Wave bin construction instructions

Materials needed:

1 Large plastic storage containers (at least 19 gallon)
1 piece of Plexiglas® cut to fit the width of the storage container
2-3 lbs of sand per storage container (wash sand to reduce turbidity)
3 lbs of aquarium gravel
Plastic zippered storage bags containing measured masses of sand: 50g, 100g, 150g, 200g
Note: One bin can accommodate two groups

Construction of Wave Bin:

The wave bin is constructed from a standard 19-gallon clear storage container with holes drilled in each side through which one-inch diameter dowel rods are placed (see Figure 1). A piece of Plexiglas® is cut to fit inside the bin, and holes are drilled in the Plexiglas® and bolted to the dowel rods. Holes are drilled in the two pieces of one-inch dowel rod, and slots are cut in the dowel rods to bolt the Plexiglas® in between each dowel rod. Long bolts are used on the ends of the dowel rods, thus, providing handles to easily create waves. When a protractor is attached to the side of the bin, the angle of the handle can be measured and correlated to the size of the waves created. Sand and gravel are placed in the wave bin to simulate the coastline while still allowing the Plexiglas® to swing (see Figure 2). Add water slowly to the bin to avoid turbidity. Waves can be generated by moving the piece of Plexiglas® forward and backward at the non-beach end of the tank. Students creating the wave must experiment with the wave generation process. Start slowly and try different methods. For example, vigorous fanning motion versus a slight underwater fanning motion. It is important that waves are even and rhythmic for each test.

Figure 1.

Figure 2.