

**Title : Topographic Clay**

**Bruce Vik : Estes Park Middle School**

**Grade Level : Middle**

**Time Frame : 40 – 60 Minutes**

**Standards : National Geography Standards: Essential Element 1**

The World in Spatial Terms

Standard 1. How to use maps and other geographic representation, tools, and technologies to acquire, process, and report information from a spatial perspective

Colorado Geography Standards: Standard 1:

1.1 Students know how to use maps, globes, and other geographic tools to acquire, process and report information from a spatial perspective

**Expectations:** Students will

Analyze a topographic map

Create a cross section of a topographic map into a three dimensional model using clay.

**Materials ;**

8 Topographic maps (at least one per group)

Modeling clay for each group

**Teacher Background/Student Preparation:**

This lesson is intended for the beginning to the school year. Depending on the level of students, the lesson will either introduce or review how to use and read a topographic map.

**Getting Started:**

- In about 10-15 minutes teachers need to give a brief lesson/lecture on how to read a topographic map. ie : lines signify the difference of elevation and the closer they are the steeper the terrain is.
- Draw a couple of example of topographic terrains on the board and then draw a 2-dimensional view of the cross section.
- Check for understanding

**Activities:**

- Hand out one topographic map to each group of students and discuss that they need to analyze the cross-section (an narrow section of the map that the teacher has drawn on the map for analysis)

- Explain to students they need to draw the cross section of the drawn section from their maps into a 2 dimensional picture.
- Next students will be handed some modeling clay and the next assignment is to creatively represent the drawn section of the map into a 3-D clay model.
- The students understanding of topographic maps will be apparent as teachers check each groups model and its accuracy.

#### Extending the lesson:

- Ahead of time teachers need to create a cross section terrain using clay and get it fired.
- Place the fired clay in a small box and place graph paper over the box to obscure student's view of the model.
- Explain to students the challenge it is for cartographers to create an accurate representation of the oceans floor.
- Explain how cartographers find out what the oceans floor looks like without having to go underwater. (sound waves)
- Assignment: have students take bamboo rods and poke them through the graph paper downward until it hits the hard clay.
- After students poke numerous rods into the paper they will be able to have a good idea of what the hard clay in the box looks like.