



LESSON PLAN

CHANGING THE SHAPE OF LAND GRADES K-2

SUMMARY

Students explore how wind and water can change the shape of the land. Duration: 15-25 minutes.



2-ESS2-1. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.

Science & Engineering Practices	Connections to Classroom Activity
<p>Developing and Using Models</p> <p>Modeling in K-2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization or storyboard) that represent concrete events or design solutions.</p> <p>Develop a model to represent patterns in the natural world. (2-ESS2-2)</p>	<ul style="list-style-type: none"> Students will use a model of erosion to collect observational data and draw conclusions on the effects of flowing water on soil.

Disciplinary Core Ideas	Connections to Classroom Activity
<p>ESS1.C: The History of Planet Earth</p> <p>Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1)</p> <p>ESS2.A: Earth Materials and Systems</p> <p>Wind and water can change the shape of the land. (2-ESS2-1)</p>	<ul style="list-style-type: none"> Students will observe the effects of moving air and flowing water on sand and soil in a teacher-designed model that enables students to see changes that would normally take a much longer period of time.

Crosscutting Concepts

Stability and Change

Things may change slowly or rapidly.

Connections to Classroom Activity

- Students will observe changes to soil due to erosion that takes place over a long period of time from flowing water, as well as a rapid change from a flood.



ENGAGE

Show students a picture of the Grand Canyon. Explain that the canyon was once flat ground and that flowing water dug down into the earth over a long time by moving the land away one piece at a time. Ask students to brainstorm - Where did pieces of the earth go? How can water move pieces of the land far away? What else can move land? Can anything slow down the movement of the land?



EXPLORE

Steps

1. Arrange students in groups of 2-3.
2. Give each group a container with one fistful of sand or soil on one side.
3. Ask the students to brainstorm how they could move some of the sand or soil from one side of the container to the other side using only water.
4. Angle each container by propping one side up with a textbook so the water can flow downhill and across the container.
5. Pass out small containers of water. Demonstrate how to pour the water.
6. Instruct students to pour their water over the sand or soil.
7. Ask students to observe and discuss: How does flowing water move pieces of the land? What would happen if we kept pouring water? How could we slow down erosion caused by moving water?



EXPLAIN

Erosion is the movement of small pieces of land from one place to another. It usually happens due to water flowing or wind blowing. Over long periods of time, the changes can be dramatic. For example, our coastlines are constantly being changed by the waves of the ocean and the wind that blows near the beach. These changes usually happen very slowly, but they can also happen fast too. For example, floods can rapidly move soil from one location to another.

MATERIALS

- Clear containers (shoe box size)
- Sand or soil (about the size of an adult fist per student group)
- Cups of water (100-150 ml per student group)
- Outdoor area (if desired)

DIY Activity

- Stack of books
- Watering can with water
- 2 Cake pans
- 2 Bread pans
- Pack of soil
- 8 Plastic forks



ELABORATE



WATCH THE GENERATION GENIUS CHANGING THE SHAPE OF LAND VIDEO AS A GROUP

Facilitate a conversation using the Discussion Questions.

Provide additional supplies to design and test barriers to slow down erosion in the model used in class. Students can use anything from plastic cutlery, arts and crafts supplies or fallen branches and twigs to create barriers in their container to keep the sand or soil from moving due to flowing water or moving air.



EVALUATE

Students can play the online Kahoot! quiz game located below the video which provides downloadable scores at the end of the quiz game. Alternatively, you can use the paper quiz or the exit ticket questions. All these resources are located below the video in the Assessment section.



EXTENSION

Students can also use their models to learn about wind erosion by using straws and sand to try to blow the sand away. Different ways to slow down and stop erosion using household supplies can be tested. If you extend using this activity be sure to have students wear goggles so that sand does not blow in their eyes.

