

Discipline: Science and Technology

Standards Category: Earth Sciences

Lesson Focus: To recognize and investigate geological processes

PA Standard(s):	Related TESOL Standard(s):
3.5.4A: Know basic landforms and Earth history.	Goal 2: To use English to achieve academically in all content areas. Standard 2: Students will use English to obtain, process, construct, and provide subject matter information in spoken and written form.

Key Objectives in Accordance with TESOL Level:

Pre-Conversational/ Beginning	Intermediate	Advanced
Students will be able to: <ul style="list-style-type: none">• Identify a type of geological feature by pointing to a correct picture.• Build or draw a model showing a geological feature.• Cooperatively complete an erosion experiment.	Students will be able to: <ul style="list-style-type: none">• Write a description of a geologic feature.• Write directions to a model showing a geologic feature.• Write a description of an experiment on erosion.	Students will be able to: <ul style="list-style-type: none">• Write a description of and explain a geological feature to a peer.• Write a description of and explain a model of a geological feature to an evaluator.• Write a description of and explain an experiment on erosion to an evaluator.

Materials:

1. Pictures of mountains, plains, volcanoes, plateaus, beaches
2. Styrofoam plates
3. Small rocks
4. Sand
5. Water
6. Overhead projector
7. Strips of paper 6 inches by 12 inches
8. School science texts
9. Library sources
10. Computer Internet access

Procedure:

1. Read as group information on geological (land) features, focusing on mountains. Use as a text the school district science texts or research for science books in the school library. If available research information on the Internet with the students.

Suggested

Level:

Primary

Lesson Focus:

To recognize and investigate geological processes

Teaching

Strategies:

Whole group instruction

Cooperative learning groups

Teacher-student, pair/share

Assessment

Strategies:

Observation by teacher

Written responses

Written responses with oral explanations

2. If mountains are in viewing distance of the school have the students observe and discuss the appearance. If no mountains are visible use the pictures to evoke a class discussion.
3. Using an idea map template on an overhead projector write class descriptions of mountains.
4. Give each student a strip of paper 6" by 12". Direct the students to place the paper horizontally on their desks. Next, they place on hand on each end of the paper and slowly push the paper ends toward the middle. Discuss with the class what happens to the paper. Confirm the hypothesis that a mountain can be formed in this manner.
Beginning ESL students may not feel comfortable participating in whole-group speaking activities. Don't force them to speak. Beginners tend to develop listening skills in English before attempting to speak it.
5. Tell students that this is one way in which mountains can be formed.
6. Show pictures of various mountains (The Rocky, and Appalachian Mountains are good examples).
ESL students at all levels benefit from the use of visuals.
7. Tell students that many features found on Earth are developed because of movement of earth materials.
8. Tell students that other mountains form when melted rock inside the earth finds its way to the surface.
9. We call these types of mountains volcanoes.
10. Show pictures of volcanic mountains to the students (Mount Rainier-Washington or the Hawaiian Islands would be good examples).
11. Tell students that the movement of water (rain, rivers and oceans also cause the landforms to change.
12. Tell students that they are now going to be scientists to explore how water causes changes on the Earth.
13. Give each cooperative group (2-4 students) a Styrofoam plate with two to three small rocks on it. Step one: Have one student pour sand over the rocks to partially cover the rocks. Step Two: Have one student blow on the sand and record their findings. (Note: remind the rest of the group to lean backwards so that they do not get sand into their eyes). Step Three: Have a student slowly pour water over the sand. Discuss findings. Have students write or draw their observations. Evoke principle of erosion by water.
14. Explain to students that the flat surface of plateaus form when rivers cut into the rock layers just like the water moved the sand around in the experiment.
15. Explain to students that wind also smoothes out rocks and that this is how we get sand and soil.
16. Show students pictures of plateaus (Appalachian and Colorado Plateaus are good examples).

Closure:

The Earth constantly changes because of movement of land, wind and water on the Earth. Ask students to give examples of how these movements create land features on Earth.

Assessment:**Beginning**

1. Show students pictures of various landforms. Have the students point to the picture of the mountain.
2. Observe the student paper mountain models for accuracy and understanding.
3. Observe students interaction in a group erosion project.

Intermediate

1. Students write one paragraph describing a mountain.
2. Students write a brief description (one to two paragraphs) of the mountain formation project.
3. Students record what they observed in the erosion experiment.

Advanced

1. Using a pair-share venue student describe a mountain.
2. Students explain to an evaluator the mountain building experiment.
3. Students record and explain to an evaluator what they observed in the erosion experiment.

Notes: The advanced section will be used with the ELL students in the class.