Learning Set 1

Back to the Big Question

What Processes Within Earth Cause Geologic Activity?

You took an important step toward answering the Big Question for this Unit when you identified and described your region of the world to answer the smaller question: How can my region be described? In the process, you learned to use several different tools scientists use when answering that type of question. By combining what you could observe using each representation, you developed a good description of the topography of your region.

Build a Picture Map

While you began to answer the Big Question, you learned these geologic terms: topographic features, topography, elevation, depth, sea level, longitude, latitude, satellites, topographic maps, and contour lines. You also used some of the different representations scientists use to investigate the characteristics of your region—color maps and satellite images.

Record each of the italicized terms on a separate index card, using large letters so that others can see. On the back of each card, draw a picture to represent its geologic term. Make your picture as accurate as possible. Be sure to include features that would help someone else understand the geologic term.

When you have completed each card, share them with your group. Listen carefully as someone in your group describes each geologic term. Offer your ideas for how the description of each of the geologic terms might be improved. Then, lay the cards on the table to show how the ideas connect.
On each card, record the connections you made. For example, *Topography* may be connected to *Elevation* and *Depth*. It may also connect with terms describing different types of maps representing topography. Record and describe each connection on both cards. Be as specific as possible.

Discuss the connections among the terms with your group. Your ideas about the connections may change later in the Unit. As you learn more about the geologic terms, you will be better able to connect them. You will then revise your cards and connections.

**Conference**

The goal of this conference is to prepare to share the description of your region and Earth Structure with your class.

You used three different visualization tools, *My World* color maps, the *My World* vertical profile tool, and an Earth-imaging program, to gather information about your region and Earth structure. Each tool gave you a different way of looking at your region and different levels of detail. You recorded what you observed on a *Region Project Board*. Working with classmates who were assigned your region, examine the observations you made using each visualization tool.

Together, come to an agreement about a description of your Earth structure and region. Use the vocabulary from this *Learning Set* in your descriptions. Draw a picture of your Earth structure on a poster. Label the elevations you found. In parentheses, next to each elevation, record which tool you used to find this information. Below the picture, make
a list of the important information you learned about your region and Earth structure, including details you learned from the pen pal letter. For every detail you include, document your source of information in parentheses.

**Communicate**

**Share Your Data and Interpretations**

As you present your poster to the class, describe what you now know about your region’s topography. Be specific about information the different visualization tools provided. As you share details of your region, use the terms from this *Learning Set*.

As you listen, pay attention to the similarities and differences among the regions and Earth structures. When the presentations are complete, you will be asked to identify two regions similar to yours. Think about how each region is like yours. How are the regions similar in elevation and in changes in elevation? Also, pay attention to details that might show that your region is different from others. Listen to other groups’ use of the geologic terms.

As always, ask questions if you think your classmates need to clarify any observations they have made. Make sure to be respectful.

**Reflect**

1. What descriptive words did your classmates use when talking about their regions and Earth structures?

*The June 17, 1996 eruption of Ruapehu Volcano in New Zealand as witnessed by Thor Thordarson, an Icelandic volcanologist (a scientist who studies volcanoes). According to his account, the eruption produced a pitch-black column about 4 km (2.5 mi) high and 10 km (6.2 mi) wide.*
2. Which regions and Earth structures presented by your classmates are most similar to yours? Describe what makes them similar. What else would you need to know about each region to better compare them to each other?

3. Choose two regions that are different from yours. Describe how the land features of these regions make them different. What else would you need to know about each region to contrast them with one another?

4. You have examined the topography of your region and Earth structure. Now think about the changes reported in your region. What do you think might be causing those changes? Add your ideas to the What do we think we know? column of your Region Project Board.

After you discuss the answers to these questions as a class, do your best to answer the Big Question together: What processes within Earth cause geologic activity?

**Update the Project Board**

You now know a lot about the topography of the regions your class is studying. You know that some Earth structures have higher elevations than others. You know that some regions are very similar to yours and some are very different. Think about the characteristics that make regions similar or different. Record this information in the What are we learning? column of the class Project Board. Be sure to include evidence that supports the information in the What is our evidence? column.

Add questions you have about the topography of the regions to the What do we need to investigate? column. Your questions might be about what makes regions similar or different, or about how you can better describe the regions. You might record a question about the elevation or steepness of each Earth structure, questions about the kinds of visualization tools you could use to answer your questions, or questions about the geologic activity.

Finally, you have discussed ideas with your class about the answer to the Big Question. Add any ideas that came up during this discussion to the What do we think we know? column of the Project Board. Add questions that came up to the What do we need to investigate? column.