SAVE OUR BEACH!

4th Grade STEM Challenge

The Problem

Sunshine Beach located in Conch Shell, Florida, is in trouble. The city council has announced that unless a cost effective method can be found to stop erosion of Sunshine Beach, public access to this area will be closed.

Mr. I.M. Sand at Beachsavers Inc. has asked for your help by constructing a prototype of a barrier that will stop beach erosion.

The Challenge

Design and build a barrier prototype that will prevent the erosion of Sunshine Beach.

Materials

10 straws 10 craft sticks 50 ml pebbles toothpicks

8” x 10” mesh cloth 2 coffee filters small block of clay

\*You are not required to use all of the materials listed above, but that is the only materials you may use to make your prototype.

\*The more materials you use in your solution, the more it costs.

Challenge Timeline (subject to change)

Day 1 Introduce Challenge; create individual blue print

Day 2-3 Share individual blueprints with teams; discuss and record pros/cons of each sketch; select one

prototype to construct; complete group blueprint design sheet/team reasoning/teacher approval

Day 3-5 Construct prototype

Day 6-7 Run Test Trial; analytical discussions/reflection on test trial; redesign prototype

Day 7 Finish redesign of prototype

Day 8 Final Test; reflection on results; additional changes to prototype

Day 9 Challenge reflection

How barrier prototype will be tested

* See diagram below of beach box setup
* The measurement (cm) of where the sand meets the water will be taken prior to running the test trial.
* Prototype will be placed in the beach box. Waves will be created by moving a large block back and forth in the water for 5 minutes.
* The height of where the sand meets the water will be measured (cm). The difference between the initial measurement and the final measurement will be used to determine if erosion has taken place.