ARTS INTEGRATED LANDFORMS

This arts integrated lesson is inspired by the picture book "Water Land: Land and Water Forms Around the World" written and illustrated by Christy Hale (published by Roaring Book Press in 2018). This book makes powerful visual connections between land forms and bodies of water. The book, however, is not required to instruct this lesson.

This lesson explores Utah Science with Engineering Education (SEEd) Standard 1 for grade 2: Changes in the Earth's Surface. Students create topographical maps. Then use their maps to calculate elevation and write about a weather or nature event that changes their landforms.

**In this lesson, italics represent a suggested teacher script.*

Students will	**Teachers will**
• engage with attached sEEd, ELA, Math, Social Studies, and Fine Arts standards • create a unique land mass using positive and negative space • draw or construct topographic lines • calculate the elevation (height and depth of various landforms) • make predictions about the movement of water and changes to landforms • write a newspaper article about a weather or nature event	• prepare materials to lead activities • guide students in creating unique land masses • assist students in constructing and making sense of topographic lines • assess students' ability to read topographical maps; determining high and low elevations • support students in speaking and writing about a weather or nature event that changes a landform on their map

Supplies Needed:

Blue construction paper or cardstock
Brown construction paper, craft paper, or paper bag
(Work with any dimension paper; however, the size of the brown paper needs to be half the length and the same height as the blue paper)

scissors
glue
blue and black: marker, crayon, or color pencil

Opening - Reminder of the Topic

In small groups, brainstorm a list of landforms. *What landforms can you name?* Asking small groups to share their lists can help generate ideas for groups with fewer landforms listed.

Next, students sort the landforms and create categories for the landforms with their small groups. Set an expectation the sort will contain at least two categories and no more than five categories. This is an

activity to surface student understanding and reasoning. The teacher's role is observer and facilitator. As there are no correct answers, all sorts and categories should be accepted without evaluation.

Then, small groups share how they sorted and categorized their landforms. This could be done as a silent gallery stroll or with a spokesperson sharing from each group.

Movement – Revisiting the Material

Positive and Negative Space:

In partners, all the Partner As will make an interesting shape with their bodies to represent land. The space that Partner A is filling, is the positive space. Can you find any negative space around Partner A? Partner A is land, Partner B you are water. Partner B, your job is to move for 8 counts like water in the negative space around Partner A.

It can be helpful to have a partnership demonstrate prior to the class moving at the same time.

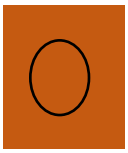
Switch roles. Land forms and water

Visual Art – Composing with New Ideas

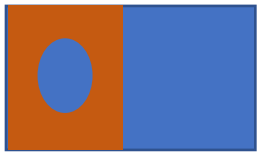
Constructing a Topographic Map

The directions are done with a simplistic form to help teachers visualize the process. The more complex a landmass that a student creates, the more interesting and complex the lesson becomes.

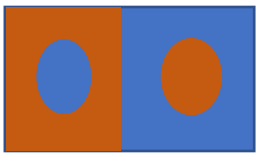
1. Cut a landform shape from the brown paper.



2. Then place the brown paper, with the cut shape removed on the left side of the blue paper and glue.



3. Glue the brown landform shape onto the right side of the blue background. Now there are two landform that are related visually, but they are distinct. One is surrounded by land and the other is surrounded by water.



4. At this point, introduce topographic maps, as maps that show physical features that are three-dimensional with lines. *When map makers want to show how tall different landforms are they use contour lines to the outline of a landform at different elevations or heights. Imagine the shape of a volcano. Make that shape with your hands. We know that many volcanoes are tall*

cone shaped landforms. It can be difficult to represent this on a map. Now imagine you are a bird flying over a volcano. You might notice that the mouth of the volcano looks like a circle and that the base of the volcano looks like a much larger circle. When topographic maps are created, cartographers, map-makers, measure landforms at different heights and draw the outline with a brown line on a map. We are going to add contour lines to our maps by making a line and then making a smaller line inside each of the lines we make. See example below:

5. As students finish adding lines, check for understanding. *What do lines close together indicate?* A steep slope. *What do lines farther apart indicate?* A gradual slope. *If the base elevation is 200 ft. and each contour line is 10 ft., what is the height of the tallest place on your map? How did you determine the highest place? How would changing the units from feet to yards change what your map represents?*
   To differentiate, students could be given different scales to work with on their maps, for instance each line could represent 100, 10, or 5 meters. Also consider changing the base elevation. These three base elevations (200, 245, or 283) provide students varying degrees of complexity when calculating the elevation.
   Also, consider showing depths on the maps with blue contour lines in the bodies of water.

Literary Arts — Expending New Knowledge to Make Predictions and Explore the Model

Our Earth changes in gradual and dynamic ways. What is a weather or nature event that would change the landforms on your map? Talk to a partner about a weather or nature event that might occur. How would it impact a landform on your map?

Write a one-paragraph newspaper article about the event and the change that occurred to a landform on your map.

Weather Events	Nature Events
tornado	volcano
hurricane	earthquake
tsunami	landslide
flood	sink hole

Standards Alignment

Science

SEEd Standard 2.1.1 **Develop and use models** illustrating the patterns of landforms and water on Earth. Examples of models could include valleys, canyons, or floodplains and could depict water in the solid or liquid state. (ESS2.B)

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English Language Arts
Speaking and Listening:
2.2 Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
2.3 Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.

Writing
2.2Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.

Social Studies

Geography: Students will use geographic tools and skills to locate and describe places on earth.
Objective 1: Identify common symbols and physical features of a community, and explain how they affect people's activities in that area.
Objective 2: Demonstrate geographic skills on a map and a globe.

- Identify and use information on a map and on a globe (e.g., map key or legend, simple grid systems, physical features, compass rose).

Math

Standard 2.MP.4: Model with mathematics. Identify the mathematical elements of a situation and create a mathematical model that shows the relationships among them. Identify important quantities in a contextual situation, use mathematical models to show the relationships of those quantities, analyze the relationships, and draw conclusions. Models may be verbal, contextual, visual, symbolic, or physical.

Standard 2.MP.7: Look for and make use of structure. Recognize and apply the structures of mathematics such as patterns, place value, the properties of operations, or the flexibility of numbers. See complicated things as single objects or as being composed of several objects.

Standard 2.NBT.2: Count within 1,000; skip-count by fives, tens, and hundreds.

Fine Arts

Dance: CREATE
Students will conceptualize, generate, develop and organize artistic ideas and work. They will complete and refine dance works.

- Demonstrate willingness to work with partners when creating dance.

Visual Arts: CREATE
Students will generate artistic work by conceptualizing, organizing, and completing their artistic ideas. They will refine original work through persistence, reflection and evaluation

- Brainstorm multiple approaches to an art or design problem, and make art or design with various materials and tools to explore personal interests, questions, and curiosity.

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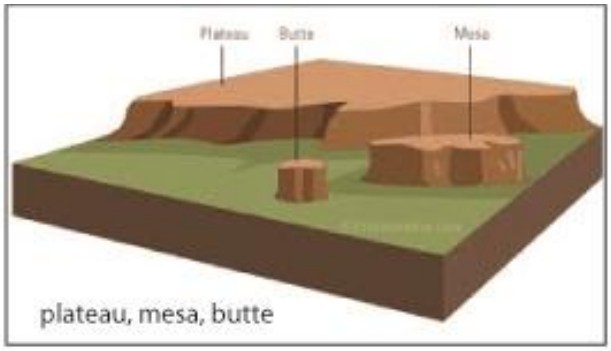
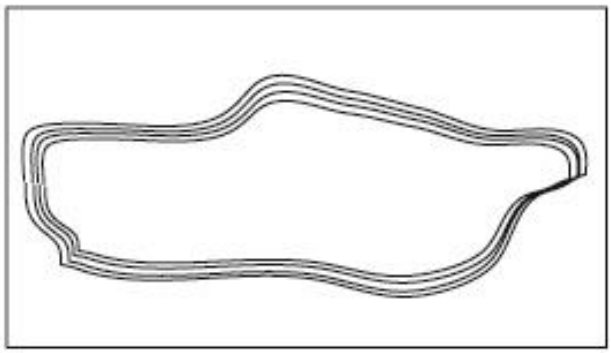
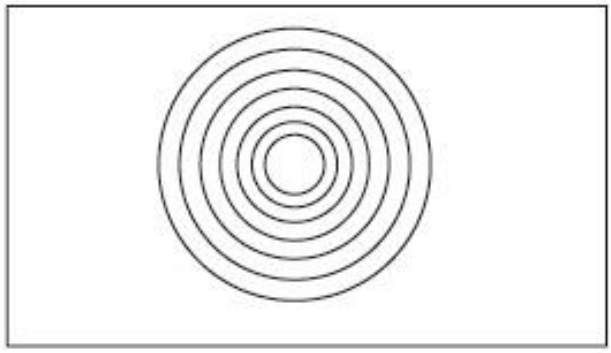
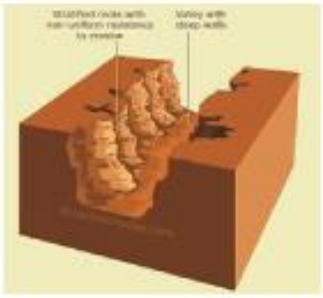


plateau, mesa, butte

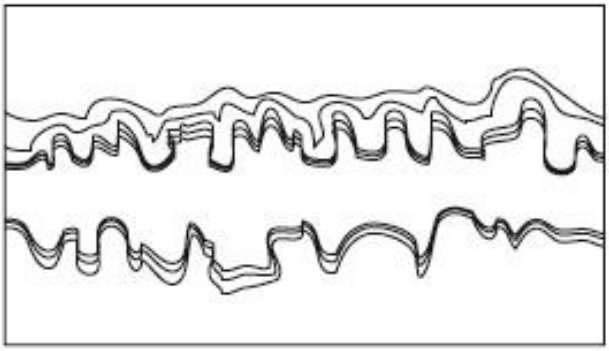


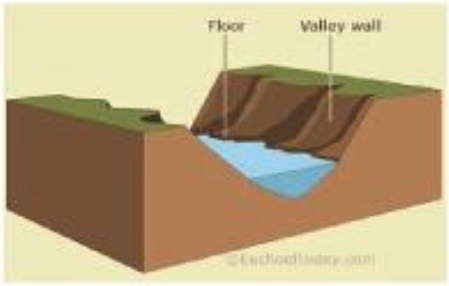
volcano



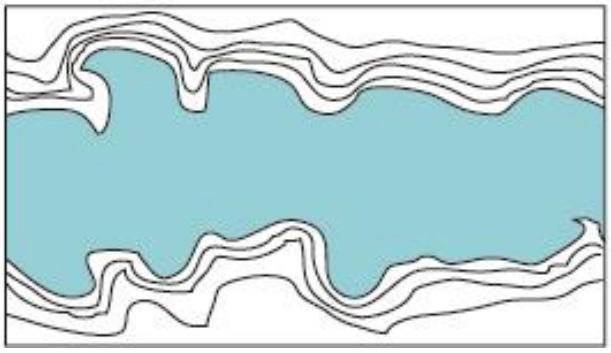


canyon





valley



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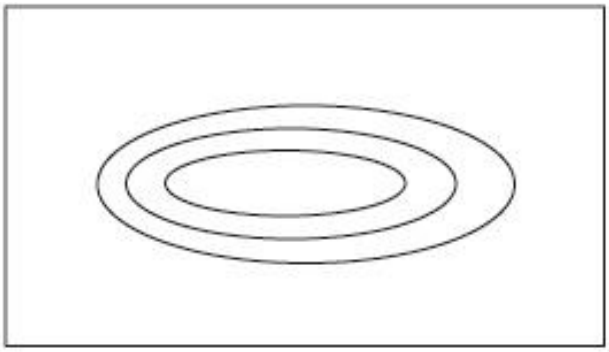

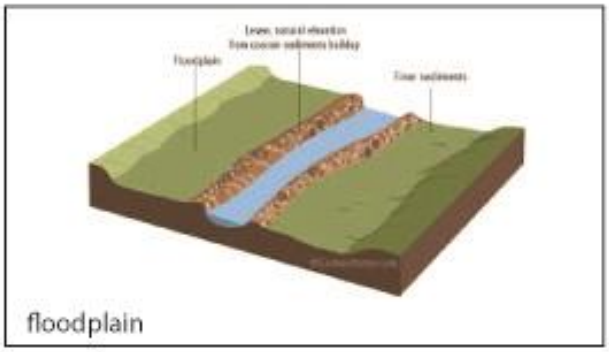

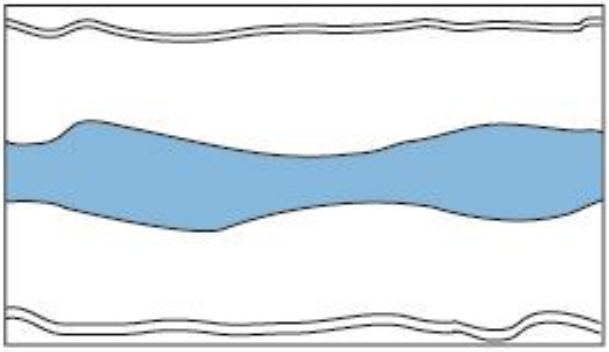

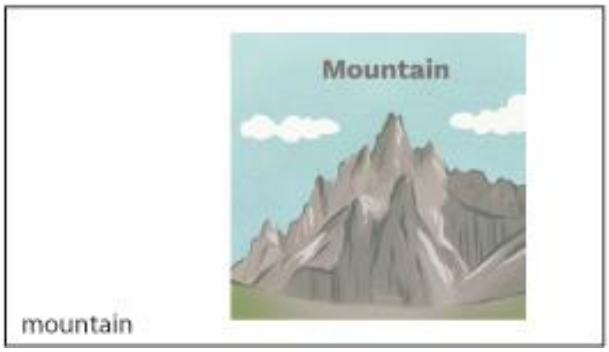

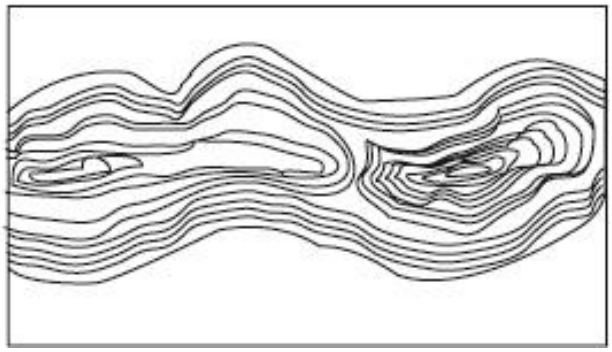

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Example of topographic lines on volcano