3-D TOPOGRAPHIC RELIEF PROJECT

Scott Little
Timberlake Jr. High School
Spirit Lake, ID
slittle@lakeland272.edu

Target Audience: 8th Grade

Objective: The learner will define a caldera.

The learner will describe the physical features of a caldera and it's surrounding by constructing a 3-D map of the Yellowstone Caldera.

Materials:

- Topographic map of Yellowstone National Park, paper or digital
- A means of transferring the contour lines from the map onto white paper.
- White poster paper
- Cardstock, cardboard, signboard or something similar.
- Scissors or X-acto knives
- Glue, markers.

Procedure:

- Transfer contour lines from the topographic map to poster paper. Use the index contours. Try to limit the overall size of the project to 22' by 32".
- Starting with the lowest elevation on the map, students cut out each contour level.
- Students trace the paper cut out onto the cardboard or signboard depending on the material available.
- Using scissor or X-acto knives, students cut out the contour levels on the cardboard.
- Again starting with the lowest elevation, students stack and glue cardboard contours in place.

Notes:

- I chose an overall project size of 22 by 32 because 11 by 16 is the largest size of copy paper available to our school. Therefore, 4 pieces fitted together would make 22 by 32. Two more pieces of 11 by 16 could be used bringing the finished size to 33 by 32. Obviously materials and time become an issue as you increase the size of the assignment.
- Index contours are every fifth line on topo maps. Tracing each individual contour line would be time-prohibitive. Using general information from tourists handouts provided on our visit, elevations within the caldera seem to run from about 6,800 to 7,800 feet above sea level. Mountains rimming the caldera range from 8,235' at Mt. Haynes in the west to Pelican Cone in the northeast at 9,643' to Mount Sheriden in the south at 10,308'. This gives a total relief of approximately 3,500'. With five index contours per thousand feet of elevation you would have about 15 levels in the raised relief map. This should provide students with a dramatic physical model of the caldera.
- The thickness of the material available will vary. Sign shops often have scraps of material that they will give to teachers for free. Political campaign signs are great for this. Obviously, cardboard comes in different thicknesses. If necessary, you may need to have students cut two of the same contours and double them up. If you want to start collecting material early, you may use multiple layers of cereal box material.