A. where it is located.

We will be making 3D maps the week of . The students are now looking for **corrugated cardboard of approximately 11 x 17 or 18 x 22 inches** on which to build their model. For the best result, the cardboard should not have any folds in it. Please save a piece of a box, if you have one!

Thanks,