ACTIVITY 5: MAPPING TERRAIN USING PLUMB LINES

In this activity, students will model the original bathymetry techniques used to map the floors of the Great Lakes.

Materials Needed:

- Aluminum quarter-sheet baking tray (or similarly-sized container
- Full sheet of graph paper with 1" x 1" squares
- Hole puncher
- Play Dough
- Wooden skewers
- Ruler
- Colored pencils
- Tape

Remind students that originally, when the Great Lakes floors were mapped, they used lead lines (retractable ropes with lead weights on the end) to lower down into the lake at different points to measure the depths. Inform students that they will be modeling this technique by mapping the terrain of a model lakebed using a technique similar to what was originally used to map the floors of the Great Lakes. Provide all the supplies they need to complete the activity.

First, have students flatten out some Play Dough to cover the bottom of the tray. Have them build it up in different areas so as to create land forms in the tray of different depths. Have them punch holes at the intersection of the lines on the graph paper before taping the graph paper over the top of the tray to cover it completely.

Teaching Tip:

Demonstrate the plumb line depth measurement technique from the paper to the bottom of skewer for the class before they begin mapping their model lakebeds.

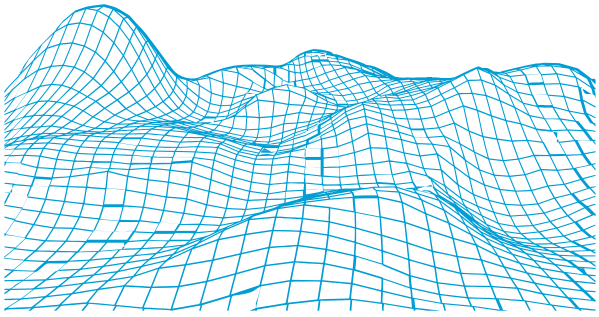

Image Credit: Gary Abud, Jr.

If multiple sheets need to be combined to cover the tray, be sure to tape them together so that the graph lines are continuous between each sheet. After the trays are prepared, have groups trade trays with one another so that they do not have their own. These trays serve as model lakebeds.

Next, give groups time to discuss how they could use their supplies to map the depth of the Play Dough lakebed. After discussion time, elicit some responses from the whole group and ensure that everyone understands that by dropping a straight line (e.g., a plumb line) until it hits the bottom that they can measure the depth and map depths along the grid.

Then, allow students time to take and record their measurements at each of the holes in the graph paper. Once they have finished, they should create a bathymetry map of their model lakebed using colored pencils and generate a legend to show which colors indicate which depths. A colorful gradient map should result.

Last, have groups uncover their lakebeds and compare the terrain with the bathymetry map that they made of it. Have them discuss with the other group (the one who created and traded their Play Dough lakebed) how accurate was their map, what limitations the technique had on the map making, and how the technique could be enhanced for improved accuracy in measurement.