



How to Make the Soil Stay (Restoring Delta Park)

OBJECTIVES: Students will be asked to experiment with a variety of materials to determine how to best slow soil erosion resulting from dams.

OVERVIEW:

Students will serve as environmental scientists in a community to help resolve an issue at a local park. The dam at the park has resulted in severe soil erosion. At the beginning of the lesson, students will examine photos of soil erosions through a series of before-and-after images. After brainstorming a list of potential factors, the students will test several options with the goal to find the best option to limit erosion. Students will develop and present their response to the community.

STANDARDS ADDRESSED:

Disciplinary Core Ideas LS2.A: Interdependent Relationships in Ecosystems

Disciplinary Core Ideas LS4.D: Biodiversity and Humans

ELA/Literacy W2.8: Recall information from experiences or gather information from provided sources to answer a question.

MATERIALS:

- Images (print, digital, or videos) showing examples of soil erosions (from dams if possible; look for before-and-after shots)
- Easel paper
- Markers

For the hands-on exploration:

- Aluminum pie pans (one per group)
- Brick or block to support pan during the experiment (one per group)
- Cups with pre-measured substrates (one each of sand, soil, pebbles)
- Assorted vegetation (this can be artificial or live—moss, grass, etc.)
- Small paper/plastic cups for water (you might want to mark with a line the water level to ensure a controlled amount)
- Science notebooks to record/draw observations (depending on the age and ability of your students, you may want to provide worksheets to help students collect information)

ACTIVITY STEPS:

1. Show images (if using videos, consider muting the sound) of soil erosion from dams to the students. If possible, show before-and-after images. Solicit descriptions from students.
2. Using an easel, create a list of possible factors (time, running water, wind, soil type, lack of vegetation).
3. Inform the students that they have been hired by the community council to develop suggestions to reduce erosion at a local park. Read the following letter to them (you may want to project it as well).

Dear Students,

As you know, we are renovating Delta Park. The dam at the far end of the park has had an impact on soil.

Years before you were born (and before the dam was built to provide us with clean energy), soil was carried along with the water and deposited along the river banks and created the delta. That is why the park is called Delta Park.

But when the dam was built, it reduced the amount of soil being carried down the river. That meant less soil deposited along the river banks. We have lost much of the soil due to water erosions. This has reduced the river banks.

We need you to make suggestions to limit the erosion. To help you, we have provided your teacher with some material samples we are considering for the park. We look forward to the results of your tests and final proposal.

We thank you for your help.

4. Divide the students into small groups and provide a few minutes to plan.
5. Before having the students trial their ideas, demonstrate the test method:
 - a. Students create their environment in the pie plate (i.e., fill plate with sand).
 - b. Tilt the pie plate (supported by the brick) so one side is higher.
 - c. Slowly pour water at the high end of the plate.
 - d. Observe and record the amount of water reaching the rim of the plate (you can collect the runoff).
 - e. Did anything other than water run off?
6. Students can use the materials provided to test a variety of substrates. The students should draw a sketch of their model (labeling the parts) and then record the results.

ASSESSMENT:

Students will prepare a response to the community council. This can be in a variety of formats (written, oral, collage, video, etc.).

EXTENSION (OPTIONAL):

Photograph the student work and create a digital portfolio of the work. This could then be incorporated to a digital storytelling application and include voice and video.